CHAMBERS'S

INFORMATION FOR THE PEOPLE

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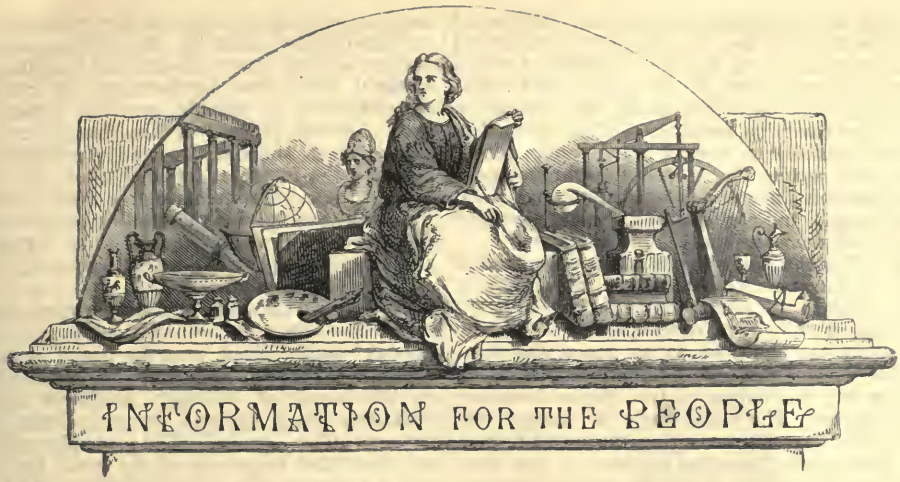
CONTENTS.



ANTHROPOLOGY.

THOUGH there is nothing more hackneyed than Pope's dictum, that 'the proper study of mankind is man;' there is no study we have, from a scientific point of view, more habitually neglected. The moral nature and constitution of man, his hopes, aspirations, passions, and ever-varying humours, have been the subjects of much speculation on the part of metaphysicians and poets; but, till very lately, the study of man in all his relations—'the proper study of mankind'—never had cast on it the dry white light of positive science, which can alone illuminate the mysteries of Nature. So little did we know that was worth knowing about this subject, that till very lately a controversy raged in this country, not as to what the 'science of mankind' taught us, but as to what it should be called. The terms 'Ethnology' and 'Physical History of Mankind' were in general use when we were content to take our notions on the subject from no other work than that of Dr Prichard. Now, however, the term Ethnology is seldom used as a general name for the whole subject, owing to the new school protesting against the science being vitiated at the outset by having a name applied to it that homologated a hotly disputed theory. Ethnology and Ethnography were terms of too limited meaning for a science that professes to study the phenomena of the human group, in its *tout ensemble*, however well they might fit a science which limited itself to the bare description and classification of *races*. Ethnology as the science of races is only a branch of the great science that investigates all the phenomena presented by man as an inhabitant of the globe. Many authorities, too, protested that there were no such things in nature as the 'races of man;' so a new term was introduced, viz. *anthropology*, which is not only of wider meaning than ethnology, but, being of neutral significance, traverses nobody's pet theories, and so gives offence to none. It is derived from the Greek *anthropos*, man, and *logos*, a discourse.

Anthropology is the natural history of man, the words 'natural history' being used in their real meaning, to signify not merely the study of the physique, and the dry descriptive classification of the members of a zoological group, but also the study of whatever of their mental nature finds expression in the phenomena of their physical organisation, and how that and their general environment act and react on each other. The most recent and logical division of the science is as follows:

(1.) *Zoological Anthropology*, discussing man's relations to the brute creation. (2.) *Descriptive Anthropology*, or ethnology proper, describing the divisions and subdivisions of mankind. (3.) *General Anthropology*, or, as M. Paul Broca, in his recent article on the subject in the *Nouveau Dict. Encyclopédique des Sciences Médicales*, puts it, the 'biology of the human race,' which borrows and collates from all sciences facts and phenomena usually investigated in men as individuals, but which relate to groups and numbers of men; comparing these with other facts (got in the same way) relating to other groups of human individuals. For example, the study and bare description of a single skull belonging to any race, is human anatomy; but the study and description of a series of skulls belonging to that race, and of their peculiarities, compared with groups of skulls belonging to other races, is not part of human anatomy, but of general anthropology.

METHODS AND TERMINOLOGY.

The methods of investigation are identical with those of other natural sciences, save when modified by the distinctive peculiarity of anthropology, viz. that its facts refer not to individuals, but to *groups of individuals*. Investigation by measurements is one of the most valuable

methods of anthropological research. By means of it we find out the comparative development of different regions of the skull in different tribes, the various proportions of the trunk and extremities, and, most important of all, the capacity of the cranial cavity or brain-case. The facts got at by this method are only of value—and, indeed, only come within the scope of anthropology—when they refer, not to individuals, but to *groups* of individuals, and are capable of being expressed in tables of maxima, minima, and averages.

As each anthropologist has his own method of measurement, which often differs from those of his brethren, the results obtained by different observers are too often contradictory. The way to measure the skull, so as to get at the comparative development of different regions, is to measure the inclination of two planes bounding those regions. The facial angle of Camper was got in this way, by measuring the angle formed by a line drawn from the forehead to the most projecting part of the jawbone, meeting another drawn from the base of the nose to the external ear. When it was nearest a right angle, it was held to indicate superior intellectual development in a race. Unfortunately, M. Jacquart, of the Natural History Museum in Paris, shewed that it came very near a right angle in comparatively stupid people; and that even in the homogeneous population of Paris, it varied within much wider limits than those Camper held to be a good test of distinct species. It is now held of little account; indeed, cranial measurements are now considered of little use to science, unless they are far more exact and elaborate than this. Instead of using one cranial measurement, as did Camper, Dr Barnard Davis, in his recent work, *Thesaurus Craniorum*, the best authority on this subject, gives us no less than ten. We may briefly sum them up as follows: (*a*) internal capacity of the skull expressed in ounces avoirdupois; (*b*) circumference of skull round forehead, taken by a tape at junction of the forehead and nose, and over the most prominent part of the occiput; (*c*) the arch of the skull, from the junction of forehead and nose to the edge of the foramen magnum; (*d*) the intermastoid arch, from the tip of one mastoid process to another; (*e*) longitudinal diameter, or length from forehead to occiput; (*f*) transverse diameter, noting whether the greatest breadth is between the parietal or temporal bones on opposite sides; (*g*) height from the plane of the foramen magnum to that of the vertex; (*h*) length of face from nasal suture to tip of chin; (*i*) breadth of face or interzygomatic diameter, or space between the two cheek-bones; and lastly, (*j*) a measurement expressing the proportion of the greatest length to breadth of face, taking the latter as 1·00. Dr Davis determines the capacity of the brain-case by filling it with fine sand of specific gravity 1·425; but this is objectionable, for the sand gets into crevices and sutures and little cavities where no brain-matter lodged in life, and gives a false indication of the cerebral capacity of the skulls so measured. Professor Wyman of Harvard University, in the *Proc. Boston Nat. Hist. Soc.* for 1868, suggests a better method. According to him, you first fill the brain-case with fine shot, which cannot get into crevices, &c. and then weigh the cranium. Then convert the weight of material into cubic measurement by determining the cubic measurement of an ounce of the material (shot), and multiplying this by the whole number of ounces. Then you convert the weight of the material (shot) into brain-weight by correcting the difference in specific gravities between the two. Another process of his, though less accurate, is much simpler. Instead of weighing, you *measure* the contents of the brain-case. You convert the cubic contents of the skull into brain-weight, by multiplying the number of cubic inches by the weight of a cubic inch of water (252·5 grs.), and allowing 4 per cent. for difference of specific gravities of brain and water.

Philological methods of research were once the prime favourites of anthropologists. Professor Huxley would indeed base the grand separating distinction between man and the lower animals on the faculty of language, doubtless agreeing with Aristotle in saying: 'Animals have voices, but man alone speaks.' The principles on which the diversified languages of the world are classified, are treated of in another number. The study of this new science of comparative philology made at the outset so many revelations of unexpected affinities among nations, that it seemed at one time as though anthropologists were about to reject all other more laborious methods of research. But of late years, the value of language as a test of race has lost a good deal of its prestige. It is only one amongst many tests; and evidence derived from it must be corroborated by evidence derived from history, physical structure, religion, customs, &c. before it can be regarded with respect. Nations have been known to change their language, and adopt that of nations that conquer them or enslave them; and Sir E. Tennent mentions one tribe, the Veddahs of Ceylon, that are not believed to have any language at all. Such being the case, language is of too fluctuating a character to be relied on as an infallible basis for racial classifications. Next to grammatical structure, similarity in the words denoting the simplest and most necessary things, those most closely interwoven with the home-life of the people, are studied as being likely to afford the clue to the racial affinities of the tribes in whose dialects they occur. As Dr Prichard said: 'Tribes and families separated from each other have been known to have preserved such similar words for thousands of years in a degree of purity that admitted of an easy recognition of this sign of a common origin.'

The study of the myths, customs, weapons, implements, &c. of different tribes has greatly displaced philology as a means of discovering racial relationships. But identity of this sort can never, any more than language, be relied on as an infallible test. Mr Tylor says, in his recent work on the *Early History of Mankind:* 'The principle, that man does the same thing under the same circumstances, will account for much, but it is very doubtful whether it can be stretched far enough to account for even the greater proportion of the facts in question. The other side of the argument is, that the resemblance is due to connection, and the truth is made up of the two, though in what proportion we do not know.'

There are a few anthropological terms liable to considerable ambiguity, owing to their being used by different writers in different senses. These

terms are—(1.) Race, (2.) Species, (3.) Variety. '*Race*,' says M. Broca, 'affirms the existence of a parental bond between the individuals forming a race; but it neither affirms nor denies a similar relationship between that race and other races.' *Species* affirms diversity of origin; so that, if we were to talk of the African species, the European species, &c., we should imply that these several groups sprang from separate origins. *Varieties* is a term the use of which, as applied to mankind, implies that the whole group of mankind form but *one* single species, which many deny. It will be seen that the use of the terms 'variety,' 'species,' implies that we are partisans of those who hold the rival theories regarding the unity and plurality of races; so that it is more convenient to use the term 'race,' in the sense of 'a persistent modification of mankind,' which enables us to preserve our neutrality between the two hostile sects into which anthropologists are divided.

I. ZOOLOGICAL ANTHROPOLOGY.

For the full discussion of the physical differences between man and the lower animals, we refer to treatises on zoology. We may say that the skull presents well-marked differences. For instance, the ridges above the eyebrows are, as a rule, never developed in man as in the higher apes. 'The orbits and jaws are relatively smaller, and situated less in front of, and more below, the fore part of the brain-case. . . . In the profile view of the face, the nasal bones project more beyond the level of the ascending process of the maxilla than they do in any ape.'—*Huxley*. Then we have the erect posture in progression, the non-prehensile nature of the feet, the greater size of the brain, the greater number and complexity of its convolutions, the greater size of the cerebrum as compared with the cerebellum, and of the brain as a whole, as amongst the principal features distinguishing man from the higher apes. Whilst some authorities would place man in an order by himself, later writers, such as Huxley, reverting, to a certain extent, to the ideas of Linnæus, the Father of natural history, would simply make him the only genus and species of a group of higher animals, the group Anthropidæ, which belongs to the family of the Catarrhini, one of the divisions of the order Simiadæ. The most striking distinction between man and the higher apes is in the *volume* of the brain. Professor Schauffhausen holds that the difference in this respect between the highest ape and the lowest man (excluding diseased or abnormal brains from consideration) is so very much greater than any differences of the sort among the anthropomorphic apes themselves, as to create an almost impassable gulf between them. The higher apes and the lowest races of man are gradually tending to extinction, and it may be, that in the ages that have elapsed since man first appeared on the earth, many intermediate forms that might have bridged this gulf have died out, though as yet geologists have not discovered any positive traces of their fossil remains.

II. DESCRIPTIVE ANTHROPOLOGY.

The principles upon which we classify the races of mankind must be the same as those that guide us elsewhere. The value of a character must mainly depend on its permanence and power of resisting change. Hence it is, that though men differ from each other more in brain-power than physical characteristics, yet the latter, being the less ductile, and the most persistent in resisting change, are of most value as a means of classification. Hence it is that even Professor Max Müller has given up the notion of classifying mankind by means of language alone—language being of all human products the one least capable of withstanding change. Blumenbach's popular classification divided mankind into—

1. The *Caucasian Variety*—the characters of which are: white skin, straight oval face, large broad forehead and skull, narrow nose, and thin

Fig. 1.—Caucasian.

Fig. 2.—Mongolian.

Fig. 3.—African.

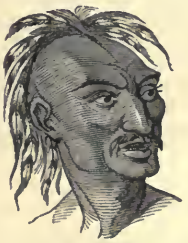


Fig. 4.—American.

Fig. 5.—Malay.

lips. It includes all the people of Europe (except the Finns), high-caste Hindus, Persians, Assyrians, Arabians, Jews, inhabitants of Asia Minor, Caucasus, Egypt, Abyssinia, and Morocco. This is the highest race of all as regards moral feeling and intellect.

2. *Mongolian Variety*.—Characters are: yellow skin, long black *straight* hair, scanty beard, short broad nose, broad flat cheek-bones and prominent, skull flattened at the side, with forehead low. The eyes are rather obliquely set. The Chinese, Tatars, Turks, Finns, Lapps, &c. are good examples.

3. *African Variety*.—Characters: Skin black, hair woolly, forehead low and retreating, jaws

projecting, lips large and thick, nose thick and flat.

4. *American Variety.*—Skin reddish brown, hair long, black, and lank, scanty beard, black eyes, high cheek-bones, aquiline nose, small skull with high apex, and flat occiput.

5. *Malay Variety.*—Characters: Tawny dark-brown skin, coarse black hair, short broad nose, large mouth, broad flat faces with projecting upper jaws, skull high, and the forehead low and broad. This race inhabits the Malay Archipelago.

The most recent classification is the highly ingenious one of Huxley, which is founded on the hair. There are two primary divisions—I. the *Ulotrichi* (crisp or woolly haired people), and II. the *Leiotrichi* (with smooth hair). In the Ulotrichi, the colour varies from yellow to black, and they are dolichocephalic (or possess skulls longer than they are broad). The Negroes, Bushmen, Malays, are members of this *Negroid* stock. The Leiotrichi he divides into—(1) the Australoid group, 'with dark skin and eyes, wavy black hair, and eminently long prognathous skulls, with well-developed brow ridges, who are found in Australia and the Dekhan;' he considers the ancient Egyptians to belong to this group; and Colonel Lane Fox's recent discoveries of the resemblances in the weapons used by these races confirms this somewhat startling view; (2) the Mongoloid group, including Chinese, Tatars, Polynesians, Eskimos, and American Indians; (3) the Xanthochroic group, with pale skins, blue eyes, fair hair, including Sclavs, Teutons, Scandinavians, and the fair Celtic-speaking peoples; (4) lastly, the Melanochroi, or dark whites, with pale complexions, dark hair and eyes, including Iberians, 'black Celts' of Europe, and the dark-complexioned white peoples of the shores of the Mediterranean, Western Asia, and Persia. This group he thinks the result of a mixture of Australoids and Xanthochroi.

To every classification (the most recent one of Huxley's not excepted) grave objections may be made; but as it is necessary to have *some* classification to work from, we recommend, as most popular, simple, and at the same time least inadequate, the following summary of Dr Latham's. He adopts three primary varieties, the Mongolian, African, and European, to which he gives the technical names of (1) Mongolidæ, (2) Atlantidæ, (3) Japetidæ.

I. MONGOLIDÆ.

This is by far the largest division, embracing the nations of Asia, Polynesia, and America, and takes its name from the Mongols of Central Asia, who are considered as typical of the whole. The general characters are—a broad flat face; the skull wide rather than long, and square rather than round; forehead retiring or depressed, rarely approaching the perpendicular; jaw moderately projecting, rarely orthognathic; eyes often oblique; skin rarely a true white or a jet black; eyes generally dark; hair straight, and lank, and black. The languages are either without inflections, or agglutinate. Their influence on the history of the world has been rather material than moral. They fall into the following groups:

(A.) ALTAIC MONGOLIDÆ, which are composed of two stocks, the Seriform and the Turanian.

1. The *Seriform* stock embraces the nations nearly allied to the Chinese (Lat. *Seres*)—namely, Chinese, Tibetans, Anamese, Siamese, Cambodians, Burmese, and other tribes. These all agree in having languages that are monosyllabic and without inflections. The prevailing religion is Buddhism. The Chinese are specially characterised by *oblique* eyes, which, however, occur in other Mongolidæ.

2. The *Turanian* stock, which extends over an immense area, has four branches—the Mongolian, Tungusian, Turk, and Ugrian. The languages of these tribes have inflections of the agglutinate kind. Their physical structure is typically Mongolian. The Mongolian branch of the stock is composed of the Mongols proper of the Desert of Shamo, the Buriats about Lake Baikal, the Kalmucs, &c. The Tungus inhabit about the Lena and the Sea of Okhotsk. The Mantshu conquerors of China were Tungus. The Turk branch includes, among others, the Turks of the Sandy Desert, Kirghis, Uzbeks, Turkomans, Ottoman or Osmanli of the Turkish Empire, and Turks of the Russian Empire. It is probable that a large portion of ancient Scythia was Turk, and that that race furnished some of the most famous conquerors of antiquity. Among the Osmanlis of Turkey, and in other cases, the Mongolian features have become modified by intermixture and other causes. The Turk of Constantinople has a round head, oval face, a regularly formed eye, and a long beard.

The Ugrian branch has its locality along the Arctic Ocean from Norway to the Yenisei, with a detached area in Hungary. A variety of Ugrian tribes inhabit Russia on both sides of the Ural Mountains, and on the Volga, as far south as Astrakhan. The Finlanders of Finland, the Esthonians of Esthonia, the Laplanders of Sweden and Norway, and the Magyars of Hungary, are all Ugrians. With the exception of the Magyar intrusion, the Ugrian frontier is a receding one. The ancient barrows of Scandinavia give evidence that the race at one time had a wider area. The older tombs contain, along with implements, *not* made of iron, skulls that are broad rather than long, and therefore Ugrian. Many Ugrian tribes retain their ancient paganism, called Shamanism.

(B.) DIOSCURIAN MONGOLIDÆ.—The ancient seaport of Dioscurias, at the east end of the Black Sea, was the chief mart of commerce with the inhabitants of the Caucasus, and was remarkable for the multiplicity of languages spoken. This is still a characteristic of these regions, and hence the name. It is startling to find the inhabitants of the Caucasus, so long held to be types of the European variety, excluded from it altogether, and classed with the sallow flat-faced Mongols. Yet the nature of their languages, and other facts, are considered to overbalance the symmetry of their shape and their complexion. The languages of the Caucasus seem to have more resemblance to the monosyllabic and non-inflectional languages of the Chinese and other Seriform peoples, than even to the Turanian. The nature of the climate may account for the physical transformation of the Caucasians, if their personal beauty is really true to the extent generally believed.

The narrow basis on which the theory was formed which makes the Caucasians the type of all that is highest in humanity, is very remarkable.

Dr Latham gives this account of it : 'Blumenbach had a solitary Georgian skull; and that skull was the finest in his collection—that of a Greek being the next. Hence it was taken as the type of the skull of the more organised divisions of our species. More than this; it gave its name to the type, and introduced the term *Caucasian*. Never has a single head done more harm to science than was done in the way of posthumous mischief by the head of this well-shaped female from Georgia.' The chief Circassian tribes are the Georgians, Lesgians, Mizjeji, Iron or Ossetes, and Circassians.

(C.) OCEANIC MONGOLIDÆ.—With a few exceptions, all the islands in the Indian and Pacific Oceans are inhabited by one race—the Oceanic race. The exceptions are—Mauritius, Isle of Bourbon, Ceylon, Maldives and Laccadives, Japan and adjacent islands. This race is not found anywhere on the continent, except in the peninsula of Malacca. It exhibits two types—the Malay, whose colour is yellow, olive, brunette or brown, rather than black, with long black and straight hair; and the Negrito, of a black colour, resembling the negro, and with hair always long, sometimes straight, but in other cases crisp, frizzy, or even woolly. The Negritos, or blacks, are lower in point of civilisation than the Malays. The Negritos extend over New Guinea, Australia, Tasmania, New Ireland, and the islands between it and New Caledonia. The brown division occupy the rest of the oceanic area—Sumatra, Borneo, Java, Moluccas, South Sea Islands, &c. Each of these divisions falls into a great number of subdivisions. The Malays are distinguished for their enterprising and commercial tendencies, and have been called the Phœnicians of the East. Many of the Polynesian section of this type approach Europeans in conformation.

(D.) HYPERBOREAN MONGOLIDÆ.—This class contains three divisions—Samoeids, Yeniseians, and Yukahiri, inhabiting the coasts of the Arctic Ocean. Of all the Siberian tribes, the Samoeids are the nearest to the Eskimos.

(E.) PENINSULAR MONGOLIDÆ, inhabiting the peninsulas of Kamtchatka and Corea, and the islands that form a continuation of them. The divisions are the Coreans, Japanese, Koriaks, and Kamtchadales. One marked distinction between these peoples and the Chinese is, that their languages are anything but monosyllabic; according to Dr Latham, they are the nearest to the languages of America.

(F.) AMERICAN MONGOLIDÆ.—The Eskimos who inhabit the northern coasts of America from Greenland to Alaska, are also found on the Asiatic side of Behring's Strait; and this naturally suggests the idea that America was peopled from Asia by that line. The chief difficulties attending this view are two. The first lies in the physical differences between the Eskimos and the American Indians. 'Stinted as he is in stature,' says Dr Latham, 'the Eskimo is essentially a Mongol in physiognomy. His nose is flattened, his cheek-bones project, his eyes are often oblique, and his skin is more yellow and brown than red or copper coloured. On the other hand, in his most typical form, the American Indian is not Mongol in his physiognomy. With the same black, straight hair, he has an aquiline nose, a prominent profile, and a skin more red or copper coloured than either yellow or brown.' The second difficulty is philological. The Eskimo language is very unlike the better known languages of Europe and Asia, and, *in grammatical structure at least*, is American. The two tests are thus in antagonism; 'physically, the Eskimo is a Mongol and Asiatic; philologically, he is American.' As to the physical differences, though there is a strong contrast between the Eskimos on the east side of the continent and the conterminous tribes on the south, there is no marked line on the west side; the Eskimos of Alaska pass gradually into the Indians proper. In fact, the red colour is little marked, except in a few typical nations, chiefly the Iroquois and Algonkins. The languages of the New World differ from one another in respect of their roots and single words far more completely than is the case in the Old World; yet they are all constructed on the same principle, and have, as it were, one physiognomy. On this and other grounds, the unity of the American peoples is considered established.

(G.) INDIAN MONGOLIDÆ.—These embrace the natives of Hindustan, Cashmere, Ceylon, the Maldives and Laccadives, and part of Beloochistan. They present two types of physical form—one dark, approaching to black, and with a Mongol, or even African physiognomy; the other, brunette, sometimes delicate and clear, and with a profile and oval face approaching the European. The first type prevails in the Deccan and south generally—the last in Northern India. The languages of the northern Hindus, or Indo-Gangetic tribes, are full of Sanscrit vocables, so that they are generally held to be of Sanscrit origin; but Dr Latham and others believe that in respect of grammar they are not Sanscritic. The prevailing religion is Brahminism. The darker tribes—as the Tamuls of the Deccan—retain in a great measure their ancient heathenism, and their language has fewer Sanscrit words in proportion.

II. ATLANTIDÆ.

Under this term, Dr Latham classes all the tribes of Africa, and along with them those of Syria and Arabia. This seems startling; but the transition from the lowest to the highest of these nations is so gradual, that the affinities of language are held to justify the arrangement. The general characters of this variety are a projecting maxilla, retiring forehead, and flat nose. The skull is narrow, and developed in length rather than breadth. The eyes are rarely oblique; the skin is often jet black, very rarely approaching pure white; the hair crisp, woolly, rarely straight or light. The languages are agglutinate, rarely amalgamate. Circumcision is prevalent. The group has seven divisions.

(A.) NEGRO ATLANTIDÆ.—These have, in an exaggerated form, the black unctuous skin, woolly hair, projecting jaws, flat nose, and thick lips characteristic of the whole variety. But it is important to observe the comparatively narrow area to which the Negroes proper are confined. They occupy Western Africa from the Senegal to the Gaboon, Soudan in the centre, and the low parts of the Upper Nile. The dusky or brown hue of the Arab and Australian is more prevalent through Africa as a whole than the jet black of the Negro; which seems nearly coincident with river valleys and deltas lying within the tropics.

(B.) KAFFRE ATLANTIDÆ.—In physical conformation, they are modified Negro; the profile less prognathic; their language has some singular peculiarities. They occupy from north of the equator to south of the Tropic of Capricorn.

(C.) HOTTENTOT ATLANTIDÆ.—These, according to Dr Latham, have a better claim to be considered a second species than any other section of mankind. Their colour is brown rather than black; the hair grows in tufts. The stature is low, and the bones of the pelvis peculiar. Their language has a characteristic *click*. They inhabit the south of the continent, and are divided into Hottentots and Saabs, or Bushmen.

(D.) NILOTIC ATLANTIDÆ, occupying the water-system of the Upper and Middle Nile. The leading tribes are the Gallas, Agows, Nubians, and Bishari, forming the population of Abyssinia, Adel, and Nubia. It connects by imperceptible gradations the Coptic and Semitic groups with the rest of the African.

(E.) AMAZIRGH ATLANTIDÆ, usually called Berbers. In conformation, they vary from the Negro to the Arab type. The language is *sub*-Semitic. They inhabit the ranges of the Atlas, the Sahara, and the Canary Isles.

(F.) EGYPTIAN ATLANTIDÆ, or old Egyptians, represented by the modern Copts. Both language and physical conformation connect them, on the one hand, with Berbers and Nubians; on the other, with the Assyrians, Jews, &c.

(G.) SEMITIC ATLANTIDÆ.—The area of this division lies chiefly in South-western Asia; and to it belong the Syrians, Assyrians, Babylonians, Phœnicians, Carthaginians, Edomites, &c. Jews, Arabs, Ethiopians (Abyssinia). The Semitic nations are light-complexioned, with capacious, elongated skulls, the nasal profile straight or prominent, the maxillary prognathic. Their influence on the world has been eminently moral. All the alphabets of Europe are undoubtedly of Semitic origin; and probably those of the whole world are so. In the early period of their history, their religion was paganism; in the later, it has been eminently monotheistic. The Jewish and Christian Scriptures, and the Mohammedan Koran, are the rules of life to the most advanced peoples of the species. The first builders of cities and organisers of empires seem to have been the Assyrians and Babylonians on the Tigris and Euphrates.

The chief modern Semitic types are the Jew and the Arab; the first being characterised by thicker lips, more aquiline nose, and larger head; the last, by a more oval face, thinner lips, sparer limbs, and brown complexion—in Africa, often nearly black.

The present inhabitants of Madagascar seem to be of Malay origin, and to have exterminated an aboriginal African—probably Hottentot—population.

III. JAPETIDÆ.

The chief nations of Europe belong to this variety, which is generally known by the term Indo-European. Dr Latham prefers to call them Japetidæ, as being traditionally descended from Japheth; probably because he dissents from the theory of the European nations having migrated from Asia, which is implied in the usually received name.

The physical characteristics of the Japetidæ are those of the so-called Caucasians. There are two divisions of them.

(A.) OCCIDENTAL JAPETIDÆ, including the Celtic nations. The Celtic area is now confined to Brittany, Wales, the Highlands of Scotland, the Isle of Man, and Ireland, but at one time it undoubtedly extended over the whole of Britain, the north of France or Gaul, and part of Switzerland, and probably over Baden, Bavaria, the north of Italy, &c. The Celtic languages have the appearance of having broken off from the common mother-tongue at an earlier stage than the other European stocks; they retain an agglutinate character. The modern representatives of the Celtic are divided into two branches—the Cambrian, consisting of Welsh, Cornish, and Armorican; and the Gaelic, consisting of Scotch Gaelic, Irish Gaelic, and Manx.

In physical conformation, the Celts are pre-eminently long-headed, with prominent cheek-bones. Black hair and eyes, and a dark complexion, prevail in South Wales; the Hibernian type has gray eyes, light complexion, and hair yellow, red, or sandy.

(B.) INDO-GERMANIC JAPETIDÆ.—The European part of this division falls into three stocks.

1. The *Gothic* or *German* stock.—This stock exhibits two physical types—one with blue eyes, flaxen hair, and ruddy complexion; the other with gray, dark, or hazel eyes, brown or black hair, and sallow or swarthy complexion. It has two branches—the Teutonic or German proper, and the Scandinavian.

a. The *Teutons* are again divided into High Germans and Low Germans, distinguished chiefly by certain peculiarities of language. The High German area is Hesse and parts of Thuringia and Bavaria. The Low Germans are the Dutch or Batavians of Holland, the Saxons, and the Frisians. The original Saxons of Hanover and Westphalia are now extinct or incorporated with the other Germans. The Anglo-Saxons of England are the most important representatives of the Saxon tribes.

b. The *Scandinavian* branch occupy Denmark and Scandinavia, Iceland and the Faröe Isles. One marked difference in point of language between the Scandinavian Germans and the Teutonic is, that the former place the definite article after the noun, and incorporate the two; as, *bord-et*, 'the table,' from *bord*, 'table,' and *hitt* (neuter), 'the.'

2. The *Sarmatian* stock, comprising the Slavonic and Lithuanic nations. In physical conformation, these often approach the Turanian type.

a. The *Lithuanians* are now confined chiefly to the Baltic provinces of Russia, but were once more extensively spread. The old Prussian language, now extinct, was Lithuanic. The Lettish of Courland, Livonia, Wilna, &c. is a Lithuanic dialect. The great interest attaching to the Lithuanians arises from the fact, that their language is the nearest to the Sanscrit or sacred language of India that is known. They also retained their original paganism longer than any other member of this variety.

b. The *Slavonic* peoples form an extensive group, comprising Russians, Servians, Illyrians, Tsheks (of Bohemia, Moravia, &c.), Poles, Serbs. Large tracts of Northern Germany, now occupied

by Germans, were apparently Slavonic within the historic era.

3. The *Mediterranean* or *Classic* stock, comprising the ancient Greeks and Romans, with their modern representatives. The modern Greeks speak a language far closer to ancient Greek than any modern tongue is to Latin. How far their blood is pure Hellenic, it is difficult to say. The blood of the modern Italians is in the main of Roman descent, with Gothic admixture. The Romans, along with their language and civilisation, contributed important elements to the population of the Spanish peninsula and to France. Distinct traces of Rome also remain among the Swiss of the Grisons and the Walachians. The peoples, therefore, speaking Italian, Spanish, Portuguese, French, Romane (Walachia), and Rumonsch (Grisons), are classed as Romanic. The affinities of the ancient tribes inhabiting these countries are in many respects unsettled. The close relation between the Greek and Latin tongues has always been felt. Dr Latham brings them together geographically by making the Hellenes emigrants from the south of Italy.

Dr Latham dissents from the opinion that classes Persians, Afghans, and even Hindus, with Europeans, but it is generally received by students of language and ethnologists. That opinion rests on affinities of language, and arose about the beginning of the present century in the study of Sanscrit. Sanscrit is the language in which the religious books of the Hindus are preserved, and is of great antiquity. Its similarity in structure to Greek and Latin is so striking, that it was maintained at one time to be a factitious or artificial language, constructed by the Brahmins on the model of the Greek, for the purpose of giving an air of mystery and sanctity to their religious records. But this theory did not long stand examination. Striking coincidences had previously been pointed out between Greek, Persian, and German. The subject was taken up by the scholars of Germany, who are specially qualified for such a research; and the affinity of Sanscrit and Persian, not only with Greek and Latin, and their descendants, but with the other principal languages of Europe—Slavonic, Lithuanic, and all the Germanic languages, including English—soon became a received doctrine. It was generally admitted as beyond doubt that all these languages must have had a common origin, and might, therefore, be fitly designated a family, to which the name of Indo-German was given, as indicating its extremities. The Celtic of Wales, Ireland, and Scotland, continued for some time to be looked upon as foreign to this family—as the remains of the primitive language of Europe before the arrival of the Indo-German races. It was reserved for Dr Prichard to vindicate more recently the claims of the Celtic dialects to be numbered in the sisterhood. This he is allowed to have successfully done; so that Indo-European, instead of Indo-German, is now thought by many to be the more appropriate name for the group.

Along with the affiliation of tongues went that of the peoples speaking them; and the modern languages of Northern India (Hindustani, Bengali, &c.), being held descended from Sanscrit, as Italian is from Latin, and those of Persia similarly related to the ancient Zend—a form very similar to the Sanscrit—Hindus, Afghans, and Persians, were classed as eastern cousins of the European nations. To account for the connection, the European branches of the family were assumed to have migrated from the East before the historic period—a migration to which many traditions are believed to point.

The diversity of appearance in language, features, and physique, found in the existing European descendants of the great Aryan, or Indo-Germanic stock, is, as we have said, due to the fact, that the Aryan race did not find Europe empty when it came to it. The Aryans not only subdued the European *autochthones* (aborigines or primitive people), but intermixture took place between conqueror and conquered, and as the latter may have consisted of a great many varieties, the diversities noticeable in the present inhabitants of Europe are easily accounted for. Indeed, prehistoric investigators tell us that before the Aryan invasion, in the Stone Age, there *must* have been at least two different races in Europe: a race with skulls longer than they were broad (dolichocephalic), that inhabited the shores of Provence; and a race with skulls broader than the former (brachycephalic), inhabiting Scandinavia. The Basques and the Finns have skulls which are respectively dolichocephalic and brachycephalic, like those of the European *autochthones*, and they are the only two nations whose languages shew not the remotest affinity to other European languages, or to the Sanscrit. They are thought to be the last traces of the primeval human fauna of Europe, which was swamped by the tide of Aryan migration from the East.

III. GENERAL ANTHROPOLOGY.

PHYSICAL PECULIARITIES.

Skin, Hair, and Eyes.

The skin varies much in colour and texture in different races—from the pale reddish brown of the 'white' or Xanthochroic races to the black tint peculiar to the Negro. The true skin is the same in all races. The cuticle or scarf-skin, which covers it, varies according to the amount of pigment deposited in the flattened epidermal cells of which it is composed. The pigment is formed in the deeper layer of the cells of the cuticle, sometimes called the *rete mucosum*. Exposure to solar heat is the most popular explanation of the coloration of the skin, but it cannot be shewn that there is any absolute relation between this and the amount of skin pigment. Dark-skinned races exist in the cold arctic regions; and though in the Old World we find a gradual darkening of the skin occurring as we proceed southward from Northern Asia, yet in the New World we find an almost unvarying shade of dusky brown prevailing amongst the aborigines, through every variation of temperature and climate—from the icy regions of Hudson's Bay to the sun-dried Pampas of South America. In corresponding latitudes in Africa, we find the natives not brown, but black. Some have tried to explain this by saying that Africa is an older continent than America, and that its inhabitants, having been so much longer exposed to extreme solar heat, have consequently become proportionately darker in colour. If this theory were reliable, we should have in colour a valuable indicator of the relative

antiquity of races. In India, the darker races are the oldest, and the dark races of the Malay Archipelago inhabit the remains of a continent probably older than that of Asia. Professor Laycock of Edinburgh, in his oral lectures on the practice of medicine, has lately advanced an ingenious theory of skin-pigmentation. The pigment consists of carbonaceous matter, and the skin is an excretory organ; he therefore thinks that where the lungs, as excretors of carbon, are not equal to the demands made on them by the system, as we might suppose the case in hot climates, the skin comes in to aid them, and a vicarious excretion of carbon goes on, through the agency of the epidermal cells, resulting in the deposit of black pigment in these structures. It is assumed by some that the black skin of the Negro gives him an advantage in a hot climate. But if the Negro derives advantage from his skin, it is not because of its colour; for it is now known—though the contrary was long believed—that two surfaces of the same material, the one black and the other white, radiate heat equally. When exposed naked to the sun, the Negro must feel the colour of his skin a disadvantage; for black absorbs bright rays better than white does. The advantage of the Negro lies in the more vigorous excretory power of his skin, and its freer perspiration, which produces cooling. The Negro at birth is not black, but light gray or brown. The skin of the Negro emits a most disagreeable odour, which in some can be smelt at a great distance, and in others is not very perceptible. Foissac says it corresponds to the smell characteristic of black feathers of birds, and black hair of the dogs in New Guinea. We have no evidence of an aboriginal black race having ever existed in Europe, or of a white race having ever existed in Africa. In Asia and Africa, apes and men manifest similar peculiarities as regards colour of skin.

The hair is an appendage of the skin; its pigment is of the same sort, and is not confined to the pith of the hair, for hairs without pith possess pigment. In the hair of red-haired people, traces of sulphur may be discovered by analysis. Hair varies much in form and appearance, as well as colour—sometimes exhibiting a circular, or an oval, or a flattened transverse section. In some races, it is long and straight; in others, short and crisp, like wool. It usually, but not always, is of greater length in the female. In most races, it is scanty on the face and body; in some, almost absent, except on the scalp and eyebrows. When hair is developed to any great extent on the limbs, it is curious to note that the points of the hairs of the arm and fore-arm are directed to the elbow, and those of the leg and thigh slope away from the knee—as in the anthropomorphic apes.

The colour of the eye usually corresponds with that of the hair—though not always—light-coloured eyes being associated, as a rule, with a fair complexion—the exceptions being most numerous in what are called mixed races.

Albinos, Prichard and the old ethnologists held to be mere morbid products of humanity; and in cases where dark-skinned people got their colour blanched by disease, examples of which we find amongst the Tatars and natives of Malabar, the opinion was tenable enough. But the albino Australian described by Bennett in his *Wanderings in New South Wales*, i. 437, who had flaxen hair, light-blue eyes, and white skin, with occasional black spots, can be no more a 'morbid product' than a piebald pony is one. Albinism of this sort is now held to be an individual variation from the racial type, which, though not at all morbid, being out of harmony with external circumstances, rarely becomes permanent; except in the Isthmus of Darien, where albinos are said to be so numerous as to have been described by Coreal (*Voy. aux Indes Occ.* vol. ii. p. 140) as a distinct race. In white races, albinos have reddish eyes and white hair; the want of pigment in the lining membrane of the eye rendering the red blood-vessels that play upon it visible, and greatly impairing the capacity of the organ for absorbing light. The eyes in most European races are set horizontally in the sockets. In the Chinese and Tatar races, they are set obliquely, the inner angle being depressed, and the outer elevated.

Voice.

Very recently, Sir D. Gibb, M.D. drew attention to the varying character of the voice in different races—a subject that had been hitherto greatly overlooked. It would appear that, as we proceed from east to west, the power of the voice tends to increase. The Chinese have a voice feeble in power and compass, its peculiarity being a whining metallic twang. In the races inhabiting Tatary, Tibet, and Mongolia, the voice is strong and loud, though it still has a slight metallic twang. In India and Burmah, the voice is soft and womanly, shrill rather than strong—the hill tribes having stronger voices than the dwellers on the plains; in the Negro, the voice is bellowing and noisy, rather than powerful; it is also indistinct and husky. The Europeans have most powerful sonorous voices, the Germans having the strongest of all, being in this respect excelled by the Tatars only, who have the most powerful voices in the Old World. It is remarkable that in both nations short broad skulls (brachycephaly) prevail. The American Indians excel even the Tatars in vocal power. The Hottentots have peculiar 'clicks' in their speech (which, by the way, Van der Kemp differentiated into six distinct speech-sounds). Sir D. Gibb is hardly justified in describing this as a racial peculiarity, for it is not an inherent one. Hottentot children, reared amongst the whites, on returning to their savage home, can as little acquire the art of 'clicking' as the missionaries (Waitz, *Int. Anthrop.* vol. i. p. 136). The Eskimos are said to have remarkable powers of ventriloquism.

It is probable these variations in vocal powers are due to, as yet, unstudied or unnoticed structural variations in the larynx peculiar to different races. In the Negro, for example, the peculiar position of the larynx prevents the tones of the voice from reverberating so well as they do in the cavern-shaped ventricles of the vocal apparatus in the European; and the shallowness of the larynx characteristic of the Chinese may cause their voices to assume an effeminate type.

Trunk and Extremities.

In the Bushmen, especially in the females, enormous deposits of fat are observed on the buttocks. Cuvier compared these cushions of fat to similar formations in female monkeys (Mandrills), but

Desmoulins denies there is any strict analogy between them. These deposits of fat are seen in many Negresses—for example, in Congo women, often among Nubian and Somali women—and it is curious to note that the Negro race seem to consider these cushions marks of superior beauty. Hence it is that women about Cape Coast Castle imitate this envied peculiarity when they have it not, and wear artificial cushions of cloth to simulate the fat-cushions—a custom which seems strangely enough to survive in a modified form even in the highest races, as a glance at any recent Parisian book of fashions will prove. 'In the lower races, the forearm and hand, and foot and leg, are often longer than in Europeans' (Huxley). As shoes are not worn by them, the great toe is more movable, and the foot more capable of prehension than in higher races. The apelike form of the Negro foot is much exaggerated. Some writers noticing that the Negro often uses the great toe as a thumb, attempt to relegate him to a much lower place in the scale of classification than is justifiable. Many other aboriginal races exhibit the same peculiarity. The Indians, for example, in Yucatan and on the Orinoco can, we are told, pick up money and throw stones with their feet (Waitz, *Int. Anthrop.* vol. i. p. 102). Indeed, Bory (*L'Homme*, vol. i. p. 45) shewed that in the higher races this peculiarity might be acquired: *e. g.* in the gum-gatherers of Marrensin, Department des Landes, who have the great toes on the feet developed in many cases, by habitual climbing, into a closer resemblance to the Simian structure than even the Negro has. It is a popular delusion that the heel is longer in proportion to the foot in Negroes than in other races. The spines in the middle of the back-bone of the neck cease more or less to be bifurcated in the lower races, in whom also, *e.g.* the Australians, the pelvis of the male is less in many of its dimensions, and differs more from that of the female, than in higher races.

Skull.

Here we have the most marked and most important variations in the different races; and of late, our knowledge of these has been so much extended as almost to make the study of them rank as an independent science under the name of Craniology. The most striking differences exist in skulls between the proportions of length and breadth. Taking 100 to represent the length of a skull from before backwards, the breadth or transverse diameter varies from 99 to 62. The *cephalic index* is the number which gives us the proportion the breadth bears to the length. When the cephalic index is 80 and upwards, that is, when the breadth is to the length as 80 to 100, the skull is *brachycephalic* (*brachys*, short, and *kephalē*, head). When the length from front to back is to the breadth as 100 to 68, *i.e.* where the skull is markedly elongated from front to back, it is *dolichocephalic* (*dolichos*, long, and *kephalē*, head); and races possessing crania belonging to these two great typical forms are called respectively *dolichocephali* and *brachycephali*. In fig. 6 may be seen a drawing of a fine specimen of a brachycephalic skull. The calvarium (bones of the head without those of the lower jaw) is short, equable, and well formed—and the great breadth of the cranium in relation to its length is very characteristic. It is a good example of the typical ancient

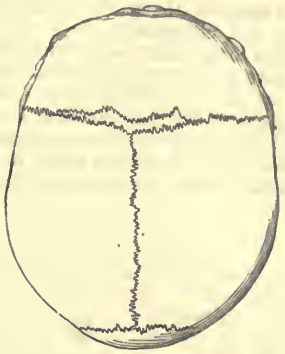


Fig. 6.—Brachycephalic Skull.

British cranium, and was taken from Green-gate Hill Barrow, Yorkshire, in July 1852. Fig. 7 is a good specimen of the dolichocephalic skull of an East Angle, taken from Linton Heath Cemetery.

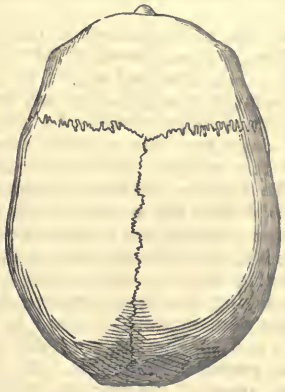


Fig. 7.—Dolichocephalic Skull.

Dolichocephaly is the primitive and lowest type in development, and it tends to disappear with the advance of civilisation (Broca). The old Germans whom the Romans fought were dolichocephalic, differing in this respect but little from their contemporaries the Celts; but Welcker lately shewed that the modern Germans, as a race, are tending towards brachycephaly. Ecker also shews that the same change of type has taken place in the skulls of the old dolichocephalic Alemanni, whose descendants, the modern Swabians, are nearer the brachycephalic type. Professor Herman Schauffhausen, in a lecture delivered before the Archaic Anthropological Congress of Paris, on the 30th August 1867, says, that the 'human skull, during its growth, continues longest to extend in breadth, whence it follows that the *breadth diameter* of the cranium corresponds most with the intellectual development of the brain;' and it is certainly a curious fact that, on comparing the brain of a savage with that of a European, the difference lies less in length than in breadth. In the man-like apes, it is notable that the same cranial types occur—those of Asia, *e.g.* the orang, being brachycephalic,

those of Africa, *e.g.* the chimpanzee, being dolichocephalic. Dolichocephaly may be due to the greater amount of muscular pressure brought to bear on the sides of the skull constantly tending to compress and elongate it; and this would be greatest in the lower races, where the muscles that act on the jaws are more highly developed than in races that eat less and think more. Some races artificially alter the form of the skull by flattening the forehead in infancy by means of pressure. A good example of this is shewn in fig. 8, representing a Peruvian skull. Here we can, from marks

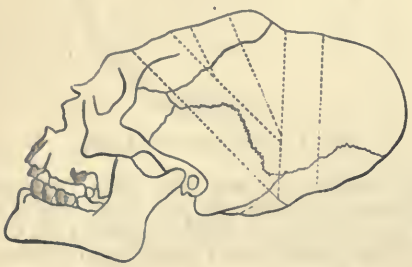


Fig. 8.—Artificially Distorted Skull.

on the skull, trace the course of the bandages used for flattening it, as shewn in the dotted lines of the figure. The forehead seems to have been squeezed downwards and backwards by a compress, probably of folded cloth. To keep it in its place, a bandage has been carried over it from the base of the occiput, and thence across the forehead. To confine the lateral portions of the skull, and to produce the symmetrically elongated form, the same bandage has been carried over the top of the head, immediately behind the coronal suture (probably with an intervening compress), and the bandaging has been repeated over these parts till they were immovably fixed in the position desired, and the head permitted to develop only in the posterior direction. This practice was common amongst the ancient Mexicans and Peruvians, and though it is unknown amongst their modern Indian descendants, yet Dr Robert Brown, in his *Races of Mankind*, says the practice is still continued in some of the lower races of the north-west Pacific coast. His theory of it is, that the American aborigines borrowed the idea from the Mexicans and Peruvians, who had a notion that a flattened retreating forehead was a sign of divine greatness, and whose gods are always represented with this peculiarity.

In the latest and greatest work on craniology, Dr Barnard Davis's *Thesaurus Craniorum*, published by subscription in 1867, a series of most elaborate tables of cranial measurements are given, which, being based upon a much more extensive series of observations than the old tables of Morton, are of greatly more value. The measurements indicating internal cranial capacity, supposed to indicate brain-power, are most interesting, as might be expected, and are of value as correcting the comparatively limited series of observations Morton made in the infancy of the science. Dr Davis finds that the largest average of internal capacity prevails in European skulls, these reaching 90 cubic inches and upwards. In Germans, Russians, and Cossacks, it was 98·5 cubic inches, in Finns 98, ancient Britons 97·5, Welsh 94·8, Turks 93·3, Merovingian Franks 93, Italians 93, Dutch 92·5, Swedes 92, Scotch and Irish 91·2, English 90·9, Lapps 90·6, ancient Gauls 90·3. In Morton's tables, the capacity of the English skull is set down at 96 cubic inches, but his averages were made up from only 58 observations, whereas Dr Davis's are the result of probably ten times that number. In Asiatic skulls, we find few with an internal capacity above 90. Amongst the few are Mishnees 92·7, Chinese 92·6, Siamese 92·1, Bodos 90. Morton's limited observations gave the Asiatic skull an internal capacity under 90 cubic inches. In the African races there are only three whose skulls shew over 90 cubic inches of internal capacity—these are, Kaffirs 92·6, Zulus 91·2, Dahomans 90·7. The mean of Morton's Negro group is 82·25 only. Of the American skulls, Dr Davis finds the Araucanians with internal capacity of 94·1 cubic inches, the Eskimos 90·6; the average of the American group being 89, whereas Morton's tables make it only 80·3. The Australians have an internal cranial capacity of 80·9, Tasmanians 82·5; the general average being 81·7, as compared with Morton's average 75. Dr Davis found the internal cranial capacity of the Oceanic races to be as follows: Mathuans 98·6, Tidonese 98·4, Javans 93·3, Papuans 91·6, Loyalty Islanders 91·3, Marquesans 91, Sumatrans 90·8, Amboynese 90·5, Celebeans 90·2. In Dr Davis's unrivalled craniological collection, few races shewed an internal cranial capacity under 90. Of the few, we may mention, amongst African races, Eboes 85·1, Hottentots 83·9, Bushmen 85·7; amongst American races, Caribs 86·3, Nians 83·5.

It must be remembered that these observations, though more valuable than Morton's, are merely *contributions* to the ultimate absolute truth. Averages obtained from measuring a series of skulls will be affected by the extent of the series, by the proportion of male to female specimens, by the proportion of microcephalic, or idiot crania in the collection, and perhaps by the class of the population from which the skulls are taken. The internal cranial capacity is of use to give us an idea of the contained brain-volume—but it must be borne in mind that the volume of the brain in relation to the brain-case changes greatly at different periods of life. In childhood, when development is going on, the brain presses outwards on all sides of the cavity of the skull, whose bones, by means of the un-united dovetailed joinings called sutures, yield. But as development is completed, the brain-pressure diminishes, and the bone-pressure or cranial resistance increases, as the sutures close. It is held by many that in middle age, the brain, having reached its highest development, begins to shrink; but the space left in the cranial cavity in consequence is filled by serous fluids, which are effused in the ventricles of the organ and between its membranes. We do not, however, know with any exactness the rate at which this shrinking goes on. In a rough way, craniologists say that 10 per cent. requires to be deducted from the brain-volume, as indicated by measurements of internal cranial capacity, on account of this shrinking.

The bones of the face vary in different races. When the facial bones jut forward to excess, the face is *prognathous* (*pro*, forward, *gnathos*, jaw). When the face and jaws are upright, the face is

orthognathous (*orthos*, straight, *gnathos*, jaw). Prognathism may be single or double. In the latter case, the teeth in *both* upper and lower jaws jut forward; in the former, those in the upper jaw only. Double prognathism is very rare. The skulls of the Stone Age are more prognathous than those of the present-day savages, in whom, as in apes, prognathism increases as the development of the individual goes on. Prognathism is the exception in white races, though it is met with in the more degraded portion of the population in England, in the peasantry in Ireland, in the women in Paris, and it is quite a prominent feature in the Esthonians, by some anthropologists held to be the remains of a primitive Mongolian race that first peopled Europe. Professor Owen, in his *Anatomy of Vertebrates*, ii. 566, says prognathism is 'probably concomitant with late weaning of the infant.' It is certainly true that Negro mothers suckle their children longer than any others. Bosman, in his *Description of the Coast of Guinea*, says they give their infants suck for even two or three years. But it seems to us that late weaning of this sort is a characteristic, not of African savages, but of all aboriginal races, whether prognathous or not. Amongst the North American Indians, boys of four years of age may be seen still unweaned. The late Captain C. F. Hall, in his *Life with the Esquimaux*, says (ii. 93): 'As I stood gazing upon the scene before me, Annawa's big boy was actually *standing* by his mother and sucking at the breast, she all the time continuing her work.' Yet we do not find well-marked prognathism amongst the flat-faced races of the arctic circle.

The human skull is slow of ossification compared with that of apes, and it is slowest in the highest races. Quick ossification and straight linear sutures indicate inferiority of race. The sutures or dove-tailed joinings of the cranial bones remain longest open in the higher races, because their brains have a superior impetus of development *ab initio*, and go on developing much longer than they do in lower races.

Stature and Proportions.

Dolichocephaly is usually associated with high stature, brachycephaly with the reverse. The Celts of the past were a tall race. The natives of Scandinavia in the reindeer age were a short race. The Malays and the Mongols are brachycephalic, and they are shorter than the northern Europeans, and Negroes, who are rather dolichocephalic. So we find the dolichocephalic gorilla taller than the brachycephalic orang. The observations that have as yet been made on stature have been trifling and limited. The old notions of the gigantic height of the Patagonians are overthrown by the extensive and accurate measurements lately made by Musters and Cunningham. The tallest Patagonian they could get was only six feet four, and the average height was five feet ten. The most dwarfish races seem to be those at the extremities of great continents—*e. g.* the Eskimos, Lapps, Tierra del Fuegians, and Bushmen. The average height of the Bushmen is variously stated—Barrow described it in one tribe as about four feet four. The Negroes of the South Seas (Austral Negroes, Negritos, &c.) are not much bigger—being on an average about four feet eight in height. The results of Broca's recent investigations as to the proportions of Europeans and Negroes are (1) the length of the upper, as compared with the lower limb, is less in the Negro than European; (2) the length of the humerus or arm-bone, compared with that of the radius or fore-arm bone, is less in the Negro; (3) that though the upper limb of the Negro, by greater length of radius, approximated him more closely to the ape type, the comparative shortness of the humerus removed him even further from that type than the European. Mr David Forbes (*Ethnological Society's Transactions*, 1870) shewed, from the results of sixty measurements of typical specimens of the Negro, European, and Aymara Indian, that the lower extremities of the last are exactly one half the total height; whilst in the European and Negro they were 522-thousandths and 540-thousandths respectively, or much more. The Aymara had the shortest, the Negro the longest, arms of the three. The leg is longest in the Aymara, and shortest in the European; and the European foot was also the shortest of the three. The chest in the Aymara was the most voluminous, and least in the Negro. The excessive length of the trunk in the Aymara Indians may be due to their living in the high table-lands of Bolivia and Peru, where the air is so rarefied that it requires a much greater development of lungs to take in the necessary amount of oxygen. This saves them from suffering from the oppressed breathing that affects the white (Hispano-American) officers of the Bolivian troops on the march, a symptom the privates (half-breeds or pure Indians) do not manifest. Recent explorers do not think the Negroes are under the European average of stature; but the Chinese are. Dr Beddoe finds that the stature of the Scots is highest of all the British people; that of the English comes next; and that of the Irish comes lowest of all. Quetelet's observations shewed that, between eighteen and twenty-three years of age, the average stature of the English was higher than that of the French.

As in the case of animals, the temperate zone is that in which, as a rule, the greatest bodily growth occurs in the different races; the same rule may be held to apply to man. Wherever the greatest quantity of the most nutritious food can be got without over-exertion, the human body will attain the greatest development; for, as Milne Edwards shewed (*Eléments de Zoologie*, p. 254), the size of the body depends essentially on nutrition. Hence, the warmth and luxury of cities develop rapidly the growth of all but the poorest classes.

Weight and Strength.

Regarding weight, the observations yet made are also very trifling; and as this and strength are important elements in the calculations of military leaders in the field, a comparative view of the height, weight, and strength of different races would be most valuable if it were got. Principal Forbes of St Andrews, from observations made on students, found, both as regards height and weight, the Irish were first, the Scots second, the English third, and the Belgians lowest of all.

As regards strength, we may say, when the capacity for great physical effort is a characteristic of any race, it is usually associated with great digestive powers. Examples of vast strength in *individuals* of all races are numerous

enough, but as they are not *racial* peculiarities, they are of little interest to the anthropologist. Peron's dynamometrical observations on muscular power shewed that the natives of Van Diemen's Land were inferior to the Australians in this respect, and these again to the Timorese, and all were inferior to the Europeans (Peron, *Voy. de Découv. aux Terres Australes*, ii. p. 417, 2d ed. 1824). The weakness of the Timorese, he says, is due, not to want of food, but their laziness and hot climate; that of the Australians, to bad nourishment. Freycinet's observations are more recent. He found—

	Kilogrammes.
Creoles (white) from Ile de France could lift	64·4
Frenchmen in " "	60·3
Sandwich Islanders	66·2 and 58·3
Mozambique Negroes	57·1
Malagasches	56·9
Natives of the Carolines	54·2
New Zealanders	51·4
Timorese and Papuans	40·0
Australians	45·6

Buckton (*Western Australia*, p. 91, 1840) gives different results:

	Mean Strength of Arms. Kilogrammes.	Mean Strength of Hips. Myriagrammes.
12 Tasmanians	50·6	—
17 Australians	50·8	10·2
56 Timorese	58·7	11·6
17 Frenchmen	69·2	15·2
14 Englishmen	71·4	16·3

That the Tasmanian race was degenerating, by the time Buckton made his observations, faster than the others, may in part explain the difference between his and Freycinet's statistics.

PHYSIOLOGICAL PECULIARITIES.

It is not to be expected that the various races should have each physiological peculiarities that would enable us to classify them into distinct groups; for it is a general law in biology that all animals—and we include under this term man—belonging to the same species have the same arrangements as regards animal functions and economy. We find in varieties of the same species a pretty general similarity existing as regards animal heat, frequency of pulse, fecundity, duration of life, gestation, &c. In fact, it has always been one of the very strongest arguments against those who maintain the doctrines of polygeny or the specific distinctness of the different races of mankind, that no corresponding physiological differences could be found in these races. Physiological differences and peculiarities there are; but they are only such as could be easily acquired by the operation of widely differing conditions of life or existence. These conditions may be, of course, internal or external, arising from culture, progress in refinement, and civilised modes of life, and the nature of climate and surrounding environment. As regards duration of life, there are few observations that can be called reliable. All over the animal kingdom there would seem to be a relation between reproductive power and longevity. Where the former is high, and greatly exercised, the length of life perhaps on the whole tends to be less. In the races of mankind, all we know on the subject leads us to infer in the meantime that the duration of life is greatest in the highest races, and that life is shortest in the savage and more primitive ones. Just as there is in the higher races greater power of acclimatisation, less death from epidemic disease, and greater muscular strength, so there is greater longevity. The causes may be the same in both cases, and may be chiefly traced to better nutrition, greater ingenuity in warding off the attacks of disease and injurious influences of all sorts. The duration of life is longest in the temperate zone, and becomes less as we approach the tropics. Examples of centenarians, more or less well authenticated, might be adduced in all races, from the highest to the lowest. According to the United States census of 1850, examples of advanced age (*i. e.* from eighty to one hundred) occurred more frequently among the free coloured population, and still more among the Negroes, than among the whites. The duration of life is of course intimately connected with the question of the influence of disease on different races. Some of the American anthropologists, who are sticklers for the plurality of races, have tried to shew that the various races suffer from different specific diseases. The attempt was a signal failure; and no one believes more in this direction than that different races vary as regards their predispositions to diseases. It has been held that the specific distinctness of the Negro from the white race was proved by the fact, that the Negro was not liable to be attacked by yellow fever as the white was in south-western parts of North America. But this is due more to acclimatisation than to any specific racial peculiarity; for even white people in the West Indies who have become acclimatised, enjoy a certain immunity from yellow fever as well as the Negroes. Then, again, Negroes of the third generation, who were sent from America to Africa, suffered from the diseases peculiar to the African climate, as did white unacclimatised persons. There is one strange physiological peculiarity that seems pretty well authenticated, and that is, that what physicians call the *vix medicatrix naturæ*, or innate healing power, is much greater in the lower than in the higher races. The Malays are said to have this high healing power particularly well marked in consequence of their strictly vegetable diet, which reduces the tendency to inflammatory attacks. Parkyns (*Life in Abyssinia*, vol. ii. p. 268) relates instances of people being punished by the most horrible mutilations, and yet recovering simply by their own innate healing power, without any treatment at all. Yet it would appear that from the mere contact of different races, though both may be in good health at the time of meeting, destructive epidemics are originated, which seem much more fatal to the aborigines than to the higher race who came in contact with them.

There is no proof that sexual development is so much affected by race as by the influence of climate. Hence it is that in races inhabiting the torrid zones, women arrive at the age of puberty much sooner than in temperate regions, though it must be noted that there are many exceptions to this general statement. Yet it is clear that Jewish women arrive at puberty much earlier than the women of the nations amongst whom they live; and it is difficult to resist the conclusion, that this

physiological peculiarity is a truly racial one. As a consequence of the early advent of puberty, we may say that women marry at much earlier ages amongst aboriginal races in hot climates, than they do in the higher races inhabiting temperate latitudes, and this as a rule tends to lessen their prolificacy. The fecundity of different races varies. That of the Negroes seems to be far above the average; indeed, it is difficult to understand how, if this were not the case, Africa could have survived the drain on her population, caused by the devastation, horrors, and barbarities of the slave trade. The greatest fecundity known is associated with the most abject demoralisation, and is that of Guanaxuato, in Mexico. The North American Indians, on the other hand, are not a prolific race. The same may be said of the natives of Australia, and the islands in the South Seas. The scanty prolificacy of many aboriginal tribes may be due to the severe labours imposed on women, the practice of abortion so common in savage races, and the custom of long suckling, to which reference has already been made in our remarks on prognathism.

The proportion of male to female births has been, by some, held to differ in different races. In Europe it is as 106:100, there being in European races a preponderance of male births; due, say some, to the fact, that in Europe the male is generally five or six years older than the female at the time of marriage. Quetelet says that at the Cape of Good Hope, amongst the colonists, the female births preponderate—a remarkably exceptional circumstance. In Central America, among the Indians, male and female births are as nearly as possible equal. In Yucatan, the proportion of women to men is said to be 2:1; and in Cumena it is asserted there are seven women to every man in the district. Some authorities think it may turn out that there is a general law that the further you go from the equator the preponderance of female births gradually declines, and when you go far enough north, the preponderance is reversed. It is said, however, that on the Gold Coast, the preponderance of female births only prevails on the coast, and not in the interior. In Australia, on the other hand, Sturt says the smaller tribes in the interior have an excess of women, in the proportion of 2:1, or even more (*Narrative of an Expedition into Central Australia*). The Jews are remarkable for the great excess in the male births as compared with the female, it being in Berlin as 208:100 (Waitz, *Int. Anthrop.* vol. i. p. 112), and as 100:111 in Prussia generally.

The mean animal heat and frequency of the respiration vary hardly at all in different races. Gmelin, Ross, and Parry found even in 74° lat. north that the heat of the body was as great as it is in warm climates. Dr Livingstone, however, found that the heat of his body, taken by applying the thermometer to his tongue, was 100°; whilst the same instrument registered only 98° when applied to the Negroes amongst whom he was living.

We have referred to the peculiarly offensive odour characteristic of the exhalations of the skin in the Negro. This has been by some dwelt on as one proof of the specific distinctness of the African from the other races of mankind. Chemical examination of the sweat of the Negro does not shew it to be different from that of the European; indeed, both are alkaline; whereas it is said the sweat of the aboriginal Indian is acid, though it can be rendered alkaline by continuous animal diet. Again, not only do the Negroes vary amongst themselves in regard to intensity of skin-odour, but some American Indians, *e.g.* the Araucanians, who live on animal food greatly, manifest a similar peculiarity. Rengger even says that Europeans, when acclimatised in Paraguay, have a peculiarly rank skin-odour, and in consequence are, like Negroes, less liable to be pestered with mosquitos. Then we may remark that it is probable that every individual, white or black, has a distinctive skin-odour, and if our senses were as keen as those of dogs, we should, like them, be able to distinguish it in every instance. There is no good proof that the pulse beats quicker in southern races than in northern. Congenital deformities are rarer amongst savage than among civilised races. It is alleged that the capacity for *blushing* is peculiar to white races—that Negroes have it not. But in Mulatto women, it has been proved that where the complexion is delicate, blushing is seen; and Monrad, quoted by Waitz, in his *Introduction to Anthropology*, p. 135, asserts that Negresses become darker when under the influence of a sense of shame. The idea that blushing is peculiar to white races, seems to have originated in careless observation; for the slight deepening of colour that occurs in dark-skinned races when influenced by a sense of shame is not so easily noticed. As regards the senses, it seems clear that savage races have them developed in greater perfection than the higher races. However, it would appear there is one exception, viz. the sense of taste, which in inferior races is but poorly developed. The savage who gluts himself with food for no other purpose than to quench the cravings of an animal appetite, is not a gourmand. The inferior races have, in the struggle for existence, to rely more on their senses than have the civilised; hence they have them by use developed into wonderful acuteness. The power of 'following the trail,' possessed by savage hunters is well known. The Bedouin can discern objects at infinitely greater distances than the European. Rengger says that Indians can distinguish a riderless horse from a mounted one by the difference in the sounds made by its hoofs afar off. Then the Bushmen—a race very low in the scale of civilisation—have the sense of sight so highly developed, that travellers assert they can see things with the naked eye which white men would need a telescope to perceive. Illustrative of what we said about the high state of development of all the senses except taste in the inferior races, we may mention that Freycinet tells a story of a Papuan of New Guinea who actually swallowed up the contents of a pepper-box, and thought it very pleasant to taste—yet the Papuans are said to possess the most delicate and acute senses of sight and hearing.

PSYCHICAL CHARACTERISTICS.

As yet, the materials for a complete science of comparative human psychology hardly exist; yet from what we do know of the subject, the direct drift of its teaching is to strengthen the position of those who maintain the unity of mankind, the psychical differences between different races being clearly accounted for by the recorded

differences in the degrees of civilisation through which these races have passed within the historic period. We may admit that the mental endowments of the Negro are so far inferior to those of the European, that it would be impossible to say the former was capable of doing the strong intellectual work of the latter. But the two races are passing through different stages of civilisation, and cannot possibly be expected to have the same intellectual capacity. Then the intellectual capacity of a race denotes not the work it is capable of doing at a given time, but the best possible work it might be able to achieve if existing in the best possible circumstances. It has yet to be shewn that, if the lower races were placed in the same favourable circumstances as the European, and that, too, for the same length of time, they would manifest any inferior capacity for intellectual development. We not only find at different periods the greatest differences as regards the degree of intellectual development they have attained, but we find these differences characteristic of different races at the same period of history, and in no case do we find them greater or less than those that exist in the various 'races of men' now peopling the earth. It has been asserted, and the assertion has been denied, that there are no races so low as to have no vestige of religion amongst them. The controversy is chiefly a war of words. If it is meant that all races believe in a god or gods, the assertion is not absolutely true, and the natives of New Caledonia may be cited as one amongst many examples we might bring forward in support of the literal godlessness of savages. Yet even they have their magic and magicians; and the Dyaks of Borneo, who have neither priests, temples, nor images, believe in augurs and omens. Indeed, we find that the proof of the alleged want of traces of a religion gradually fades away as we get more information about the race of whom it was asserted. In every tribe, no matter how degraded, we find a belief, not in gods perhaps, but in the Supernatural—in viewless, mystic powers or spectres, capable of not only controlling the forces of nature, but making and marring the fate and fortunes of man.

In the lowest races, we find traces of the power of design, and crude ideas of beauty. The black intertropical races are not all equally low in the scale of civilisation and mental development, but they have a tendency to idleness, want of prudence, and energy, which renders them incapable of coping with the races that inhabit more temperate climates. The Negroid races are the lowest; the black aborigines of Australia being lowest of all, possessing in many cases but rudimentary notions of a social community. The American Indians, especially those of the north, are powerful and warlike, and often display moral and mental qualities of the highest kind. The Mongolians are higher still, and possess a literary culture, and powers of invention, together with capacity for persevering industry, which, were it not for their stationary character, might enable them to cope fairly with Europeans. Europeans have, in addition to their other high mental qualities, the desire and capacity for progress and improvement, which, with their greater moral and intellectual weight and energy, make them soon become masters of whatever part of the world they settle in.

GENERAL QUESTIONS.

The vast number of these makes it impossible that we should do more than glance at a few of the most prominent.

Migrations and Extinctions of Races.

Man has the power of adapting himself to all varieties of climate, and the human race being in its early stage of development nomadic and pastoral, we may easily understand how migrations of races from their original centres to more fertile places would soon occur, and how, when two races came thus into collision, the weaker would be displaced or absorbed by the stronger. Examples of migrations, from the Celtic migrations from Asia already mentioned, down to the modern emigrations of Europeans to America, must occur to every one. Early migrations of peoples with but the rude elements of culture, account for the fact that it is the most primitive arts that are most widely distributed all over the world. As the arts rise in the scale of perfection, their areas of distribution become more and more limited.

Some have thought it impossible to extinguish a race. That it is possible, is proved by the fact, that in 1872 the last of the Tasmanian race disappeared for ever from the face of the earth. If the races that come into collision are widely divergent, the weaker dies out. If not, intermixture takes place, and a new, and probably stronger, race is formed, both parent races disappearing. The most remarkable example of extinction of races, regarding which most contradictory views are abroad, is that of the American Indians. The aborigines of the West Indian Islands were swept away by the barbarity of European conquerors. Dr Robert Brown, the author of one of the ablest works on the *Races of Mankind* in our language, and one of the best authorities living on the anthropology of the North-west American Indians, holds that the extinction of these tribes is due to (1) frontier wars with white emigrants; (2) the greater fatality of inter-tribal wars, due to the introduction of firearms among them; (3) alcoholic excesses; (4) diseases, such as smallpox and syphilis, which the white man brings to them from Europe; (5) diseases the scantily clothed savage contracts after getting to wear the white man's heavy clothing, diseases such as consumption, which are due to his being less able, in consequence of accustoming himself to European clothing, to stand exposure to cold and wet; (6) diseases of the digestive system—for example, dysentery, introduced amongst them after they change their food, and use that used by the whites. To these causes, rather than to any proved inherent incapacity for civilisation, would this traveller attribute the decay of savage tribes that come into collision with the white man.

Miscegenation.

The mixture of different races gives rise to half-breeds, to which various names are given. Europeans and Negroes produce Mulattoes; Europeans and American Indians produce Mestizoes; Negroes and Indians produce Zamboes. The European and Mulatto produce the Terceron; the

Terceron and the European, the Quadroon; the Quadroon and the European, the Quinteron, who in slave countries used to rank as a white man. It is the favourite dogma of the modern school of French anthropologists that mixed races are not permanent. Opposed to this, we have the facts that our Anglo-Saxon race owes its strong vitality to its being a mixed race, whereas the purest race in Europe—the Danes—are on the decline. In Red River Settlement, a country peopled by a mixed or hybrid race of whites and red Indians, population has been increasing. The Mestizoes of Granada and Paraguay (mongrels of Spaniards and native Indians) shew no signs of decay or diminished vitality. The nearer the parent races are allied to each other, the less will be the diminution of vitality produced by miscegenation. In such cases, it is probable that miscegenation may produce a better race than in-breeding. The greater the difference between the parent races, the less persistent and permanent will be the mixed race they beget. It seems as though the European and the higher races of American Indians can produce not only a permanent but lusty and powerful mixed race, but that, when the European and the Negro intermarry, the divergence of the parent races is too great to admit of a stable race of hybrids being produced. The coloured population of the slave states increased so long as slavery was an institution, by constant intermixture of the original parent races, and not by the reproductive power of the hybrid races, which the 'peculiar domestic institution' of these states encouraged. Since the abolition of slavery, the Negroes and hybrid races have not been cultivated and bred as valuable chattels, but have been left to the mercy of the natural 'struggle for existence,' and it would appear that they are gradually dying out.

Acclimatisation.

Natives of temperate, who emigrate to tropical, climates, die soon. Even when they manage to live, their children die before reaching maturity. When a white man goes to a tropical climate, he and his descendants, if he have any, become darker in colour. The Negro and his descendants when transplanted to a cold climate become paler. It is doubtful whether the European has yet been thoroughly acclimatised even in the temperate regions of America. Recent statistical investigations go to shew that the native white population of the United States is not on the increase, and that any apparent increase is due to reinforcements from European emigration. There are some anthropologists who hold that the European races in America are being modified in physique in the direction of the Indian type. The general law seems to be, that the capacity of a race for acclimatisation is proportionate to its intellectuality.

ORIGIN AND DESCENT OF MAN.

Two hypotheses are advanced as to the origin and descent of man, neither of which admits of scientific demonstration—namely, (1) the hypothesis of special creation; (2) the derivative hypothesis of Mr Darwin. Scientifically speaking, the chief objections to the former are: that it is an assertion wanting the solid proofs on which scientific theories are usually based; that it explains very few of the facts capable of demonstrative proof; and that it is little more than a formulated assertion, that of the origin of man nothing is known save that nothing will ever be known—apart from traditions and the revelations of religion. The derivative hypothesis asserts that the origin of man is in harmony with that of all organised and living things, a process of evolution of the higher and very highest from the lower and very lowest forms of life. (See ZOOLOGY.) It rests mainly on (1) the existence in animals of useless rudimentary structures, which are found in man developed into usefulness, and of useless structures in man representing the survival of organs found well developed in lower forms, and of use there; (2) the resemblances between man and animals in embryonic development and homological structure; (3) the absence of any differences, bodily or mental, between the highest apes and the lowest savages, wide enough to make it impossible they should have had a common progenitor.

The derivative hypothesis is one which has the advantage, at present, of accounting for more otherwise inexplicable facts than any other; its advocates very plausibly shew that it is not inconsistent with the facts it does not account for, and that it is no more contrary to revealed religion than the now accepted doctrines regarding the antiquity of man and the geological development of the earth were once held to be. We may therefore expect that it will daily gain adherents, till a more adequate and perfect hypothesis is started. At present, it is adopted by scientific men as a convenient provisional theory, preferable to, because less inadequate than the alternative, special creation hypothesis, which seems a mere confession of ignorance of the subject. The great objection to the derivative hypothesis used to be the assumption it compelled us to make of longer periods of time having elapsed since the first appearance of man on the earth than recorded history could cover; periods during which it was possible for the Stone-age savage to develop into the nineteenth-century Christian. However, the

Antiquity of Man

is now, on all hands, admitted to be immensely greater than we were wont to consider it according to Archbishop Usher's chronology. Ages before history and even tradition began, it can be shewn man lived on the earth, and human remains are found associated with the fossil relics of animals now extinct, and belonging to a period of probably from 50,000 to 100,000 years back. Sir John Lubbock, our greatest authority on this subject, thinks man may have existed during the Miocene period; and the other day it was reported that bones taken from undisturbed caves in Miocene rocks on the Mediterranean coast, had carved on them figures of prehistoric animals.

Unity or Plurality of Human Species.

Those who hold the doctrine of *polygeny*, or that mankind do not form one, but many distinct species, sprung from stocks specifically distinct, and those who believe in *monogeny*, or the essential specific unity of the human species, have long warred with each other without satisfactory results.

The influence of the derivative hypothesis of

Mr Darwin has of late done much to strengthen the monogenists—indeed, the ablest naturalists are now monogenistic in their tendencies. Those who hold that the races of mankind are specifically distinct, rely chiefly on the assertion, that the present diversities in the various races cannot be accounted for in any other way, and that physical types in man are so permanent, that they cannot be changed to such an extent, by climatic and other external influences, as to account for existing diversities amongst different races. Any one who studies Mr Darwin's work on *Animals and Plants under Domestication*, will see at once how feeble this argument is, in the light of his discoveries of the almost incredible diversity in form and physique that can be produced within the limits of one single species—say, in dogs or pigeons (diversities far greater, it would seem, than any found within the limits of the human species)—merely by the operation of artificial selection, and hereditary transmission of parental peculiarities to offspring. The polygenists relied greatly on Dr W. F. Edwards's argument in favour of permanence of racial types, drawn from the resemblance of the pictures of Jews and Negroes on the old Egyptian monuments to the Jews and Negroes of the present day. In regard to the Jews, it would be very strange if a community, whose social and religious observances so carefully prevent any intermixture with alien races, exhibited any signs of departure from the original type. All these monuments prove is, that in the *same conditions*, the most striking race characters have not become altered in the course of 3000 years. They do not prove that the type would have remained unchanged if the race had been subjected to great diversity of climatic changes for 30,000 years. Dr Edwards's idea, that permanence of type was proved by the fact, that mixed races, such as those inhabiting France and Italy, revert to the original type, is worth little, for we have no anatomical proof of what the original types were in such cases; and we may ask, if a *mixed* race reverts to its original type, to which original type does it revert? The late Professor Agassiz held that the races of man sprung from eight provinces of creation, where they now exist. But opposed to this doctrine we have philological proof that the Indo-European race did not spring up in their present area, but came from Asia; and it is absurd to suppose the Eskimos sprung up in Professor Agassiz's arctic province, for they would have been frozen to death there long before they had learned to protect themselves from the cold. The cradle of primeval man must have been a warm region, and knowing, as we do, man's restless migratory tendencies, it is imprudent to uphold a theory which permanently fixes parent stocks to particular provinces, as though they were plants incapable of the desire for emigration, and devoid of the means of gratifying it. The polygenists have to place themselves in a curious logical dilemma, for doubting the vitality of hybrid races, they deny that the different races could be brought into permanent existence by intermixture of stocks so divergent from each other as were those that produced the various peoples of the earth; yet they attribute to intermixture the manifold diversities which they admit exist in the sub-types into which what they call the different human species are split up. They are in the same dilemma with regard to the influence of climate and external agents; for, in both cases, it seems that if the manifold differences they admit as occurring within the limits of one of their many species, could be produced by admixture and climate, the production of the differences in virtue of which they defend the specific distinctness of their primal types, might also be produced in the same way by the action of longer periods of time, such as those, in fact, that the recent researches on the antiquity of man make it probable have operated on the human race. Science as yet affords material for no *certain* conclusion whether mankind is derived from one pair of human beings or from several. But, whichever view be adopted, there can be little doubt that the balance of evidence does not favour the idea that the nations of the earth are specifically distinct, or, however many pairs they may be derived from, belong to different species. Zoologically speaking, the races of men are of one blood and one brotherhood.

The development and destiny of mankind are subjects of too vast importance to be discussed in a few lines. Science teaches us that primeval man was a savage; and the notion of Archbishop Whately and the Duke of Argyll, that man was aboriginally civilised, and became degraded, and that savage races are incapable of self-civilisation, is refuted by the researches of Tylor, Lubbock, Darwin, and others. Modern civilisation has developed gradually from prehistoric savagery. The history of humanity in the mass is substantially the history of moral and material progress. That some races have been, for the limited period over which human history extends, stationary, whilst others have even retrograded, is adduced as a proof that progress is not the law of humanity. But this is to mistake the eddies in the course of the river of life, that may for a time be washing backwards a few fragments of our race, for its broad strong current, which, flowing ever onwards, bears on its bosom the mass of humanity, with all its highest hopes and aspirations, towards the perfect ideal which lies beyond.

LANGUAGE.

LANGUAGE in its widest sense signifies any means by which one conscious being conveys what it thinks or feels to another. Thus we speak of the language of the eyes, the language of birds. But in ordinary usage we understand by language the system of sounds uttered by the human voice in the intercourse of society—articulate speech. The writing of language does not alter its character in this respect; it only introduces an intermediate set of signs or marks. The written characters do not convey the meaning directly, they only indicate certain sounds; and it is these sounds that are still the immediate vehicle of the thoughts. It is language in this sense—the communication of our thoughts by means of spoken signs*—that is the subject of the present paper.

Human speech is the result of a kind of tacit convention as to the meanings of the several signs, so that they are intelligible only to those who have learned them. Such signs are in this respect *artificial*. But distinct from this there is a kind of *natural* language which is universally understood without being learned, and which the lower animals to some extent possess. It is made up of the instinctive and untaught movements of the body that feelings, passions, and desires give rise to. These natural, outward signs of inward mental states consist of the tones of the voice, the play of the features, the movements of the limbs, and the gestures of the body. Every conspicuous passion or emotion gives a distinct expression to these various organs, by putting them into the state most in harmony with itself; and each different expression tends, by an instinctive operation of fellow-feeling, to call forth its proper emotion in those who witness it. The howlings and contortions of pain, the quakings of terror, the fixed gape of astonishment, the wailings and tears of wounded affection, the swellings of rage, the eagerness of pursuit, the cry of victory, the placid repose of contentment, the outburst of the ludicrous, the bending of reverential feeling, the urgent movements of entreaty—are all peculiar effects on the bodily organs, characteristic of the several feelings, and capable of communicating these feelings at once, and independently of all instruction, from one human being to another. But these signs are by far too limited to express the wide variety of thoughts and sentiments which the human mind can entertain, and which require to be communicated between man and man. Even in the most perfect development of this mode of expression, in the stage pantomime or dumb-show, it is very obscure when it attempts to convey anything beyond the most obvious ideas and feelings. So far as it goes, however, it is the most powerful means of impressing one man's feelings on another, or of inspiring a multitude with a common enthusiasm; hence it continues to be used along with artificial speech, as is seen in the gestures, grimaces, movements, and modulations of conversation and oratory. It is the resource of children, and of persons ignorant of one another's language; and is partially employed by the deaf and dumb. On this we need not dwell longer, but return to audible speech.

We may occupy ourselves with languages for two very different purposes. In most cases, the object in studying a language is to be able to understand it, and to speak and write it. When the knowledge of languages is spoken of, few, we apprehend, think of anything but knowledge of this directly useful kind. From the time we begin to lisp to the time we leave school or college, and even after, we are chiefly occupied in learning our mother-tongue, or other living or dead tongues; and until recently, the multitude of dictionaries, grammars, critical commentaries, and the like, that constitute so vast a bulk of the literature of the world, turned almost exclusively on the right understanding, and the correct or elegant use of the individual languages.

But there is another light in which the same subject-matter may be viewed. We may study two or more languages, in order to compare them with one another, and note in what they agree and in what they differ. When a considerable number of tongues are subjected to this kind of examination, it is found that some features are widely prevalent, and in some instances universal, or all but so; while others are confined to a narrower circle, or, it may be, are peculiar to a single tongue. It is the general facts thus arrived at by induction that form what are called the general principles or laws of language—universal grammar—as distinguished from the peculiarities of individual languages. Nor is this the only result of such comparison. It becomes at once evident that any particular tongue differs widely from one set, while it agrees extensively with another; and thus the known languages of the world can be *classified*, in much the same way as minerals, plants, and animals are.

In this process of comparison we do not take a language as it was spoken at any one date, and confine ourselves to that. Not only are different languages compared with one another, but the same language is compared with itself at different times throughout the period of its known existence. The historical method is thus conjoined with the comparative, and it is this conjunction that has shed the most light on the laws of language. All languages are found to be undergoing incessant change; waste and repair of parts are constantly going on, as in a living organism, the result being a gradual change in the aspect and character of the whole, so that, after the lapse of centuries, it shall seem to the superficial observer a new tongue. These changes do not happen by blind chance or caprice; they are found to take place on the whole

* This is the proper etymological meaning of Language, which is a French word formed from *langue*, the tongue. In classical Latin the word is *lingua*; but the old form was *dingua*, and with this the English *tongue* is evidently cognate.

according to discoverable laws, some of which are general, and others more or less special. Those laws by which languages become transformed, or developed, as it is called, are among the most important of the general principles of language.

In all this, there is an obvious analogy to the study of natural history. The zoologist, for example, investigates the structure and functions of the different animals, and assigns to each its place in the classification of the animal kingdom. But he has this advantage over the linguist: he can trace the organism he is investigating from the embryo, through every stage of its development and growth, to its death, and thus give a complete scheme of its life. The student of language, on the contrary, has his survey in the historical direction hemmed in by narrow limits. He has never seen, and can never hope to see, a language in embryo; the oldest relics of language that have come down to us are such as to imply centuries on centuries of previous existence; so that he is like the naturalist if reduced to study organisms exclusively in the adult state. He is not, however, precluded from all hope of arriving at some notion of the embryo condition of speech. By analysing languages as they exist, and finding the ultimate elements of which the words are built up; and by reasoning from the way in which words are seen to change, and new words to come into use, we may hope to arrive at some conclusions more or less probable as to what the beginnings of language must, or, at all events, may, have been. It is this speculation as to the *Origin of language* that forms the crowning of the philological edifice.

The learning of languages for use is treated of in the grammars and dictionaries of the several languages. The only part of this vast field that at all falls in with the scheme of this work is the grammar of the English language, which is briefly sketched in a special paper. It is the natural-history aspect of speech, above described, its physiology, as it were, and the classification of the different forms it assumes, that is the subject of the present number. This study, as a distinct branch, is of recent growth, and has not yet settled down into a fixed name. It is variously spoken of as Comparative Grammar, Comparative Philology, Linguistic, the Science of Language. The last name seems the most appropriate, but has the disadvantage of being rather cumbrous.

Although investigations of the kind described may not promise any directly useful result, they are not without interest of an absorbing kind. Speech is at once the sign and the means of man's superiority over the rest of the animal kingdom; and he who can find no interest in learning the nature and workings of this precious faculty unless it promise to make him richer, can hardly be called a man. Besides its own inherent attractions, the comparative study of tongues is one of the chief instruments in another inquiry of universal interest, that, namely, of the affinities of nations; Comparative Philology is the handmaid of Ethnology. See ANTHROPOLOGY, No. 53.

The science of language, as already remarked, is of recent origin. It is not to be understood by this that it never occurred to anybody, until recently, to seek for affinities between the words of different tongues, and to speculate as to the nature and origin of language in general. On the contrary, inquiring minds have at all times been fond of exercising their ingenuity in this field. The exercise, however, was long little better than beating the air; it consisted mostly in blind gropings, wild guesses, and fanciful theories that died with their projectors. The cause of this fruitlessness lay in the reasoning being founded on too few facts. The ancient Greeks speculated largely on language, but, as a rule, they knew no tongue but their own, and considered all others barbarous jargons, and unworthy of study. The scholars of modern times for a long period confined their attention to Greek and Latin, including, it might be, Hebrew, with a contemptuous glance at their mother-tongue; hence their theories were nearly as baseless as those of the Greeks. They were mere *a-priori* speculations, akin to the 'Theory of the Earth,' written by the learned Thomas Burnet in 1689, before the strata of the earth's crust had been at all explored.

One great obstruction to the true course of inquiry was the assumption, first made by the Church Fathers, and for a long time unquestioned, that Hebrew was the primitive language of man, and that, therefore, all languages must be derived from Hebrew. A prodigious amount of learning and labour was wasted, during the seventeenth and eighteenth centuries, in trying to trace this imaginary connection. Leibnitz was the first to set aside this notion, and to establish the principle, that the study of languages must be conducted in the same way as that of the exact sciences, by first collecting as many facts as possible, and then proceeding by inductive reasoning. It was owing to his appeals and exertions that missionaries, travellers, and others, now began making those collections of vocabularies and specimens of languages and dialects which form the *Herbarium*, as it were, of human speech. The truths deduced from these collections were at first fragmentary, and without any fixed principles of classification. The light that brought order into the chaos rose with the study of Sanscrit, first made accessible to European scholars by Sir William Jones, Colebrooke, and other members of the Asiatic Society, founded in Calcutta in 1784. The similarity of Sanscrit to Greek and Latin, especially in the grammatical forms, struck every one with surprise. Sir William Jones declared that 'no philologer could examine the Sanscrit, Greek, and Latin without believing them to have sprung from the same source, which perhaps no longer exists. There is a similar reason, though not quite so forcible, for supposing that both the Gothic and the Celtic had the same origin with the Sanscrit. The old Persian may be added to the same family.' German scholars now took up the subject, and have since been the chief workers in this field. Frederick Schlegel has the merit of first (in 1808) boldly embracing the languages of India, Persia, and Europe in one family group by the comprehensive name of the Indo-Germanic languages. When first advanced, this could be considered only as a more or less probable assumption; but its truth has since been demonstrated by an accumulation of evidence, and it is now received as an established fact. Among the contributors to this demonstration, the chief place is due to the eminent scholar, Franz Bopp, Professor in the University of Berlin. The first instalment of his labours appeared in 1816, and they culminated in

his great work (published 1833–52) on the Comparative Grammar of the Sanscrit, Zend, Greek, Latin, Lithuanian, Old Slavonian, Gothic, and German. In this work it is shewn that the grammatical forms—the endings of the declensions and conjugations, &c. and the methods by which words are built up from other words, are fundamentally the same in all; these tongues, therefore, must have been inherited by all from a common source. This formed the foundation of the science of language, and the edifice has since been rising steadily under the hands of quite an army of workers. The method of investigation, thus invented and perfected in the field of the Aryan tongues, has been applied to other languages, and considerable progress has been made in forming the principal varieties of human speech into groups, which, again, fall into subdivisions or branches, according to the different degrees of nearness in the relationship.

We will now proceed to give some account of the kind of facts and reasonings by which these results are arrived at.

THE VOICE.

A necessary preliminary to the study of speech itself is that of the organs that produce it. They consist of the same organs that serve for breathing, chewing, and swallowing, with certain additions and modifications. The sounds that compose speech are made out of emitted breath by means of mechanical modifications. As emitted breath proceeds from the lungs, that organ, together with the chest which compresses it, and the windpipe, may be considered as the fundamental organ of speech—the bellows. When the breath issues gently and without constraint, as in ordinary breathing, it is almost noiseless; by constricting the throat, and thus roughening the stream, we give it that kind of audibility known as a whisper. But in speaking aloud, the breath is chiefly *sonorous*. This quality it receives in the larynx, a kind of cartilaginous box between the windpipe, or trachea, and the throat. It is a complex structure; but the essential parts for our purpose are two membranous bands, called the *vocal chords*, running parallel from before, backwards, across the glottis or opening of the larynx into the throat. In a state of rest there is a considerable opening between the chords, and the air passes freely; but when we wish to speak or sing aloud, the chords become tightened, their edges approach, the stream of air makes them vibrate, and a sound is produced of the nature of a musical note or tone, on the same principle as in a *reed* instrument. The *pitch* of the sound depends mainly on the tension of the parts; and by varying this tension, a series of musical notes is produced. But it is not this kind of modification that produces articulate speech. For this purpose, the sounds produced in the larnyx, whether of high or low pitch, must be further modified by the throat, the tongue, the teeth, the lips, the nose, which constitute, therefore, the remaining organs of speech.

Although loud speech is mostly made up of vocalised breath or tones, yet the indistinct sounds, or rather noises called breathings, of which whispering is made up, enter largely into its texture. By careful attention to the movements of the organs we are sensible of when producing the several sounds, and by means of the laryngoscope, an instrument which lays bare what takes place in the larynx, much has been done to render the mechanism of the elementary sounds of speech plain. We can only give the results in outline.

When the mouth is sufficiently open to allow the breath to flow without obstruction or roughening, the air is moulded into the various qualities of *vowel*-sound. When the channel of the mouth is obstructed so as to stop the current of breath, or so narrowed at any part as to produce a rushing or hissing sound, *consonant*-sounds are produced.

Vowels.—The fundamental vowel may be considered as the open, Italian *a*, heard in *father;* it seems to issue full as it comes from the throat, without any special movement in the oral passage. This fundamental sound becomes modified into two divergent series, the one produced by the tongue, the other by the lips. By raising the convexity of the tongue a little towards the roof of the mouth, the breath column becomes flattened or thinned, and yields the vowel heard in *an;* still greater degrees of convexity yield the *e* of *ell*, and the *a* of *ale;* while the greatest degree possible, without actual contact or friction, yields the *ee* of *eel*. In all this the lips take no share; but in the other series they are the active modifiers, and the tongue is passive. When the aperture of the lips is gradually contracted, the open *ah* is converted successively into *aw*, the *o* of *ore*, the *o* of *no*, and the *oo* of *ooze*. A third series of vowels is formed by combining elevated positions of the tongue and contracted positions of the lips, or retracted positions of the tongue and expanded positions of the lips. Of this labio-lingual series, the German *ü* is the most contracted, and the English sound heard in the word *err* the most open.

The following table shews the principal vowels of each class:

	Lingual.	Labio-lingual.	Labial.
Close.....	*ee(l)*	*ü*	*oo(ze)*
Medial.....	*ai(l)* / *e(re)*	*eu* / *ö*	*o(ld)* / *o(re)*
Open.....	*ah*	*e(rr)*	*a(ll)*

The possible modifications of the oral channel are endless, and untraceably minute, as are the shades of vowel-quality heard in dialects, and among individual speakers. In English, there are altogether *thirteen* established varieties, as heard in the words *eel, ill, ale, ell, an, ask, ah, err, up, all, ore, old, ooze*. Besides these, which a perfect alphabet must represent, we have the diphthongal sounds heard in the words *isle, owl, oil*, and the asperated compound *yoo*—the sound of the letter *u* in *use*—which is often, but erroneously, supposed to be a diphthongal vowel.

The Aspirate H.—The letter *h* represents an expulsive breathing, modified by the form of the vocal element which follows it—as in *he, hay, high, hoe*, &c. in which the H will be observed to have the quality of *ē, ā, ī, ō*, &c. but without the laryngeal contraction, and consequent asperation of the breath, which forms a whispered vowel.

Consonants.—The most characteristic of the consonants are those that altogether stop the emission of breath. When the tongue is raised convexly against the back of the palate so as to stop the breath, the separation of the parts is accompanied by a percussive effect, represented

in the English alphabet by *c*, *k*, and *q*. When the stoppage is made by the fore-part of the tongue against the front of the palate, the effect of separation is the sound *t*. Similarly, the separation of the closed lips gives rise to *p*. Intimately connected with *k*, *t*, *p*, are the series *g* (gun), *d*, *b*. The same contact that produces *p* produces *b*; but the latter is attended with a kind of muffled sound, which cannot, however, be prolonged. Similar is the relation of the other pairs *t-d*, *k-g*. The nature of the difference seems to be this: It is ascertained that in pronouncing *k*, *t*, *p*, the vocal chords are wide apart; but for *g*, *d*, *b*, they approach so as to moderate the rush of air, and also to be able to yield a tone during the brief time that air continues to escape from the larynx into the mouth after the latter is closed. That there is such an escape, any one may satisfy himself by trying to prolong the sound of *b*, when he will find his mouth become distended. The difference between the two series is marked by contrasting them, as *surd* and *sonant*, or, better, perhaps, as *sharp* and *flat*.

The six consonants now described completely arrest the issue of breath from the mouth, and are therefore called *checks*. The term *mutes*, often applied to them, is hardly appropriate in the case of the flat series, seeing there is a momentary tone. In all the other consonants, the breath is not stopped, but only constrained or squeezed more or less, so that the sound can be prolonged. On this account, these consonants are called *continuous*. The distinction of flat and sharp pervades the continuous consonants as well as the percussive. In the sharps, the glottis is wide open, and the prolonged sound is that of a stream of breath roughened by narrowing of the passages in the mouth (*if*); in the flats, the continuous mouth-sounds are accompanied by a muffled sound from the narrowed glottis (*iv*). The chief continuous consonants are thus formed:

If, while the organs are in the several positions that produce the checks *g*, *d*, *b*, the vocalised breath is allowed to pass through the nose, the sounds *ng*, *n*, and *m*, respectively will be heard.

The elevation of the base of the tongue so as to leave a narrow aperture between its centre and the back-part of the palate forms, with vocalised breath, the sound of initial *y* heard in *ye*. The same position, with voiceless breath, forms the German *ch* heard in *ich*, which is the same as *h* before *u* in English—for example, *hue*. The Scotch guttural in *loch* and the German *ach* differ from this only in the more retracted position of the tongue.

The elevation of the middle of the tongue towards the front of the palatal arch, with a narrow central passage for the breath, produces the element which, for lack of an alphabetic character, is represented by the digraph *sh*; and the same position forms, with vocalised breath, the common element heard in *pleasure*, *seizure*, &c. but which has no appropriate literal symbol in English.

The approximation of the flattened point of the tongue to the front of the mouth, so as to leave a narrow central passage between the tongue and the upper gum, forms the sound represented by *s*; and by *z* when the breath is vocalised.

The elevation of the tip of the tongue towards the rim of the palatal arch causes a degree of vibration of the edge of the tongue, and consequent asperation of the breath, proportioned to the degree of elevation, which is the English sound of the letter *r*.

The approximation of the lower to the upper lip, so as to leave a central aperture for the breath, produces, with vocalised breath, the sound of *w* initial, as in *woo*. The sound of *w* resembles that of the vowel *oo*, but with a more contracted aperture. The same position, with voiceless breath, forms the element represented, for lack of an alphabetic character, by the digraph *wh*.

The remaining varieties of English articulate sounds are formed by forcing the breath through *lateral* apertures, instead of one central aperture.

When the fore-part of the tongue is spread against the front of the palate, and vocalised breath passes laterally over the middle of the tongue, the sound of *l* is heard.

When the tip of the tongue is applied to the upper teeth (or the gum), and the breath is emitted laterally over the point of the tongue, the sound of the digraph *th* as in *thin* is heard; and, with vocalised breath, the sound of *th* in *then*,—neither of which is now represented in our alphabet.

When the middle of the lower lip is applied to the edge of the upper teeth, and the breath is emitted laterally between the teeth and the lip, the sound represented by *f* is produced; and, with vocalised breath, the sound of *v*.

Liquids.—The voice is so little intercepted in passing through the nostrils in forming *m*, *n*, or *ng*, and through the wide apertures of *l*, and also of *r* when not initial in a syllable, that the sound has almost the pure sonorousness of a vowel; and these elements have received the name of Liquids, to designate their property of syllabically combining with voiceless consonants—seeming to flow into and to be absorbed by them, and losing much of their natural quality as vocal sounds.

Consonants form, as it were, the bare and bony skeleton of speech; vowels give definite shape and individuality to words. Thus the consonants *sprt* constitute the common skeleton of such diverse words as *sport—spirt*, *sprat—sprite*, *spirit*, *support*, *separate*, *aspirate—asperate*, which receive their distinct configuration and filling up from the vowel-sounds, which cover the consonant skeleton with moulded elegance and variety. Consonants are thus the more stable elements of words, and their interchanges in the corresponding words of allied tongues are found to follow certain general laws dependent on the relations and affinities of letters. These relations are exhibited in the following table:

	SHUT.		OPEN.		NASAL.	
	Sharp.	Flat.	Sharp.	Flat.	Sharp.	Flat.
1. Labials.....	*p*	*b*	*f*, *wh*	*v*, *w*	†	*m*
2. Linguals....	*t*	*d*	*th*, *s*, *sh*, *	*dh*, *z*, *zh*, *r*		*n*
			ll (Welsh)	*l*		
3. Gutturals...	*k*	*g*	*ch* (loch), *ch* (ich)	*gh*, *y*		*ng*

* The 'sharp' or voiceless *r* is of frequent but unrecognised occurrence. It is heard in French, as the sound of *r* final after a consonant, as in *theatre*; and in Scotch, as a substitute for *thr*, as in *three*, pronounced *hree*.

† The 'sharp' forms of the nasals are in constant use as interjectional sounds, as in *humph l* (pronounced *'hm l*), *'hn l* (expressive of sneering), and *'mhm l* (used as an affirmative in Scotland).

In pronouncing the letters of the first class, the lips are chiefly concerned; in the second, the principal organ is the tongue, or the tongue and the teeth (whence they are also called *dentals*); and in the third, the back-parts of the tongue and palate are employed.

The branch of the science of language which treats of the elementary sounds of speech is called Phonetics (from Greek *phone*, sound); and, along with the sounds themselves, it considers their representation by visible signs or letters. How imperfectly the elementary sounds of English are represented by the letters that compose the English alphabet, is apparent from the analysis above given. That alphabet is imperfect both by redundancy and defect. (1.) The same sounds are represented by more than one letter; as *c*, *k*, and *q*; *c* and *s*; *g* and *j*. (2.) The same letter represents more than one sound; as *c*, which is sometimes *k*, and sometimes *s*; *g*, which is sometimes the vocalised form of *k*, and sometimes *j*; *n*, which is sometimes *n*, and sometimes *ng*; *s*, which is sometimes *s*, and sometimes *z*; and *y*, which is sometimes a consonant (when initial), and sometimes a vowel, sounded like the letter *i*. (3.) Single letters are used to represent articulate compounds; as *g* and *j*, which are sounded *dzh* [the voiceless form of *j* is represented by *ch*, as in *chair*]; *u*, which is sounded *yoo*; and *x*, which is sounded *ks*, and sometimes *gz*. (4.) The alphabet contains no characters for six of our undoubted consonant elements—namely, *wh*, *th*(in), *th*(en), *sh*, *zh*, *ng*. (5.) Each vowel-letter represents many sounds; and the lack of seven characters to denote the excess of our vowel-sounds over the number of our vowel-letters, is supplied by about sixty combinations of two or of three letters, so that the original phonetic character of the alphabet is almost entirely lost in the confusion of our orthography.

HOW LANGUAGE CHANGES.

Language passes from generation to generation by tradition; the rising generation naturally learn to speak as the adult generation speaks; and where there is any express teaching on the part of the old, it is to the effect of guarding the young against any deviation from existing use. But, notwithstanding this, language does change, has always changed, and will continue to change, like everything human. In proof of this, we have only to look back at English as it appears in any book written two or three hundred years ago. It already begins to have a strange aspect, and were it not that almost everybody still reads the Bible and Shakspeare, its strangeness would strike us still more. Chaucer, who wrote two centuries earlier, can be understood by ordinary English readers only with pains and the help of a glossary. When we go back five centuries further to King Alfred, the language of the royal author is as much foreign to us as Dutch. So much is this the case, that it has got a different name, and is spoken of as Anglo-Saxon. It is really, however, the same uninterrupted stream of English, only traced farther up towards its source.

Languages change in various ways. One change going on daily before our eyes consists in the introduction of new words. As a rule, we have an instinctive and salutary hostility to new words. They, in fact, defeat the very end of speech; to which it is essential that the meaning of the signs used be commonly known. But when we have a new thing or a new idea to speak about, we must either describe it in a roundabout way every time we mention it, or invent a special name for it. This is legitimate innovation. The progress of art and science has, within the last hundred years, enriched the English and other European tongues with many thousands of new technical terms. These terms have very various origins. Many of them are formed from Greek or Latin words; others from the names of persons; sometimes, in importing a new product or notion from a foreign country, we retain its native name: *e. g.* palæontology, megatherium, Galvanism, Faradisation, Darwinism, Macadamise, electro-magnetism, zincography, spectroscope, telegraph, telegram, Magenta, gutta-percha, trepang, tomahawk.

In the more generally current part of the vocabulary, new coinages are naturally less frequent; and when a new word does appear, it has to run the gantlet of criticism before admission. The right of *reliable*, which has only recently come into frequent use, to rank as a genuine English word, is still disputed. The Americans are less fastidious in this respect than we are, and not a few words of transatlantic manufacture are asserting a place in England, although still looked askance at by purists: *e. g. to progréss* as a verb from *prógress*; *to interview'* from *in'terview*.

The counterpart of this birth of new words is the decay and death of old ones. Many words current in England in the days of Shakspeare are no longer heard, unless, it may be, in provincial dialects: barn (child), eyne (eyes), wee (small), caliver (hand-gun), chare (a turn of work), fardel (burden), foison (plenty), geck (fool), stomach (courage), welkin (sky), yare (ready).

A more important change than the growth of new words and the death of old, is the transformation that words undergo while still continuing in use. This transformation is either in the meaning or the form, or in both. 1. *Changes in meaning.*—The Anglo-Saxon *sælig*, from which the modern English *silly* has been formed, means 'blessed,' 'happy.' But the best type of unalloyed happiness is that of a child, and as the happiness of a child is accompanied with innocence and simplicity, the word acquired the secondary meaning of 'innocent, simple,' and after a time, altogether lost its primary meaning. Milton uses 'silly'—into which form *sælig* had by degrees been transmuted—in the sense of 'simple,' without implying any disparagement. But simplicity borders on ignorance and feebleness of mind, and hence a second transition to the modern meaning of *silly*, in which nothing remains of the former stages. The same word *selig*, while continuing to be used in German in the sense of 'blessed,' has acquired the secondary sense of 'departed,' 'dead,' 'the late.' The association of ideas here is obvious, and the substitution of *selig* for a more obviously appropriate term is prompted by the desire to suggest a disagreeable idea in an indirect way. This instinct of politeness in speech—euphemism, as it is called—which seeks to hint at an unpleasant or an indelicate thing, rather than name it directly, has had much to do in making words acquire new meanings and

lose old ones: thus, 'plain' has usurped the sense of 'ugly;' 'fast,' of 'dissipated;' 'gallantry,' of 'licentiousness.' To trace such transitions in the meaning of words is one of the most interesting and instructive studies. It has been treated by numerous writers in regard to English; among others by Archbishop Trench on *The Study of Words*.

2. *Changes in form.*—One obvious change of this kind in English is the shifting of the accent a syllable forward. It is not long since everybody said reve'nue and balco'ny; now everybody says re'venue and ba'lcony. It is held incorrect to accent *ally* on the first syllable; yet many do so, being guided by the analogy of the language, which seldom has the accent on the final syllable; and there can be little doubt that a'lly will in the end triumph over ally'.

Since Anglo-Saxon times, and even since the days of Chaucer, the vowel sounds of English have been greatly altered. The investigations of Mr Ellis lead him to the conclusion that the vowel letters were pronounced by Chaucer's contemporaries pretty much as they continue to be pronounced in broad Scotch.

But a more striking change is the dropping of sounds altogether out of words. This change is very much disguised by the conservative effect of writing, which tends to preserve the spelling of words, although the pronunciation has altered. Johnson's Dictionary did much to stereotype the spelling of the English language, although it has not been completely successful recently: *e. g.* emperour,' 'arithmetick,' are now 'emperor,' 'arithmetic,' and 'honour' is on the inevitable road to 'honor.' The essential thing, however, are the spoken words, and they are constantly suffering curtailment whether the spelling alter or not. Thus, in *soften*, the *t* was originally pronounced, but it is now considered formal and old-fashioned to do so. Nearly all our silent letters, as they are called, were at one time heard, as in *psalm, wrought*. In words like *knee*, there was, in the primary forms, a vowel after the silent letter—k(e)nee—as we see in the corresponding Latin *genu*. This vowel vanishing, the *k* becomes difficult to pronounce, and is left silent in standard English, though still heard in Scotch and other dialects. Mistress, as a courtesy title, has dwindled into Misses for a married woman, with a kind of diminutive, Miss, for a young woman.

This curtailing of language has for its cause the natural tendency to economise exertion—laziness, in short. We instinctively seek to save our time and breath, and make as short work as possible with a word, provided it still conveys its meaning distinctly. Hence the vowel of an unaccented syllable becomes gradually shorter and more indistinct, until at last it is dropped altogether, and two syllables are pronounced as one, as in the instance just given of *knee; know* is a case of the same thing, as is seen from the old word *ken*, which is from the same root. But in this process the result is often not all gain in the way of ease; for the coalescence of syllables frequently causes combinations of consonants difficult of utterance. A great many of the existing clusters of consonants in the languages of civilised nations are distinctly traceable to this kind of coalescence (*debitum, debit, debt*), and it is believed that all of them orginated in that way, and that the primitive form of all tongues was what we still see among barbarous peoples (*e. g.* Kamehameha, the name of the late king of Hawaii), where every consonant is accompanied by a vowel.

This 'phonetic decay,' this wearing away and crumpling up of words for the sake of shortness, is strikingly seen in tracing the transition of Anglo-Saxon into modern English. Thus *dæg* becomes day; *fæger*, fair; *hlaford*, lord; *hlafdige*, lady: *wîf-man*, woman; *niht* (with the guttural *h* pronounced, as in Scotch), ni(gh)t; *wêorold*, world; *Eofor-wic*, York. One marked tendency or law may be observed in all this—namely, the tendency to drop or soften down the rough gutturals. Although it is generally by leaving out articulations that ease is sought, the same end is sometimes attained by inserting anomalous ones; thus, on borrowing the French *genre*, we have made it *gender*, because it is more easy in passing from *n* to *er* to take *d* by the way. In the same way *b* is brought in as a bridge of transition in *slumber*, from Anglo-Saxon *slumerian;* in *humble*, from Latin *humilis;* in *dissemble*, from *similis*. The Greek word *ambrosia* would have been *amrosia*, if the Greeks could have tolerated *r* after *m*, for the word is from *a*, negative, and the root that we see in Latin *mors*, death, and means 'undying.'

The Latin tongue, in being transformed into French, has suffered severe degradation. *Pater* became *père; frater, frère; presbyter*, first *prestre*, and then *prêtre; magister, maistre, maître*. The termination *-atus* dwindled away to *é*: *e. g. amatus* = *aimé*, *privatus* = *privé*. Before the inhabitants of Gaul began to learn the language of their conquerors, the Romans, they spoke Celtic. Now, such combinations as *sp, st*, are unknown in that language; and therefore, to make them pronounceable, the Gauls prefixed *e*, and turned *sperare* into *espérer*, *stabilire* into *establir* (English *establish*) and then into *établir*. This peculiar habit, together with the change of *-atus, -ata, -atum*, into *é*, or *ée*, shews at once how *épée*, a sword, grew out of Latin *spatha* or *spata*, a blade of any kind (English *spade*).

It is manifest at a glance, even from the few examples given, that the curtailments that words undergo do not take place by chance or caprice, but in a more or less regular and uniform way. These uniformities in phonetic change and decay are among the most important of the laws of the life of language, which it is the business of philology to study.

It may seem strange to speak of decay as life; yet it is just as much a part of the life of language as waste of the tissues is in the life of the animal body. But the important part it plays will be best understood by considering it along with the counter-process—namely, the building up of new words from old material.

WORD-BUILDING.

When we have to speak frequently about a thing that has no single name, as 'the top of the house,' 'a road provided with rails,' 'a ring for the ear,' 'a boat moved by steam,' we put the two words together without the connectives, and say 'house-top,' 'rail-road,' 'ear-ring,' 'steam-boat.' What constitutes a perfect compound in such a case is the sinking of the accent of one of the parts. We can bring together the two words *ocean*

steamer, but they remain two words, each with its own accent; the combination is not required sufficiently often to have formed them into a unity. There are a great many black′ birds′, but only one black′bird. When a compound has been long in use, the hyphen is dropped, and phonetic corruption sets in, if not in the spelling, in the pronunciation. In *forehead* and *shepherd*, it is only on consideration that we feel the two parts of the word as distinct. The sailor, familiar only with *bōs'n*, never thought of a *boat* or a *swain* in connection with the officer so called, and would not know what was meant by *boat-swain* if he saw it, or heard it for the first time. In *nostril*, we readily recognise the first syllable, but for the second we must go back to Anglo-Saxon *nas-thyrel;* and even then, it requires some etymological expertness to connect this with 'to drill,' 'to bore,' and to see that the full etymological meaning is 'nose-bore.' In *bōs'n* and *nostril* the fusion is felt to be complete, and two words have been welded into a single integral word; and, what it is of consequence to observe, this does not take place until we cease to perceive the meanings of the separate component parts, or at least of one of them. The necessary obscuration is brought about unintentionally, by slurring over the sounds; and thus the corruption of two old words results in the birth of a new one.

Affixes and other formative Particles.—The important part played by phonetic degradation and fusion is best seen in classes of words like god-ly, friend-ly; king-dom, heathen-dom; good-ness, hard-ness; plen-ty, pover-ty; bishop-ric; hard-ship, wor-ship; plente-ous, graci-ous; god-less, aim-less. The affixes or derivative terminations in such compounds were, there is little doubt, originally distinct words; it is demonstrable in the case of many of them, and may be confidently inferred in the case of all. That 'godly,' 'friendly,' are merely degraded forms of 'god-like,' 'friend-like,' is made certain by a reference to the Anglo-Saxon *god-lic*, *freond-lic*, and to the corresponding forms in other Teutonic tongues. We have shortened the Anglo-Saxon adverbial form *-lice* also into *-ly*, and now add it to all manner of adjectives to form adverbs: *e. g. privately;* we can even say *godlily*, in which the word 'like' occurs twice. The affix *-dom* is doom, judgment, jurisdiction; *ric*, in Anglo-Saxon, means kingdom, rule, and is from the same root as *rex; -ship* is nothing else than *shape*, condition, dignity; and 'god-less' is Ang.-Sax. *god-leas*, in which *leas* is the adjective *leas*, loose, free from, without. The affix *-ty* belongs, apparently, to an earlier stage than the other elements we have been considering; it is through the French (*pauvrete*), from Lat. *-tas*, *-tat*(is), (*pauper-tas*, *-tatis*), in which, owing to the wear and tear of long ages, it is difficult to say what may have been the original form.

The earlier and primitive affixes seem to have been built up of monosyllables of the nature of demonstrative adverbs or pronouns, indicating primarily position in space—'here,' 'there,' 'up,' 'down,' 'towards,' 'away from,' &c. Two of these pronominal roots, *ma*, 'here' (pointing towards the speaker), and *sa*, or *ta*, 'there,' can be traced in all the Indo-European languages; they enter into the personal and other pronouns, and into the cases of nouns and the terminations of verbs. In the earliest form known, the three persons of the present singular of the verb ended in *mi*, *si*, *ti*. These are evidently connected with the personal pronouns, so that *dada-mi*, *dada-si*, *dada-ti*, are compound words, equivalent to 'give-I, give-thou, give-he;' or rather, 'giving-of-me, giving-of-thee, giving-of-him.' The plural terminations *mas*, *tas*, *nti*, contain the same elements with an indication of the plural number. The pronominal element *sa* entered into the nominative singular of masculine and feminine nouns, as in Lat. *equu-s*, Gr. *hippo-s*. A bare stem or root, with a general predicative meaning, was not considered a word without an addition to limit and fix it down. Thus *voc* in Latin has the sense of calling or sounding; *voc*-sa or *voc*-s (*vox*) is 'sound'—that, or that which, sounds—'the voice.' The plural *voc*-es is believed to be a corruption of *voc-sa-sa*, 'sound that and that,' the doubling of the pronoun expressing symbolically a plurality of the same thing.

In many of the tense-endings it is possible to recognise auxiliary verbs. Thus Lat. *ama-vi* is for *ama-fui*, and *fui* is part of the verb *fu*, to be; so that *ama-vi* is literally, 'love-was I,' or, 'I was in the act of loving.' The future tense in French is known to have been formed within historical times by affixing the present tense of the auxiliary *avoir*, 'to have,' to the infinitive of the verb—for example, *finir-ai* is, 'to-finish-have-I,' or, 'I have to finish.'

The formation of the English past tense in *d* or *ed* is a most instructive instance of this kind of composition. One of the earliest expedients for expressing past time seems to have been the repetition of the root; thus, from the root *dā*, 'give,' the Sanscrit formed *dadāu*, the Greek *dedōka*, and the Latin *dedi*, in which the reduplication of the word symbolises thorough, complete action—'have given'—thereby implying that the action is over and past. Similarly, the root *dha*, 'put' or 'make,' furnished Gr. *tetheika*, Old High German *teta*, Ang.-Sax. *dide* or *did*. In nearly all simple Greek verbs, the perfect was formed by reduplication. Many of the oldest Latin verbs retained it, as *cado*, *cecidi*, to fall; *pello*, *pepuli*, to drive; and its previous existence may be inferred in *tŭli* for *tetuli*, *fēci* contracted for *fefici*. How readily the first syllable, being without the accent, would fall off is seen in its uniform absence in compound verbs: *e. g. compello*, *compŭli*. In modern Teutonic languages, the only remaining instance of the reduplicated past is *did* (Ger. *that*); but in Mœso-Gothic, the oldest form of Teutonic known, there were a considerable number of reduplicated past tenses—for example, *haldan*, to hold, perfect *haihald;* in Ang.-Sax. *heold*, for *hehold;* Goth. *haita*, to command, perfect *haihait*, in Ang.-Sax. *héht* for *hehet;* Old. Eng. *hight; letan*, to permit, *lailôt*. The reduplication, it is to be observed, is usually accompanied by a change of the root-vowel. This seems not to have been an essential part of the process, or, at most, only an accessory. The vowel-change was probably not intended to signify anything, but arose from the lengthening of the word. The addition of a syllable to a word has frequently this effect: *e. g. revīse*, *revīsion; proclāim*, *proclāmation; nātion*, *nātional*. But when the reduplication fell away, the altered radical vowel came to be looked upon as in itself the mark of past time. The vowel-changes, however, were irregular, and seemingly capricious, so that no rule could be

deduced from them for forming the past tense of a new verb. Besides, reduplication is only suited to simple verbs—root or stem verbs. Accordingly, in the case of compound and derivative verbs, the expedient was adopted of affixing an auxiliary verb. In Latin, as already observed, a common form was *vi* or *ui* (*ama-vi*, *par-ui*), corrupted from *fui*, which is a contraction of the reduplicated past *fufui*, of *fu*, to be. In perfects like *scrip-si*, we may recognise the relics of an obsolete reduplicate perfect of *es-*, to be. The Teutonic languages employed the reduplicated preterit of the verb 'do.' That the modern signs of past time in English (*d* or *ed*), and in German (*te*), are relics of Ang.-Sax. *dide*, and Old German *teta*, is rendered certain by the occurrence of such forms in Mœso-Gothic as *salbo-dêd-um*, *tame-ded-um*, which are as explicit as 'anoint-did-we,' 'tame-did-we.' The preterits formed in this way soon came to outnumber the older reduplicated forms, and we now speak of them as 'regular,' and of the others as 'irregular.' Many verbs that in Old English formed the past tense by a change of vowel, now follow the prevailing fashion, and take *d*—as *leap*, which had at one time *lap* in the past tense, and has so still in some provincial dialects.

Assimilation.—When the composition of words brings incompatible letters together, one of the two is assimilated to the other. The same takes place when the falling-out of a vowel allows two incompatible articulations to come together. The operation of this law is conspicuously seen in words from Latin and Greek, compounded with prepositions and other prefixes; as *af*-firm for *ad*-firm, *ar*-rogate for *ad*-rogate, *il*-licit for *in*-licit, *sup*-port for *sub*-port, *sym*-metry for *syn*-metry. In these cases, the assimilation is complete; but the same end, namely, ease of pronunciation, is often attained by approximation merely, as *im*-pute for *in*-pute, in which the transition to the labial *p* is easier from the labial nasal *m*, than it would have been from the lingual nasal *n*. The case of prefixes, however, is of less importance in comparative philology than other parts of the process of word-building. Whenever we form a new compound, although we may retain the spelling, we instinctively accommodate the pronunciation of one part to that of the other. Thus, handkerchief is pronounced hang-kerchief. Here *d* is altogether dropped, and the lingual *n* is changed to the guttural *ng*, in order to make the transition to *k* more easy.

In the earlier and more fluent stages of language, this process of accommodation was more rapid and complete, being without the drag put upon it by writing and printing. Of complete assimilation of the preceding consonant to the following, we have examples in the Latin words *sum-mus* for *sup-mus*, *sel-la* for *sed-la* (*sed-*, to sit), *puel-la* for *puer-la*, *gram-ma* for *graph-ma*. In *longis-simus* for *longis-timus*, *facil-limus* for *facil-timus*, the latter is assimilated to the former. Approximation is seen in scri*p*-tus for scri*b*-tus, a*c*-tus for a*g*-tus (*ag-*, to do or drive), so*m*-nus for so*p*-nus (compare *sop*orific), Sa*m*-nium for Sa*b*-nium. Instead of assimilation, one of the consonants is frequently dropped, in which case the vowel is usually lengthened by way of compensation. For example, the Latin for foot was originally *ped-s*, which first, probably, became *pess*, and was then written *pēs*; *lū-na* is for *luc-na* (*luc-*, to shine), *lu-men* for *luc-men*.

Sometimes ease of pronunciation is sought in *dissimilation:* as in eque*s*-ter for eque*t*-ter, claus-trum for clau*d*-trum. A great many adjectives in Latin were formed by the affix *-alis*, as *mortalis*, *regalis*; but when the stem contained *l* in the last syllable, *-aris* was substituted: *e.g. popul-aris*, *vulg-aris*. In cæ*r*u-leus for cæ*l*u-leus (compare *cælum*, heaven), it is the stem that is changed.

In making these accommodations each language has peculiarities of its own. The Latins, for example, found such a combination as *genesis* (the original form of the genitive of *genus*) inconvenient, and changed the first *s* into *r*—*generis*; the Greeks threw it out altogether, and made *genesos* into *geneos*, and then into *genous*. The ancient Celtic inhabitants of Spain disliked initial *sp*, *st*, as their neighbours of Gaul did (see p. 22), and changed Latin *spata* into *espada*, *stabilis* into *estable*. Modern Italian tolerates *sp*, *st*, but not *fl*, *pl*, and turns Latin *flor* into *fiore*, *planus* into *piano*. French and Spanish retain these combinations, having *fleur*, *flor*, and *plain*, *plano*. Spanish has the peculiarity of turning Latin initial *f*, in many cases, into *h*, so that, *e.g. facere*, *filius*, *fames*, *formosus*, appear disguised as *hacer*, *hijo*, *hambre*, *hermoso*.

These examples will suffice to shew how, what were originally the same words, may, in the mouths of people living apart, and with different idiosyncrasies, after a lapse of years, become so different as to form a new language. This leads us to the subject of

DIALECTS.

In speaking of a people having essentially all one language, but living extended over a wide territory, the name of *dialects* is given to those varieties or peculiar forms which that language assumes among the various tribes or other local divisions of the people. It is clear that the wider the separation comes to be between the several tribes, and the more they differ in mode of life and other circumstances, the more marked will the differences of dialect become. When, again, a particular tribe of this people increases in numbers, and also extends its territory, the same process is repeated, and its dialect becomes broken into a number of sub-dialects. The principal check to this tendency to seemingly endless subdivision of language, is furnished by an increasing degree of common culture and civilisation. Where this is wanting, as in Africa and among the native populations of America, the subdivision is practically endless.

A further check to divergence is usually found in one dialect of a country acquiring a dominance over the others. Various circumstances may give rise to this. The tribe that succeeds in establishing political supremacy is likely to make its dialect also prevail. A popular poet also may give his local dialect a general currency. Accidental circumstances have, in many cases, decided the rivalry. The Bible happened to be translated by a High-German, Luther, into his native dialect; other works on the then all-engrossing subject of religion followed in the same dialect; happily, too, the art of printing had just attained the perfection necessary to give these productions general

circulation. It was this concurrence of circumstances that decided that High-German should in future be the spiritual bond among the widespread German people. For there were other dialects whose claims to the distinction were at that time equal, if not higher.

When a dialect has thus become the vehicle of written communication, and of the higher kinds of oral address, its character and position become changed; and it stands henceforth in a sort of antagonism to the other dialects, and even to that out of which itself sprung. After a time these dialects become the exclusive possession of the uneducated classes, in which position they preserve many relics of old grammatical forms long after these have disappeared in the language of literature. It is thus to take an erroneous view of dialects, to treat them as corruptions of the standard language; they had an independent origin, and they and the written standard continue to act and react on one another. The genius of a national language cannot be fully understood without taking into account its provincial varieties.

It is obvious that dialect is entirely a *relative* term, and that what we call by that name in one connection, we may call a language in another connection. Thus, the most casual observer must be struck with the family likeness of Italian, French, and Spanish; indeed we know, as an historical fact, that all three were formed out of the same material, namely, the language of the ancient Romans. We might therefore speak of these languages as sister dialects, sprung from one common mother. But in ordinary usage, however nearly related the speech of two peoples may be, we do not apply the term dialects, unless the peoples are mutually intelligible, and have a common literary standard. Intelligibility does not go for much, but political relations enter more or less into the notion. Thus, Scotch is sometimes spoken of as a distinct language from English; and yet in no part of Scotland is the common speech so unintelligible to an Englishman as is that of Somerset, which is always a 'dialect.' This arises from Scotland being thought of as a separate country, which it once was; and its speech as the vehicle of a peculiar literature.

FAMILIES OF LANGUAGES.

The idea of groups or families of allied languages is thus an extension of the idea of dialects or varieties of one language; the differences are perhaps more numerous and profound in the one case than in the other, but they are of the same kind. The relation is the same in both cases—namely, that of sisters sprung from a common mother. The most important of the groups as yet established is that already named, the Indo-European. This great family embraces seven stocks, each with its ramifications.

1. The ancient *Sanscrit*, with its modern descendants, the Hindu dialects spoken all over Northern Hindustan.

2. *Persian*, ancient and modern, along with Armenian, Kurdish, and Afghan.

3. *Greek*, ancient and modern. Notwithstanding the important part played by the Greek people in the intellectual history of mankind, their language now occupies but a small area, being mostly confined to Greece itself, and to the islands of the Ægean. Modern Greek is much less changed from classic Greek than Italian is from Latin.

4. *Latin.*—The modern representatives of Latin form a sub-family called the Romanic languages, consisting of Italian, French, Spanish, Portuguese, Rhæto-Romanic—spoken in several dialects in the valleys of the Rhætian Alps—and Walachian.

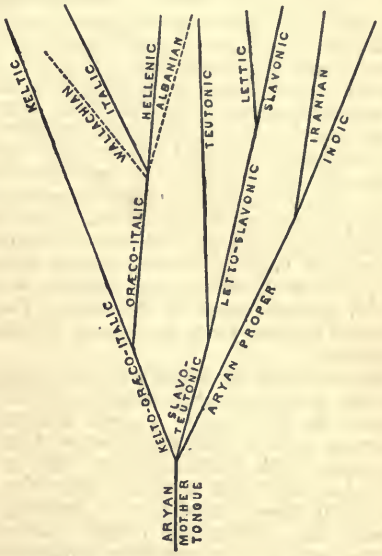


Fig. 1.—Outline Genealogical Tree of the Aryan Tongues.
From Farrar's *Families of Speech.*

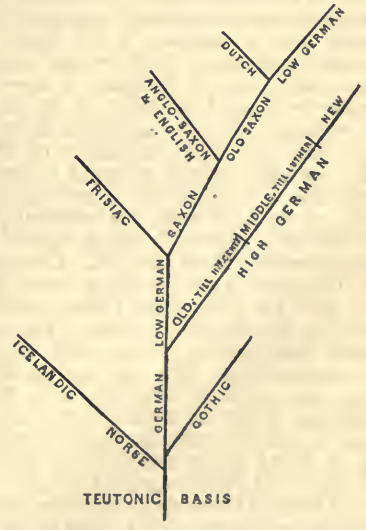


Fig. 2.—Ramifications of the Teutonic Stock.
From Farrar's *Families of Speech.*

5. The *Teutonic* stock, divided into two branches, the Germanic and the Scandinavian. The Germanic branch embraces the various dialects, High and Low, spoken in Germany proper, together with the Dutch or Netherlandish of

Holland and Belgium, and English, the last two being varieties of Low-German. The Scandinavian branch occupies Denmark, Sweden, Norway, and Iceland.

6. The *Slavic* or *Slavonic* stock, covering Russia, Poland, portions of Austria, and the north of Turkey. The chief languages are Russian, Polish, Bohemian, Servian, Bulgarian.

7. *Celtic.*—At the dawn of history, tongues of this stock were spoken over a great part of Europe—Gaul or France, the British Islands, part of the Spanish peninsula, many parts of South Germany, and the north of Italy; and judging from the names of mountains, rivers, &c. the Celtic area must at one time have been still more extensive. It is now confined to Ireland, the Scottish Highlands, Wales, the Isle of Man, and some parts of Brittany. The remnants of the Celtic tongues present two types, forming two branches. The Irish, the Gaelic of Scotland, and the Manx, belong to the northern or Gadhelic branch (Gaelic is merely a short form of Gadhelic); the southern or Cymric branch is represented by the Welsh, Cornish of Cornwall (extinct since 1778), and the Breton of Brittany.

The evidence on which all these tongues are believed to be sprung from one original tongue, consists in their having a great many words in common, and in their grammatical forms being the same. This latter kind of evidence is considered a surer test of affinity than the former. For when those elements of a language which express the relations of things—case, number, tense—have once become mere terminations, and lost their original form and independent meaning, they can only be transmitted by tradition; and when the same grammatical forms are found possessed in common by two or more tongues, they must be an inheritance from a common ancestor. It is difficult, without entering into minute details, to exhibit even a specimen of the identity of the inflectional endings of the Germanic tongues, for instance, with those of Sanscrit; it is more easy to make the radical sameness of the individual words apparent. In judging of this sameness, we are no longer guided by mere similarity of sound; on the contrary, identity of sound is generally a presumption that a proposed etymology is wrong. Words, as we have seen, are constantly undergoing change, and each language follows its own fashion in making those changes. Corresponding words, therefore, in allied tongues must, as a rule, differ, and the differences follow certain laws which it is possible to ascertain; and unless a proposed identification accord with those laws, it is inadmissible. We are not at liberty to suppose any arbitrary omission of a letter, or substitution of one letter for another, as was the fashion in the old guessing school of etymology. Thus, it would be inadmissible to assume Old Irish *athir* to be identical with Latin *pater*, unless it be the habit of the Irish to drop the initial *p* of the original word; but this is seen to be the case by such additional instances as *iasg*, Old Irish *isc* = Latin *piscis*, a fish; *lan* = Latin *plenus*, full.

GRIMM'S LAW.

Of the laws of interchange of sounds in the Indo-European family, the most important is that known as Grimm's Law, so called after the famous German philologist who investigated it. It is of extensive application, affecting the whole consonantal structure of the Aryan tongues, and in its whole extent is rather intricate. The following table exhibits the more important interchanges between the ancient classic languages and the Germanic:

	Labials.			Dentals.			Gutturals.		
Greek (Latin, Sanscrit)....	p	b	f	t	d	th	k	g	ch
Gothic.....	f	p	b	th	t	d		k	g
Old High German.....	b (v)	f	p	d	z	t	g	ch	k

Examples.

Sans. pad-as, Gr. pod-os, Lat. ped-is, Goth. fot-us, Eng. foot, O. H. Ger. vuoz, Ger. fuss.

Sans. pitri, Gr. and Lat. pater, Goth. fadrs, Eng. father, O. H. Ger. vatar.

Sans. bharami, Gr. phero, Lat. fero, Goth. baira, Eng. bear.

Sans. bhrag, Gr. phlego, Lat. flagro, Goth. bairht, Eng. bright, O. H. Ger. percht, Ger. pracht.

Sans. tola, Gr. talan, Lat. tolerare, Goth. thulan, Scot. thole, Ger. dulden.

Sans. damja, Gr. daman, Lat. domare, Goth. tamjan, Eng. tame, Ger. zähmen.

Sans. uda, Gr. hydor, Lat. u(n)da, Goth. vato, Eng. water, Ger. wasser.

Sans. hrid (krid), Gr. kardia, Lat. cord-is, Goth. hearto, Eng. heart, Ger. herz.

Sans. kas, Gr. kos and pos, Lat. quis, Goth. hvas, Eng. hwo, hwat (who, what), Ger. was.

Sans. ganaka, Gr. gennetor, Lat. genitor, Goth. kyning, Eng. king, O. H. Ger. chunine, Ger. könig. 'King' thus meant originally 'father.'

Sans. gani (mother), Gr. gyne (woman), Lat. gene-trix, Goth. qino or qens, A. S. cuen, Eng. queen.

Sans. hansa, Gr. chen, Lat. (h)anser, A. S. gos, Eng. goose, Ger. gans.

There are, of course, many exceptions to the law, arising from the influence of adjoining letters and other incidental causes. It holds good oftenest at the beginning of words. It will be observed that the English differs more from the High-German than it does from the Gothic, which belongs, like English itself, to the 'low' Teutonic group. By observing the relations between the German and the English exhibited in the following table, the beginner of German may easily recognise the English equivalent of many German words:

Ger. *d* = Eng. *th.*			Ger. *z* = Eng. *t.*			Ger. *th* or *t* = Eng. *d.*		
dies	=	this.	zahlen	=	tell.	thau	=	dew.
das	=	that.	zehe	=	toe.	theuer	=	dear.
denn	=	then.	zinn	=	tin.	theil	=	deal.
denken	=	think.	zoll	=	toll.	tanz	=	dance.
dick	=	thick.	zu	=	to.	tag	=	day.
dein	=	thine.	zwei	=	two.	taube	=	dove.

It is difficult to account for such dialectic diversifications, as the greater part of them cannot be ascribed to the tendency to seek ease of utterance. Max Müller thinks it necessary to go back to a time when many of the articulations were not yet sharply defined; and he appeals, in illustration, to the confusion children make between such sounds as *tat* and *cat;* and, what is still more in point, to the analogy presented by languages like the Polynesian. In the language of the Sandwich Islands, the two consonants, *k* and *t*, run into one another, 'and it seems impossible for a foreigner to say whether what he hears is

a guttural or a dental. The same word is written by Protestant missionaries with *k*, by French with *t*. It takes months of patient labour to teach a Hawaian youth the difference between *k* and *t*, *g* and *d*, *l* and *r*. . . . If colonies started to-morrow from the Hawaian islands, the same which took place thousands of years ago, when the Hindus, the Greeks, and Romans left their common home, would take place again. One colony would elaborate the indistinct, half-guttural, half-dental contact into a pure guttural; another, into a pure dental; a third, into a labial.' Much light is thrown on this question by those phonetic peculiarities—those deficiencies and predilections of articulation which characterise whole tribes and nations, as they often do individuals. They may have originated, perhaps, in the idiosyncrasies of individual ancestors (a lisping patriarch might produce a tribe of lispers, without their inheriting the physical defect which caused the lisp in him), or in a common habit of the organs of speech produced by external circumstances; but once established, they are very persistent and influential. The Mohawks, and several other American tribes, have no *p*, *b*, *m*, *f*, *v*, or *w*; they never articulate with their lips. In Chinese, there is no *d*; *r* is also wanting; and as the habit of the language requires a vowel after every consonant, the nearest approach they can make to the sound of *Christ* is *Ki-li-se-tu*. An analogous habit of articulation transforms the English word *gold* in the mouth of a Kafir into *i-go-li-de*.*

By observing the laws which we have above illustrated as regulating the interchange of sounds among the Indo-European languages, we can often identify words where there is little or no internal resemblance. Take Eng. *feather*. If there is a corresponding word in Greek or Latin, the root-consonants must, by Grimm's law, be *p-t*; which leads us to the root *pet*, signifying in both languages, to fly. From this the Greeks formed *pet-eron* (contracted into *pteron*), a wing, which there is no difficulty in admitting to be the same word as feather. It is hard to believe the same of the Lat. *penna*, until we learn that it once had the forms *pet-na* and *pes-na*, *penna* being the result of assimilation. Again, we undertake to identify French *larme* with Eng. *tear*. No one will dispute that *larme* is a corruption of Lat. *lacrima*; in fact, it can be followed through the successive stages of change. Now, we know that the Romans had a peculiarity of letting *d* in some positions degenerate into *l*. Nor is this unaccountable, when we consider that the contact of organs which produces *d*, differs from that which produces *l* chiefly in being more energetic; a slovenly *d* slides into *l*. Thus, the Greek name, Odysseus, became, in the mouths of the Romans, Ulysses; they said *odor* (a smell), but *oleo* (I smell); and, instead of *impedimentum*, *dedicare*, we sometimes find *impelimentum*, *delicare*. These and other instances would warrant us to conclude that *lacrima* was a corruption of *dacri-ma* (corresponding to Gr. *dakru*), even if we had not the express statement of Festus that *dacrima* was the older form. After this, there is no difficulty in recognising *dacri*, or *dakru*, as identical with Gothic *tagr*, Eng. *tear*.

The words which are most palpably and unmistakably the same throughout the Indo-European tongues are the numerals, the pronouns, and those expressive of family relations. The following table, taken from Professor Whitney's excellent volume on *Language and the Study of Language*, exhibits in a clear way some of these correspondences. Under each word is added its equivalent in two other languages, Arabic and Turkish, which, though existing in proximity to the Aryan languages, will be seen to have no affinity with them or with one another.

English.....	two.	three.	seven.	thou.	me.	mother.	brother.	daughter.
Germanic:								
Dutch.....	twee.	drie.	zeven.	....	mij.	moeder.	broeder.	dochter.
Icelandic.....	tvð.	thriu.	sið.	thu.	mik.	modhir.	brodhir.	dottir.
High-German..	zwei.	drei.	sieben.	du.	mich.	mutter.	bruder.	tochter.
Mœso-Gothic..	twa.	thri.	sibun.	thu.	mik.	....	brothar.	dauhtar.
Lithuanic.....	du.	tri.	septyni.	tu.	manen.	moter.	brolis.	dukter.
Slavonic.....	dwa.	tri.	sedmi.	tũ.	man.	mater.	brat.	dochy.
Celtic.....	dau.	tri.	secht.	tu.	me.	mathair.	brathair.	dear (??)
Latin.....	duo.	trẽs.	septem.	tu.	me.	mater.	frater.	....
Greek.....	dũo.	treis.	hepta.	sũ.	me.	meter.	phrater.	thugater.
Persian.....	dwa.	thri.	hapta.	tum.	me.	matar.	....	....
Sanscrit.....	dwa.	tri.	sapta.	twam.	me.	matar.	bhratar.	duhitar.
Arabic	ithn.	thalath.	sab.	anta.	ana.	umm.	akh.	bint.
Turkish.....	iki.	ũch.	yedi.	sen.	ben.	ana.	kardash.	kiz.

Such are a few specimens of the mass of evidence which goes to prove that the Indo-European languages are only later dialectic varieties of a single original tongue. No one of these languages—not even the Sanscrit, old as we know it to have been—can claim to be the parent of the others. The relation among them is that of sisters, daughters of one mother, which perished, as it were, in giving them birth. If we ask where the tribe or nation lived that spoke this parent tongue, we get little beyond conjectures for answer. Most of the speculations on this topic point to Central Asia, somewhere east of the Caspian, and north of the Hindu Kush. And, from the legendary traditions of the sacred books of the ancient Persians, there seem good grounds for believing that in that region—the ancient Bactria—the Indo-Persian branch of the family once lived together; that they there quarrelled, owing to religious

* These predilections and idiosyncrasies of articulation are strikingly exhibited in a New Zealand newspaper printed in parallel columns of English and Maori. The Maori version exhibits European proper names and words borrowed from English, transliterated as the natives pronounce them. The Maoris seem incapable of articulating *d*, *b*, *f*, *v*, *l*, or *s*, or of pronouncing any consonant without a vowel after it; so that in their mouths Donald Fraser becomes Tonore Pereiha; Stephen = Tepene; Martha = Maata; Locke = Raka; Jerusalem = Hiruharama; October = Oketopa; September = Hepetema; school = kura; horses = hoiho; bay = pei; courts = cooti.

differences, and that one section made their way across the Indus, to become the Sanscrit-speaking Hindus, while the other moved southwards, and settled in Persia.* But that the Indo-Persians had always lived in that northern region, or that the western members of the family migrated from thence, there is no direct evidence. One distinguished ethnologist, Dr Latham, believes the seat of the mother Aryan nation to have been Central Europe; but the probability seems to be in favour of the East.

The time of these migrations is equally unknown with the point of departure; they had taken place ages before the dawn of history.

But although left in darkness as to the when and where of the primitive Aryans, we are able, strange as it may seem, to speak with some confidence as to their state of civilisation. Where the same name for an object or notion is found used by the widely spread members of the family, it is justly inferred that that object or notion must have been familiar to them while yet resident together in the paternal home. It is in this way established, that among the primitive Aryans not only were the natural and primary family relations of father, mother, son, daughter, hallowed, but even the more conventional affinities of father-in-law, mother-in-law, sister-in-law; that to the organised family life there was superadded a state organisation with rulers or kings; that the ox and the cow constituted the chief riches and means of subsistence; and that houses and towns were built. In this mainly pastoral life, the more important of the primitive arts were known and exercised; fields were tilled; grain was raised and ground into meal; food was cooked and baked; cloth was woven and sewed into garments; and the use of the metals, even of iron, was known. The numbers as far as a hundred had been named, the decimal principle being followed. The name for a thousand had not come into requisition until after the dispersion, for it differs in the different Aryan tongues.

THE SEMITIC FAMILY.

The only other group of tongues among which a family relation has yet been satisfactorily made out, is the Semitic or Shemitic, so called from Shem, the son of Noah, who is represented in Genesis as the ancestor of the chief tribes that spoke those tongues. The Semitic tongues are divided into three classes: 1. The northern or Aramaic, spoken at one time over the region lying to the north of Palestine and Arabia as far as the Taurus range in Asia Minor, and extending in longitude from the Mediterranean to the Tigris. Eastern Aramaic, comprising the dialects of Assyria and Babylon, is sometimes called Chaldee; the western is known as Syriac. Aramaic was the common language of Palestine in the time of Christ, the Hebrew being then the sacred language. 2. The southern class, comprising Arabic, and the Amharic of Abyssinia, which has superseded the older allied Ethiopic. 3. The middle class, consisting of Hebrew, and the dialects spoken by the other inhabitants of Palestine, the chief of which was the Phœnician. This Semitic dialect had at one time an extensive area by means of the settlements of the Phœnicians at Carthage, and other places on the islands and coasts of the Mediterranean. With the exception of some remnants of Syriac, spoken by a few scattered Christian communities in Asia, and the Amharic of Abyssinia, Arabic is the only living representative of the Semitic tongues. From Arabia proper it has spread into Egypt and the whole of North Africa, and the vocabularies of modern Persian and Turkish are largely composed of Arabic words.

The inflection of the Semitic tongues is of a type quite distinct from that of the Aryan family, nor can any correspondences be found between the words of the two families beyond chance resemblances in sound. The cases of similarity that have been adduced are those of words directly borrowed from the Semitic, as camel from *gamal*, sapphire from *sappir*, or of onomatopoetic words, formed in imitation of the sound of the action, as *charat* = grate, *parak* = break. The attempt, on which so much learned labour was once bestowed, to trace Latin, Greek, and other words to a Hebrew origin, is now acknowledged by all competent philologists to be futile.

TYPES OF LANGUAGE.

Besides the division of languages into families bearing traces of a common origin—the genealogical classification—there is a division into three orders, as they may be called, depending upon a radical difference of structure. Speech, as the expression of thought, contains two elements: ideas or conceptions, which constitute the substance or material part; and the relations of these ideas to one another, which constitute the formal part; and the nature of a language depends upon the particular way in which the vocal expression of these two elements is combined. At the foundation of all words lie roots, or simple sounds expressive of meaning. Now, some languages, as the Chinese, use these roots in their naked form as words, the same syllable, according to its position, serving as noun, adjective, verb, &c.—*e.g. ta* means 'great,' 'greatness,' 'to be or to make great,' 'greatly,' or 'very.' The relational part of the thought, for the most part, gets no vocal expression; it is only indicated by position, as when *min*, people, and *li*, power, are simply put together (*min li*) to signify the people's power. Relations not readily indicated by position are expressed in a round-about way, by using additional significant words: thus, *tschung* (mass or multitude) *jin* (man) = men; *niu* (woman) *tsè* (child) = daughter; *ŷ min li* (employ people power) = with the people's power. Even in such cases, each root preserves its independence, and is felt to express its own radical meaning. Languages like the Chinese, whose development has been arrested at this rudimentary stage, are called *Monosyllabic* or *Isolating*.

The next stage of development is that of the *Agglutinate* languages, which are by far the most numerous, including the Turanian and American

* The region that forms the water-shed between the basin of the Sea of Aral and the streams that run eastward and southward has been only recently explored. It is not so much a mountain chain as a vast table-land of great elevation fringed with towering sierras, and is called the Pamir Steppe or Plateau. In the upper valleys that slope down from this great mountain mass are found isolated tribes strikingly different from the Tatar races all around them, and shewing what are believed to be affinities, both in physique and language, with the Aryan races.

groups. In these, the relational part of thought obtains prominent vocal expression by separate roots, joined or *glued* on to the significant roots as terminations. These terminations were originally themselves significant roots, and many of them are still used as separate significant words, although the greater part have sunk down to mere signs of cases and other relations. The compound expression thus formed never, however, attains perfect unity; the significant root always remains rigid, unobscured in its sense, and unchanged in form, and the termination is felt as something distinct from the body of the word.

Thus, the Finnish declension exhibits a structure of the most mechanical and transparent kind —*e. g. karhu*, bear; *karhu-n*, of the bear; *karhutta*, without bear; *karhu-sta*, out of the bear; and so on through fifteen cases. The insertion of the plural suffix, *i*, gives *karhu-i-n*, of the bears; *karhu-i-ta*, without bears; *karhu-i-sta*, out of the bears; &c. But this composite mechanical structure reaches its climax—remaining all the while perfectly transparent—in the Turkish verb. Thus, the root *sev* has the indefinite meaning of loving, and the inf. is *sev-mek*, to love; which then, by the insertion of certain suffixes, can take on as many as forty forms or voices—*e. g. sev-me-mek*, not to love; *sev-e-me-mek*, not to be able to love; *sev-dir-mek*, to cause to love; *sev-dir-ish-mek*, to cause one another to love; *sev-il-mek*, to be loved; *sev-il-e-me-mek*, not to be able to be loved; &c. Each of these forms, then, runs through a large round of tenses and moods, with their persons and numbers.

The languages of the American Indians are all of this agglutinating type, although they have also got the name Incorporative, or Intercalative, because they run a whole phrase or sentence into one word—*e. g. hoponi*, to wash; *hopocuni*, to wash hands; *hopoaduni*, to wash feet; *ninacaqua*, I (*ni*) eat (*qua*) flesh (*naca*). The Basque language partakes of this character. In building these compounds, it mostly happens that only fragments of the single words are used. Thus, in Mexican, *alt*, 'water;' *chichiltic*, 'red;' *tlacatl*, 'man;' and *chorea*, 'weep,' are clipped and fused into *achichillachocan*, which means, 'the place where people weep because the water is red.' Similarly, the Basque language makes *ilhun*, 'twilight,' out of *hill*, 'dead,' and *egun*, 'day;' and *belhaun*, 'the knee,' from *belhar*, 'front,' and *oin*, 'leg.'

It is only in the third or *Inflectional* stage that perfect unity of the two elements is attained. In the Aryan and Semitic tongues, which alone have reached this highest state of development, the significant root and the termination have become blended into one both in effect and form, and phonetic changes have for the most part obliterated the traces of composition. Yet no doubt is felt by philologists that the most highly organised of the inflecting or amalgamating languages began with the radical stage, and passed through the agglutinate. The analytic powers of comparative grammar have succeeded in tracing back the formal elements of the Aryan tongues to original independent words, agglutinated to other words to modify them. Of this we have given numerous examples when speaking of word-building. Against this theory it has been urged, that there is no historical instance of a language so changing its type, and passing from one stage to another. But a sufficient account of this phenomenon may be found in the different mental habits and political positions of the peoples (see Max Müller, *Lectures on the Science of Language*, First Series, page 316). Besides, the languages of the lower types do shew a tendency, under favourable circumstances, to produce grammatical forms of the higher kind. Even in Chinese, in some of its modern dialects, something like cases is to be seen; and Finnish and Turkish, in contact with the inflected languages of Europe, are making approaches to the inflectional type.

On the other hand, the inflectional languages had, before the earliest times of which we have any written monuments, entered on the reverse phase —the *analytic*. By the process of phonetic change and decay, the grammatical forms have been gradually becoming obliterated and losing their power, and their place has been supplied by separate words, in the shape of prepositions and auxiliary verbs.

No satisfactory classification of the monosyllabic and agglutinate languages has yet been made. This is owing partly to the nature of their structure, and partly to the circumstance that they have been less thoroughly studied. They may be arranged in groups having more or fewer points of similarity; but it has not been conclusively shewn with regard to any group that the members of it are genealogically related—that the features of resemblance are owing to a common parentage. The more cautious school of philologists object to the term 'Turanian Family,' which has been much used to comprise 'all languages spoken in Asia and Europe (including Oceania), and not included under the Aryan and Semitic families, with the exception of Chinese and its cognate dialects.' They would restrict the term Family to the two genealogical groups, the Aryan and the Semitic. Only in one other case, that of five of the so-called 'Turanian Family,' the Finnic, Samoiedic, Turkic, Mongolic, and Tungusic, would the evidence of family affinity seem to be strong; and even that is spoken of with hesitation. This group has been called the Alatyan group or family, from the name applied by the Tatars of Siberia to themselves. As a convenient way of designating the languages which are not Aryan and not Semitic, it has been proposed to call them Sporadic, *i.e.* scattered, or Allophylian, *i.e.* spoken by other different tribes (see Farrar's *Families of Speech*).

On the principles of classification above sketched, the chief languages of the earth may be thus arranged:

I. *Monosyllabic or Isolating.*—1. Chinese, the typical language of this order. 2. Tibetan, which shews some beginnings of grammatical forms. 3. The languages of the Eastern Peninsula—Siamese, Anamese, Burman. Japanese and the language of Corea are doubtful.

II. *Agglutinate.*—1. The Alatyan group above described. 2. The Dravidian languages spoken in the south of Hindustan (Canarese, Tamul, Telugu, &c.). 3. North Asiatic (Kamtchatdales, Kuriles, &c.). 4. Malayo-Polynesian group. 5. African Languages. Some of the languages of Africa are allied to the Semitic family, and were introduced by immigration, such as the dialect of Tigré in Abyssinia and the Arabic dialects spoken by the

Mohammedan population of the coasts, and which have even penetrated deep into the interior. How far the Berber dialects are of Semitic character, is a disputed question; and the same is the case with the language of the Gallas in Abyssinia. Little has as yet been done in investigating and classifying the native Agglutinate languages of Africa, which have been designated by the common name of Hamitic. The ancient Egyptian, from which the modern Coptic is derived, would seem never to have got beyond the isolating stage. Some of the languages adjoining Egypt are thought to be allied to the Coptic. The Negro languages, properly so called, of the Sudan, and of the west coast from the Senegal to the Niger, are exceedingly numerous and widely diverse. The languages to the south of the equator are markedly different from those to the north. They fall, according to some, into two great families, the Congo family on the west, and the Kafir family on the east. The Hottentot language is distinct from both. A valuable contribution to the study of part of the field is to be found in Bleek's *Comparative Grammar of the South African Languages* (1862). 6. The Languages of the American Indians. The native languages of the New World are numbered by many hundreds, all differing totally in their vocabulary, but still agreeing in the peculiar grammatical structure which has given the name of Incorporative. Their area is fast contracting, and they seem destined to disappear. 7. The Basque or Euscara.

III. *Inflectional.*—This order consists of two families, the Aryan and the Semitic, so distinct in their grammatical framework that it is impossible to imagine a language of the one family derived from one of the other. It is the peoples speaking these languages that have been the leaders of civilisation within the historic period (see pp. 25–28).

ARE ALL LANGUAGES SPRUNG FROM ONE?

Connected with these radical differences of type, is one of the higher and more speculative problems of the science—the question as to the common origin of all languages. The inherent and apparently ineffaceable difference of structure in the three orders above described, as well as the absence of all sure marks of genealogical affinity even between the two families of the inflectional type, the Aryan and the Semitic, are considered by some as insuperable objections to the theory of a common origin. But although it may be fruitless to look for extensive identifications of the roots and grammatical forms of the Aryan tongues, even in the oldest forms to which we can trace them, with those of the Semitic, still more with Chinese or Turkish elements; it seems rash and unscientific to affirm that, going back to the radical stage, the development of all could not have begun from a common stock of monosyllabic roots. The wonderful transformations exhibited by language in the course of its known history, seem sufficient ground for maintaining the *possibility* of a common origin. On the other hand, the nature of the case forbids all hope of ever being able to *prove* it; for the coincidences that occur (*e. g.* Chinese *fu*, Tibetan *pha*, Lat. and Gr. *pa*-ter, Eng. *fa*-ther; Chin. *mu*, Egyp. *mu*, Lat. and Gr. *ma*-ter, Eng. *mo*-ther), even though they were much more numerous than they are, might well arise from the mind and vocal organs of man being everywhere essentially the same.

MIXTURES OF LANGUAGES AND RACES.

On counting the words in one of our larger English dictionaries, it is stated that about 13,000 are of Teutonic origin, while 29,000 can be traced either mediately or immediately to Latin.* It might seem from this that English ought to be classed along with French, Italian, and Spanish, as one of the Neo-Latin or Romanic tongues. But if we take a page of an English book and count the words as they occur, an overwhelming majority will be found to be Teutonic. Thus there are only three Latin words in the Lord's Prayer. All the words of most frequent occurrence—the articles, pronouns, prepositions, and auxiliary verbs, together with the names of the most familiar and essential conceptions, without which there could be no communication—are all, or nearly all, from the Anglo-Saxon. Its grammatical apparatus, too, is purely of the same origin. From whatever source they may have come, when once adopted into English, a noun forms its plural in *s*, and its possessive in *'s*; a verb has its past tense and past participle in *d*; and an adjective is compared by *er* and *est*. The life-blood of English is thus Teutonic, and this determines its relationship. There is no such thing as a mixed idiom. Whenever two languages come in conflict, by the peoples speaking them being mixed, they may exist distinct side by side for a time, but they always end by one giving way to the other, being either altogether extruded, or in part absorbed and assimilated by the other.

It is not always the tongue of the more numerous people that carries the day. The Roman armies and officials that conquered and ruled Gaul, were few compared with the native inhabitants; yet the subject Celts had in a few generations entirely given up their own tongue, and taken to speaking Latin as they best could. They felt the superiority of the Romans in culture, and adopted their language as the most direct expression and vehicle of that culture. It was the same with the handful of Sanscrit-speaking Aryans, who, unknown centuries before the Christian era, migrated from Bactria into northern Hindustan, and imbued the millions of its previous inhabitants with their language and religion. On the other hand, the Franks and other Germanic tribes who subdued Gaul in the 5th century A.D. were at least as numerous as the Roman conquerors had been; but this time, the language of the subject people, the Romanised Gauls, was the cultured language; it was, too, the language of the new religion, to which the heathen Germans soon submitted; and thus the dominant people dropped their own language, and adopted that of their subjects, infusing into it, however, a good many Teutonic words, still recognisable in modern French (*e. g. guerre* = Eng. war, *marche* = Goth. *mark*, a boundary). The disappearance of

* Other enumerations make the proportion of the Teutonic element greater than that stated in the text. In fact, if we set aside the more strictly technical terms that occur only in books of science and art, and look at the vocabulary of general literature, the Teutonic words are even more numerous than those of Latin origin.

the Scandinavian tongue of the Northmen who settled in the north of France in the beginning of the tenth century, was still more rapid and signal. When the descendants of those Northmen conquered England, only a century and a half afterwards, they were thorough Frenchmen in tongue. This conquest gave rise to another struggle between a Teutonic tongue and the Neo-Latin. In this case, the two were in some respects on an equal footing. The Anglo-Saxon was a cultivated literary language as well as the Norman-French; and both peoples were Christian, so that neither had to adopt the religion of the other. The struggle was therefore long, and the result doubtful. The French had the advantage of being the language of the ruling class and of the courts of law; and if, in addition, the subject people had been heathens, and had received their religion from their conquerors, the inhabitants of Britain would, in all probability, have now been speaking a French dialect. As it was, the Norman-French had to yield to the weight of numbers, and be absorbed and assimilated by the Anglo-Saxon. It had to content itself with furnishing about half the vocabulary of the common language now spoken by the united peoples, while its rival furnished the rest, and the mould in which the whole was cast, the grammar. In the effort of assimilation, however, the Anglo-Saxon grammatical forms were dislocated and shattered, and now exist only in a mutilated form, as compared with the German dialects, which have not come through a like crisis.

ROOTS.

Root, in Philology, is that part which is common to a group of allied words—the germ out of which they have all sprung. It is arrived at by taking away the formative parts—the suffixes and affixes, and reversing any change that their presence may have caused. Thus, in co-in-*cid*-ence, the root-syllable is *cid*, the primary form of which in Latin is *cad*, to fall. It is seldom that this analysis can be successfully performed with only one language; in order to get at the true root, the corresponding words in all the languages of the same family must be compared. Thus, in the Eng. words *story*, *history*, *historical*, *historically*, *histor* would seem to be the root; but by comparing the Greek with the Latin and Sanscrit, we arrive at a syllable *vid*, meaning to see or know, of which the Eng. (to) *wit* (wist) is only another form. And even then we are not sure that we have arrived at the original and most simple form. Thus, Eng. *yoke*, Lat. *jugum*, come from the syllable *jug*, to join, seen in Lat. *ju(n)go*, Gr. *zeugo*; and this might be rested in as the root, were there not a simpler form, *ju*, preserved in Sanscrit, and having the meaning of mingling or being together; this, which may be taken as the primary root, gives rise to the two secondary roots or modifications, *jug*, to join, and *yudh*, to fight (*i. e.* to join battle).

The roots of the Aryan languages are always monosyllabic, as *i*, to go; *ga*, to go; *ad*, to eat; *vak*, to speak; *star*, to strew. They are divisible into two classes, the one expressing some action or general property, as in the instances now given; the other indicating relative position, as *ma*, here or me; *ta*, there or that. The one class are called *predicative* roots; the other, *pronominal*. They all expressed primarily some physical notion or relation palpable to the senses; but from these the transition to the impalpable conceptions of the mind is natural and obvious; thus, *vid*, 'to see,' served also for 'to know.' The notion expressed by a root-word is always of a very general kind; but by a variety of expedients, such as lengthening the vowel, reduplication of the syllable, prefixing and affixing letters and syllables (many of which at least are evidently pronominal roots), and composition with other predicative roots, one germ gives rise to a whole group of words expressive of the specific applications of the generic idea; *e. g.* from the root *spac* or *spec* (in Gr. *skep*), to look, have sprung a numerous family of words in the English and other kindred tongues; *spy*, *despise* (to look down upon), *spite* (through old Fr. *despit*), *respite*, *respectable*, *suspicion*, *prospect*, *inspect*, *auspices*, *speculum*, *species* (*i. e.* the appearance or individual form, as opposed to the kind or genus), *spices*, &c. From the root (Sans) *vid*, (Gr.) *id* or *eid*, (Lat.) *vid*, (Teut.) *wit* or *wis*, there are upwards of a hundred derivatives in the English language alone.

It requires but a few germs to produce, by the processes above described, the most copious vocabulary. The 50,000 words of the Chinese dictionary are formed from 450 roots; those of Hebrew and of Sanscrit are reckoned at about 500; and there are probably not many more in English.

ORIGIN OF LANGUAGE.

Having seen how words grow or are built up, and traced them back to their roots, a still further question presents itself: how, namely, these roots, this raw material of language, came first into existence? Although this question is purely speculative, it is more attractive to most minds than the more matter-of-fact inquiries we have been considering. It was, in fact, the question with which all inquiries into the nature of language began; and in recent years a whole crop of treatises on it, by the most distinguished philologists of the day, have made their appearance. As was inevitable in a matter of the kind, diverse views are advocated; we can only afford to state, briefly, and with as little controversy as possible, the view that seems to us the most reasonable.

Man speaks because he thinks and feels, and, being a social animal, has a desire to communicate his thoughts and feelings to his fellows. The impulse to utterance of some kind, either of gesture or vocal sound, seems instinctive; and a sound uttered repeatedly in connection with a particular object or impression, would become by association a sign or symbol of that object or impression. Even the lower animals, some of them at least, seem able to go a little way in this direction. But man alone possesses the faculty of analysis and abstraction necessary to convert such marks of individual things into symbols of more generalised conceptions—to make them words instead of mere animal sounds.

The necessity of words to think in is much insisted on by speculators on this subject, as being the motive-power in the generation of language; and no doubt it is true that, without language, thought could advance but little, if at all, beyond what is manifested by the brutes. But when they argue as if this necessity of having his ideas objectively depicted, in order to exercise his own

reason, would impel an individual man to construct a language for his own use, they make the unwarranted assumption that, under any circumstances, even though he grew up from infancy in solitude, the thinking powers of a human being must of necessity develop themselves. The necessarily few facts that bear on the case look the other way. Kaspar Hauser, the mysterious German youth, who had been kept in seclusion from childhood to the age of seventeen, instead of elaborating a system of symbols of thought for himself, had forgotten what he had once possessed; his faculties of thought and of speech seem to have been simultaneously arrested. Observation rather favours the opinion, that man in solitude—if he could exist in solitude—would be as mute as the lower animals. The social nature of man helped to give birth to the germs of speech, no less than his rational nature. An instinctive desire to give a sensible sign of his impressions to his fellows, was perhaps the primary impulse; the aid thus given to his own thinking powers, a secondary result.

The main question in this speculation is—what determined particular vocal sounds to be first uttered in connection with particular objects and ideas? One view is, that the conscious nature of man responded to the impressions made upon it, as a solid body does when struck; and thus produced a number of 'phonetic types,' which formed the roots of language. This is known as the 'ding-dong' theory, and is unsupported by any facts or positive arguments. The analogy of the bell does not hold; unless we could find one that gave out a different note for every object it was struck with. Any mysterious inherent correspondence between any one conception of the mind and a particular articulate sound is out of the question. As little can we think of the choice of an audible mark being altogether arbitrary or fortuitous. The sound uttered must have been suggested by something connected with the object or action itself; and by what more naturally than by the inarticulate sound which the object or action emits?

Every language contains numerous words formed on this imitative principle, such as *cuckoo*, Lat. *cucu*(lus); *pee-wit*, Dutch *kie-wit; cock; clash; rap; tap; quack; rumble; whizz; clang*. Such words are called onomatopœian or onomatopoetic, from the Greek compound *onomatopoieia*, signifying, literally, the invention of names, and used by philologists to denote the formation of words in imitation of natural sounds. The opinion that all language began in this way, is known as the 'Onomatopoetic Theory.'

The chief objection to this theory is, that if the first words were merely reproductions of natural sounds, the same natural objects would have had the same names all the world over. To which it is answered, that the mind in its first efforts at naming did not seek an exact reproduction of the sound, but a suggestive imitation; primitive words were not echoes, but 'artistic representations.' Now, the sounds of nature are not simple, but composite. Like other concrete phenomena, they present a variety of aspects; and according as one or another aspect seemed the most prominent to the observer, a different vocal sound would suggest itself as the appropriate symbol. Thus, when Professor Max Müller argues (*Science of Language*, London, 1861), that if the 'bow-wow' theory, as he nicknames it, were true, men would have everywhere spoken of a *moo*, as is done in the nursery, and not of a *cow;* it seems a valid answer to say, that the Indian *gu*, the Teut. *kuh* (Eng. *cow*), and the Græco-Lat. *bou-*, are really as suggestive imitations of the animal's actual voice as *moo*. To take a more striking instance: few words differ more in sound and aspect than the Eng. *thunder* (Ger. *donner*, Lat. *tonitru*, Fr. *tonnère*) does from the Mexican name for the same thing, *tlatlatnitzel;* and yet it would be difficult to say which is the more suggestive of the natural sound.

It is no doubt true that the great bulk of names are derived from roots having a general predicative power; but this by no means excludes the principle of onomatopœia. Thus, to take one of those instances adduced by Professor Max Müller himself, that of *raven* or *crow* (Sans. *kârava*, Lat. *corvus*, Gr. *korônê*); this is derived from the root *ru* or *kru*, which means to cry or call, and the bird was called a kârava, or crow, not in imitation of his voice, but because he was 'a shouter, a caller, a crier. The name might have been applied to many birds, but it became the traditional and recognised name of the crow.' But how came the articulation *ru* or *kru* to be chosen to convey the general meaning of crying or calling? May we not suppose that it was suggested by the voice of birds of the crow kind, whose notes are most markedly cries or calls to their fellows, as distinguished from singing? Once adopted in this particular case, it would naturally be extended to any kind of cry or call, from the harshest to the softest.

In the case of ideas unconnected with any natural sound, names would readily be suggested in many cases by analogies, real or fancied, with things that were attended by sounds (*e. g.* a *loud* colour).

The imitative theory by no means excludes the view that words may grow out of those natural involuntary exclamations—those *ahs* and *ohs* and *poohs*—which seem produced by a reflex action of the emotions on the outward organs. It is highly probable that the natural organic expression of disgust, *ugh!* gave rise to Eng. *ugly*, Old Eng. *ugsome*. Eng. *woe*, is clearly cognate with the Latin and Greek interjections *vae* and *ouai*.

But although language may have had its first beginnings in this way, it is hopeless to look for traces of onomatopœia in the great bulk of the words of any modern tongue. We have seen how a general name for 'calling' might arise from an imitation of the crow's voice. The operation of this principle, and that of phonetic change, which makes it impossible to say what the very earliest form of a root may have been, are sufficient to account for the absence of such traces, except in comparatively rare instances.

CONSTITUTION OF SOCIETY—GOVERNMENT.

MAN is a gregarious, or, as Aristotle said, a political animal; that is, he loves to herd with his fellows—to live in society. There are, indeed, instances of men fleeing society, and spending existence in solitude, but these unhappily disposed individuals form rare exceptions to the general rule.

FAMILY RELATIONSHIP—MARRIAGE.

The origin of civilisation has recently been the object of earnest investigation by numerous inquirers, who seem to have made it clear that in the lowest stages of savage life the family relation does not exist. The same authorities hold that all branches of the human race have passed through this lowest stage. Be this as it may, the formation of the family is the first step toward the formation of the civilised community. A family consists of husband, wife, children. This is not an accidental or arbitrary arrangement. The family originates in the necessities of our nature, and springs up inevitably wherever that nature develops itself. Accordingly, all attempts to encroach on the obligations or the privileges of the family are simply attacks on civilisation. In antiquity, slaves were regarded by their masters, and regarded themselves, as members of the family, and it is a very poor account of Christianity if a less kindly and intimate relation prevails between masters and servants in modern times. The relation of master and servant, by whatever name we choose to call it, is necessary for the purposes of civilisation, and is founded on nature, just as much as the relation between parents and children, or husbands and wives. If God has bestowed a progressive nature on man, he must have intended that some men should, by the aid of others, be freed from domestic occupations which, by absorbing their time, would prevent them from devoting themselves to those pursuits on which progress depends. The relation between master and servant is one of mutual obligation. It imposes duties on the former as well as on the latter, and it is a very low view of it, particularly within the domestic circle, to regard it as a mere pecuniary arrangement.

The fundamental object of the family compact is a due provision for the affections, and for the nurture and education of rational beings, and free and orderly citizens. This is insured by the matrimonial engagement—a solemn covenant between a man and a woman to attach themselves to each other through all the contingencies of life, till the death of either dissolve the union. In every nation removed from barbarism, marriage is a recognised ordinance, guarded by law and custom. In some eastern countries, polygamy, or the marriage of a man with many wives, has long been tolerated; but that relations of this kind are unnatural, is testified by the fact, that polygamy is degrading to the female sex, unfavourable to the rearing of children, and that it is inconsistent with the numerical equality of the sexes. In all countries in which polygamy is tolerated, woman occupies a degraded position, and society is rude and unexpansive in its character. Nature has designed woman to be the equal of man as a moral and intellectual being; and when she confines herself to the exercise of her proper duties as a wife and mother, she is placed in a favourable position as regards her own happiness and the happiness of her husband. And all this can only be realised by monogamy—the marriage of a man with but one wife. We have deemed it necessary to state thus unequivocally at the outset what appear to be the primary principles of human relationship; for there are not wanting those who would endeavour to rear systems of society in which the family compact is to have no place, and parental care is to be absolved from its duties—a dream which the common-sense of mankind will ever reject as visionary.

Society, as has been shewn, is necessarily composed of distinct families. The manner, however, in which these families should associate with respect to each other, is a question which has been often agitated, and here deserves some degree of notice. The true explanation, we think, lies in an appeal to nature.

It would appear that from the beginning of the world every nation has consisted of a certain number of families, and that each family, in its general circumstances, has been independent of others. Families, in the patriarchal times, may have been less or more dependent on, or connected with the head of a tribe; but we nowhere read of families yielding up their individual identity, and living in private community with each other. In all the higher races of mankind, at anyrate, each family has always had its own house, its own joys, sorrows, hopes, fears, and historical traditions. Each father of a family, a sovereign within his own domain, has been left to govern his little realm, and to undertake the obligation of finding his wife, children, and domestics in the means of daily subsistence.

A practice so universal cannot be supposed to be a violation of either nature or convenience. It has sprung up from the wants and feelings of mankind, and may be said to be a spontaneous result of unalterable circumstances. Tracing it to its true source in the mental and physical constitution, we find that it affords the widest scope for personal enterprise, perseverance, and other useful emotions. It is an error to suppose that it is selfish in principle, because it is the form of existence which best ministers to the good of the whole state, and even the whole community of mankind, as well as to that of each separate household.

In opposition to the exclusiveness inseparable from the family relations, it is urged that, by leaving society to spontaneous arrangement, there comes a time when each nation is consumed by its internal disorders. The clever, the industrious,

and the persevering become wealthy; vast numbers, either from lack of capacity or opportunity, sink into a state of extreme indigence; and a number become criminals, and prey on the rest. There is truth in this severe statement of facts; for in every nation there are rich and poor, good and bad. Nevertheless, such a mingled tissue is an inevitable consequence, not of the structure of society, but of human nature, on which society is founded. We must seek a remedy in the improvement of man's moral and intellectual constitution, not in subverting the whole organisation of society, and attempting to reunite it on fantastic principles at variance with nature. Nor should any alarm be entertained respecting the lamentable evils which seem to be inseparable from society as it at present exists. These evils, and they are great, will never utterly disappear, because human perfection is unattainable, but they will in time be much modified. In every region, society goes through a period of barbarism, during which many cruelties are perpetrated and privations endured; after this, as men become enlightened, the worst kind of evils gradually disappear, and others of lesser severity remain. At present, society in Great Britain and most civilised nations is in a transition state from barbarism to enlightenment. Within even the recollection of men now living, the steps in advance have been considerable, and every year adds to the number of both physical and social meliorations. Whatever may be the fate of individuals or nations who, from sensuality, vanity, and other forms of selfishness, neglect their duties to others and to themselves, there can be no reasonable doubt that society, as an institution of God and nature, will continue to improve, and that much that is now matter for regret and reproach will be amended or removed.

UTOPIAN COMMUNITIES.

Ingenious men have at different times conceived to themselves the idea of a state of society, or republic, in which vice, sorrow, indolence, poverty, and other evils shall either be unknown, or at least reduced to a scarcely perceptible amount. None of these theories has gained so much celebrity as that announced by Sir Thomas More, under the name of Utopia (from a Greek word signifying *no place*). The author was Chancellor of England in the reign of Henry VIII. and was a man of the highest and most honourable character. His work was written in Latin, and the elegance with which he propounded his apparently benevolent but really satirical scheme, has made the name of his imaginary republic to be adopted in our language as a current expression to denote any plan of social economy which is founded on views of human nature too favourable to be practicable.

The work was written not long after the discovery of America, near which continent, south of the line, the island of Utopia is supposed to lie. The story of discovering this island is represented as being told by a venerable traveller, whom the author met at Antwerp.

The *Utopia* of Sir Thomas More was suggested to him, no doubt, by the reading of Plato's *Republic*, which has been the parent of all such proposals. In later times, schemes not very dissimilar have been seriously proposed by benevolent speculators, and partly carried into practice, though with no prospect of permanent continuance. At the head of this class of projectors may be mentioned Robert Owen and Fourier, the latter a religious enthusiast in France. Generally stated, these plans consist in causing fifty or a hundred families, as the case may be, to live in one community, in which all are to labour for the general behoof, and all to be supported on equal terms out of the common stock. Individual property is to be unknown; all personal feelings are to be sunk in that of the community. How it is proposed to meet differences as to the education of children, religious belief, and other important matters—how evil passions are to be extinguished, or what is to be the consequence of the idle preying on the industrious, has never been satisfactorily explained. According to Fourier, we believe, members seriously transgressing the rules are to be expelled the community; which amounts to a giving up of the whole principle. If the community cannot reclaim and retain its evil-disposed members, the scheme is confessedly worthless. Defective as ordinary society is allowed to be, it does not eject the most vicious or the most improvident of its members—for the criminal it finds prisons and penitentiaries, and to the poor and starving it offers workhouses; even the most dissolute can pick up an alms. The fundamental error of all such schemes consists in the notion that society is the result of human ingenuity, and admits of being reconstructed and remodelled at will; whereas it rests upon natural laws, and results from individual characteristics, which are as unchangeable in their action as those which govern growth and decay in the vegetable world. It is no more possible to make all men equally good, and wise, and happy, than to make all trees grow equally straight or equally tall. And out of the natural inequalities and diversities of gifts and endowments, spring the inequalities of means, and the diversities of position—in a word, the whole organic structure of society as it exists, and, with such improvements as advancing civilisation may bring along with it, always must exist. By observing its laws, we may improve the condition of its individual members, as we may improve the plants in our gardens by observing the character of the soil, and the effect of the means which we employ to enrich it. But we can no more change their individual characteristics, or obviate the consequences and relations which naturally result from their peculiarities, than we can convert onions into apples, or make plants grow with their roots in the air.

PATRIARCHAL SOCIETY—CLANSHIP.

The patriarchal condition of society has prevailed in Arabia and other eastern countries from the most remote periods of history. It is the most simple kind of social union. A patriarch, so called from a word signifying father or head of a family, is the head or governor of a tribe, who obey his orders, and depend in a great measure on his judgment. Generally, the office of patriarch is hereditary, but it is also sometimes elective, though very generally in the same family. The most distinguished of the ancient patriarchs was Abraham, the great progenitor of the Hebrew nation, who was originally a dweller in Arabia.

The leaders of tribes in these pastoral regions are now known by the title of *Sheiks*—the word sheik in Arabic signifying the elder or eldest.

In this rudimentary state of society, the tribe has usually no fixed residence, but wanders from place to place in company with its flocks and herds, in quest of pasture, or for the sake of hunting wild animals. In making their long and toilsome journeys through the wilderness, the families and tents are carried on the backs of camels. From leading this wandering life, the members of these tribes are called *Nomades;* or are said to be *nomadic* in their habits, from a Greek word signifying pastoral.

From the accounts given of the patriarchal ages in the Bible, a much more favourable idea is formed of nomadic life than a close inspection is found to warrant. Carried away with pleasing fancies respecting pastoral simplicity and freedom from the cares of civilisation, we are apt to forget that human passions are the same in all ages and countries, and that every condition of life has its own peculiar difficulties and vexations. The truth seems to be, that this roving, haphazard mode of existence is full of miseries, and that force is the only law. Mr Stephens, an American traveller, who journeyed through Arabia Petræa, under the hired protection of a number of Bedouins, headed by their sheik, thus destroys the gloss which had been thrown over the nomadic social system:

'One by one I had seen the many illusions of my waking dreams fade away; the gorgeous pictures of oriental scenes melt into nothing; but I had still clung to the primitive simplicity and purity of the children of the desert, their temperance and abstinence, their contented poverty and contempt for luxuries, as approaching the true nobility of man's nature, and sustaining the poetry of the "land of the East." But my last dream was broken; and I never saw among the wanderers of the desert any traits of character, or any habits of life, which did not make me prize and value more the privileges of civilisation. I had been more than a month alone with the Bedouins; and to say nothing of their manners—excluding women from all companionship; dipping their fingers up to the knuckles in the same dish; eating sheep's insides; and sleeping under tents crawling with vermin, engendered by their filthy habits—their temperance and frugality are from necessity, not from choice; for in their nature they are gluttonous, and will eat at any time till they are gorged of whatever they can get, and then lie down and sleep like brutes. I have sometimes amused myself with trying the variety of their appetites, and I never knew them refuse anything that could be eaten. Their stomach was literally their god, and the only chance of doing anything with them was by first making to it a grateful offering; instead of scorning luxuries, they would eat sugar as boys do sugar-candy; and I am very sure if they could have got pound-cake, they would never have eaten their own coarse bread.

'One might expect to find these children of nature free from the reproach of civilised life—the love of gold. But, fellow-citizens and fellow-worshippers of Mammon, hold up your heads! this reproach must not be confined to you. It would have been a pleasing thing to me to find among the Arabs of the desert a slight similarity of taste and pursuits with the denizens of my native city; and in the early developments of a thirst for acquisition, I would have hailed the embryo spirit which might one day lead to stock and exchange boards, and laying out city-lots around the base of Mount Sinai or the excavated city of Petra. But the savage was already far beyond the civilised man in his appetite for gold; and though brought up in a school of hungry and thirsty disciples, and knowing many in my native city who regard it as the one thing needful, I blush for myself, for my city, and for them, when I say that I never saw one among them who could be compared with the Bedouin; I never saw anything like the expression of face with which a Bedouin looks upon silver or gold. When he asks for bucksheesh, and receives the glittering metal, his eyes sparkle with wild delight, his fingers clutch it with eager rapacity, and he skulks away like the miser, to count it over alone, and conceal it from all other eyes.'

The same species of patriarchal society prevails, as is well known, among the tribes of North America; each tribe being governed by its chief, an arrangement which does not prevent it from being exposed to all the calamities of a state of untutored nature.

Out of the patriarchal condition of society in the East, sprung the system of clanship, long prevalent among Celtic nations after they had ceased to be nomadic. The word *clan* signifies family, and is applied to a tribe claiming to be descended from one head; the lineal descendant of which is the chief. All the members of the clan consider him as a common father and protector, to whom they owe an implicit obedience. This form of society was brought into Western Europe by the Celts in exceedingly early times, and disappeared slowly before the encroachments of the Teutonic races. The last of its strongholds were the Highlands of Scotland, where it was finally abolished by law in 1748, and where it is now only known as matter of tradition or private feeling. The error of the patriarchal system, in point of principle, consists in the fact, that it relies on the paternal element in the social relations, to the exclusion of the fraternal. It thus prevents the development of individual character, and the formation of separate households. In this respect it is the antithesis of the democratic system, which recognises the fraternal to the exclusion of the paternal element, and thus, whilst stimulating individuality, breaks up the family, annihilates authority, silences tradition, and finally tends to destroy the historical character of a people. The patriarchal system is unprogressive, but its relation to barbarism seems accidental; and it cannot be shewn, in principle, to be retrogressive, like the systems which, resting on the supremacy of numbers, subject the higher to the lower social influences. All civilised nations have arisen out of a modification of the paternal system, but history as yet affords no example of a nation which has been held together by means of what is called 'fraternity.' It is only in subordination to the paternal that the fraternal bond retains its coherence, and becomes operative as a social force. It is from the relations of the family that we learn our relations as citizens of the state, and the first and most important family relation is that of parent and child.

SLAVERY.

That every human being possesses, as against every other human being, a free and inalienable right of property in his own person, seems an undeniable proposition; and yet it is one which even till this day is by no means universally recognised. In certain countries, there are individuals—men, women, children—who are not proprietors of themselves; they are bought and sold—treated as chattels; and they possess no civil rights whatsoever. A person in such circumstances is called a *slave*—a word of modern origin, supposed to be derived from the Slavi or Slavonians, whom the Venetian merchant-state had the cruelty to sell into bondage.

Slavery, in one form or other, has existed in the world from the most remote period of history. It existed, as we know, among the patriarchs. Joseph was sold by his brethren to a party of Midianite merchants, who carried him to Egypt, and there sold him to Potiphar (Genesis xxxvii.). A grievous famine having occurred in Egypt, the people, after disposing of all their property in exchange for corn, came to Joseph and offered their own bodies and their lands for food. Joseph complied with their request. 'Behold, I have bought you this day and your land for Pharaoh' (Genesis xlvii. 23). These occurrences alone, mentioned without comment, shew that selling and buying human beings was customary in those early times. From other parts of the Scriptures, we learn that a state of bondage, which was nearly equivalent to modern slavery, was a recognised institution among the Jews. So also did slavery exist among the ancient pagan nations—the Phœnicians, the Greeks, the Romans.

Nothing is more certain than that, in all countries in ancient times, there was a mass of the population in a state of compulsory and perpetual servitude. Even in what are termed the freest states of antiquity, a large proportion of the people were slaves, and possessed no civil rights. At the very time when Athens is spoken of as the model republic of antiquity, it contained 400,000 slaves, and only 20,000 freemen. The practice of slavery arose out of the selfishness of barbarism, and did not appear to its perpetrators either sinful or unjust. Debtors were seized, and, in liquidation of petty claims, sold like ordinary property by their ruthless creditors. Gamblers, having lost everything, staked their persons as a last chance; and being unsuccessful, became the bondsmen of the winner. Men, for their crimes, are still deprived of liberty, but in ancient times they were publicly sold into bondage. In cases of famine, parents disposed of their children, to relieve their own wants. And lastly came war, the scourge of mankind, and the fruitful cause of slavery in all ancient nations. 'It was a law established from time immemorial among the states of antiquity,' says a Greek author, 'to oblige those to undergo the severities of servitude whom victory had thrown into their hands.' There was an exception, however, in the case of civil war, the prisoners taken in which, like all prisoners of war originally, were not made slaves, but generally massacred. Besides the regular wars between nation and nation, it sometimes happened that a vagrant population overran an adjoining country, and made the peaceful and dispossessed inhabitants their slaves. Thus, the Spartans were served by a race of hereditary bondsmen, the old inhabitants of the district, called Helots—a term afterwards used by the Romans to designate men in a servile condition. The unfortunate Helots of Sparta occasionally rose in rebellion against their masters, and attempted to gain their liberty; but these efforts were always suppressed with merciless slaughter.

As Christianity spread over Europe, its beneficent influences modified slavery; and during the middle ages, the institution took the form of *serfdom*. The children born on an estate remained the *thralls* or bondsmen of the proprietor of the soil, and were bought and sold along with it, but could not legally be removed. In England and Scotland, the greater portion of the peasantry were serfs, or, in strict law-phrase, *ascripti glebæ*—that is, attached to the soil. Their masters retained them in perpetual servitude, fed them and cared for them, punished them for faults, and in some instances put metal collars round their necks, inscribed with their names and the names of their owners. This species of slavery disappeared in the progress of civilisation without direct legislative interference; it being, in reality, a greater burden to the land-proprietors than to their servants. The institution prevailed in Prussia till the beneficent legislation of Stein, and in Russia till the imperial decree of 1861, which came into full operation in 1863.

As is well known, slavery, in its more rigorous forms, is banished from every European nation except Turkey. In some parts of Asia and Africa, it exists in its original force, and having, as regards Negroes, been transferred to America, it flourished even in many of the southern states of the union up to the period of the late war, of which its abolition, whether it was the object or not, was certainly the result. Whether the inferior races of mankind, if such there be, will succeed in availing themselves of the liberty which has almost everywhere been bestowed on them, is a problem which time and experience only can solve. But their right to make the experiment cannot be questioned.

INDIVIDUAL RESPONSIBILITY—CIVIL SOCIETY.

Civil society is constructed on a system of individual efforts and interests. Each person is expected, so far as he is able, to act an independent part, controlled only by law and usage. While every one is free, therefore, he is at the same time bound to contribute to the maintenance of the society of which he forms a part, to give obedience to all existing laws, and respect to all properly constituted authorities. In consequence of the general freedom which every one enjoys, and in contradistinction to so-called *socialist* communities, society is said to be founded on the *competitive* principle. No one being interfered with, all are left to compete with each other in industrial enterprise. This may, and does, have the effect of causing a great disparity of condition—men of commanding abilities, steadiness, and perseverance usually attaining distinction and wealth, while those of weaker capacity, or who are less fortunate, lapse into poverty. Such is the arrangement of nature, and however mysterious or sad it may appear to us in individual cases, it is not difficult to see that, all things considered, freedom

of individual enterprise is most advantageous on the whole, and must therefore be carefully preserved as the basis of civil society. By holding out a premium for diligence, it induces mental culture and exercise, and affords all an equal opportunity of distinguishing themselves. It likewise ought to point out the duty of establishing systems of universal education, by which we should be assured that every one at least possessed the elements of instruction and opportunities of self-advancement. With respect to those who, from absolute incapacity, and other unavoidable circumstances, become poor, it is now a generally settled principle that they have a claim in law, as well as on principles of humanity, for support from their more fortunate fellow-creatures.

The organisation of civil society, though possessing a general resemblance, differs in a few particulars in every country. The chief difference consists in the diffusion of privileges. To understand distinctions of this nature, it is necessary to peruse a course of history, ancient and modern. Little can be learned from looking at the present aspects of things; we require to search the records of human progress for the origin of almost every institution, as well as for the philosophy which may be drawn from it.

Throughout Europe, society has generally arisen from similar circumstances. The rudimental germ of every state was a handful of adventurers, who, by military prowess, made themselves masters of the country. The leading men in such enterprises were chiefs with retainers. The principal chief became king; the chiefs assumed the character of an aristocracy; and the retainers, with the inhabitants whom they helped to subdue, from being at first serfs, finally attained the rank of freemen. It was long, however, before this latter result was achieved. For many ages, the chiefs or nobles holding lands by a military tenure from the sovereign, formed a feudal aristocracy, by whom in reality the whole system of government was conducted. The idea of imparting privileges to the common people, though recognised by the oldest institutions of the Teutonic races, was long in attaining practical efficacy—not only because the nobles needed vassals to execute their will, but because the humbler classes had really no means of an independent existence. (See HISTORY OF THE MIDDLE AGES.)

The original source of the political franchises of this country is the Crown. From having been companions and assistants of the sovereign, the principal barons were constantly encroaching on his prerogatives. Sometimes the concessions of the crown, as those of Magna Charta, made by King John, were necessary and desirable; but more frequently the nobles were inclined to exact so much power in the state as would have rendered the king's authority a nonentity. The danger of these encroachments caused the monarch to seek aid from the commons. With the view, therefore, of raising up a means of protection in this quarter, he encouraged the building of cities, to whose inhabitants he gave certain important privileges. The civic corporations, therefore, which in the older European cities continued to represent the Roman *municipia*, must be viewed as the cradle of freedom. From them sprung much of the present constitution of society. Relying on their privileges, and surrounded by walls, these burgher communities defied the nobles, and sided with the king. Sometimes the barons sided with the burghers, and to no historical individual do the commons probably owe so much as to Simon de Montfort, Earl of Leicester, who, in the reign of Henry III. and in the year 1265, ordered writs to be issued for the return of two citizens or burgesses, to represent every city or borough in the kingdom in parliament. From this time, the feudal principle declined, serfs were gradually emancipated, and ultimately every man was declared to be equal in the eye of the law.

It is necessary to be thus particular, for a notion prevails among the humbler classes that they have been deprived of rights enjoyed by their ancestors. History most explicitly shews that, in early times, the peasantry and operative bodies possessed no privileges whatever. Magna Charta does not so much as mention them. Society, in fact, has been quite a progressive development. Little by little, privileges have been widened in behalf of the citizen class, though by no means always by their own efforts, and if they continue to deserve them, there can be no doubt that they will go on widening as circumstances render it desirable. Doubtless, it may be alleged that all men are equal, and deserve to possess equal privileges; but to this assertion, contradicted as it is by the most ordinary observation and the most elementary common-sense, there are, as to all other false principles, practical as well as theoretical objections, which will always defeat the objects of those by whom it is made. Its realisation as the basis of society, would demand, as we have seen, a reversal of the laws of nature, and may safely be pronounced to be impossible, however great may be the confusion produced by such attempts to realise it as those which we have so often witnessed in France. Equality before the law—that is, the equal right of every man to be valued at what he is worth, not in his own eyes, but in the eyes of his fellow-citizens—is the only form of equality that is either just or attainable. If a man is dissatisfied with his position, it is he himself that must improve it by his own industry, intelligence, and frugality. The law cannot make him better than he makes himself. These are assertions apart from all party creeds, which lie at the root of political philosophy, and which the simplest citizen may substantiate by his own experience and reflection. Meanwhile, we desire to fix attention on the vast impulse given to civilisation by the erection of cities.

CITIES.

It is to cities or large towns that mankind chiefly owe the blessings of civilisation and the valuable institutions which they now enjoy. With cities, everything that is great and glorious—arts, science, literature—began, and after beginning, was duly fostered. Through their means, civil society began to assume a more systematic character. The division of labour, the refinements of social intercourse, the development of laws caused by the conflicting interests of many people living closely together, the idea of equality before the law, the growth of patriotism, springing from the sense of advantages enjoyed, and the exertions necessary to maintain them, were the salutary consequences of the establishment of cities.

Under the mild sky of Asia, Africa, Greece, and Italy, cities were built first, and in the greatest number. The Phœnicians and Egyptians particularly distinguished themselves by the erection of cities, which soon attained a high degree of wealth, and consequently of civilisation. The Egyptians considered their city Diospolis (Thebes) older than any of the Greek cities; and Pliny says that Cecropia (erected in Attica by Cecrops 1582 B.C. and afterwards called Athens) was the oldest city of Greece. Several confederations of cities existed in the ancient world; for instance, the Phœnician, consisting of the cities of Tyre, Sidon, &c.; and the Achæan League, formed by the most important cities of Greece, in order to strengthen themselves against the power of Macedon. Under Augustus and his successors, the Romans began to establish colonial cities in Germany, having done the same long before in Gaul, Spain, Africa, &c. In Switzerland, they first erected cities about 70 A.D. which, however, were mostly laid waste by the Alemanni, and subsequently rebuilt under the government of the Franks (496 A.D.).

The Germans, accustomed to a wild, rambling life, did not shew any disposition to live in cities, until Charlemagne laboured to collect them together in settled abodes, from his desire to civilise them. Henry I. distinguished himself particularly in this way, and on this account has been called by some Henry the City-builder. He gave the cities great privileges, in order to induce his subjects to live in them, and thus laid the foundation of that power which at a future period contributed most to break down the feudal system. In many cities, imperial castles were erected to protect the inhabitants; and the insupportable oppressions and even cruelties exercised by the feudal lords upon their peasants, or by the wandering knights and robbers, drove many people into the cities. The attacks of the neighbouring lords gave firmness to their union, and compelled them to cultivate their resources. Commerce, and the various arts and trades, were soon cultivated within their walls, and their wealth and respectability increased.

One of the most important remnants of the great fabric of ancient civilisation was the cities of Italy. What the world would have become without them is not to be calculated. In spite of their bloody contests with each other, and the vices to which these gave rise, they must be considered as having lighted the torch of modern civilisation. It was not the monarchies, it was not the courts of the great princes, it was the cities of Northern Italy which opened the way for the progress of improvement; and the petty princes of Italy caught from them the spirit which prompted their efforts to promote it. Under the reign of Conrad III. (1138–52), the cities of Lombardy, and particularly Milan, which stood at their head, had acquired a high degree of wealth and power, and had formed themselves into a confederation. The struggles between the emperors and these cities form one of the most important portions of the history of the German Empire and of Italy. Frederick I. in vain demolished the powerful city of Milan. It was soon rebuilt; and the cities of Lombardy, in alliance with the pope, obliged the emperor to conclude with them a very disadvantageous peace at Constance. Two other confederations of cities, highly important, were formed during the interregnum of the German Empire, between 1256 and 1272. One of them was the powerful league of the Hanse towns; the other, the confederacy of the High-German and Rhenish cities from the foot of the Alps to the mouth of the Maine, established, by Walpode of Mentz, in 1255. A similar confederacy, and a very important one, was that of the Swabian cities, instituted in 1488, to repel the outrages of the feudal lords and knights. By degrees, great cities arose in the different countries; and wealth, industry, knowledge, and equal laws spread from them through Europe.

Much has been said and written on the immorality of large towns and cities, and the fact cannot be denied; but immorality is not confined to them. The petty vices of small places, though less glaring, are perhaps equally injurious, making up in constant repetition for their comparatively less degree of noxiousness. It is much more difficult, moreover, to preserve one of the most important possessions — independence of character — in a small place than in a large one. The cry against the immorality of large cities should not make us forget the many great and admirable things which mankind have been enabled to perform by means of the collected strength of talents and resources combined in large cities, and their influence in forming the character of great men, who could not have acquired elsewhere their variety of accomplishments, and the well-proportioned cultivation of their various faculties. But though such considerations may be advanced to palliate, if not to controvert the charge of immorality against great cities, it is impossible to deny their exceeding unhealthiness. In the supplement to the monthly and quarterly returns for 1872, the Registrar-general says (p. 9): 'The several town and rural districts of Scotland shewed the usual striking differences in their mortality during the year just closed. Thus, for every 10,000 persons in each of the five new groups of districts into which Scotland is divided, there occurred 276 deaths in the principal towns, 251 deaths in the large towns, 215 in the small towns, 172 deaths in the mainland rural districts, but only 157 deaths in the insular rural districts. These facts might be otherwise expressed by saying, that there occurred one death out of every 36 persons in the principal towns, one death in every 40 persons in the large towns, one death in every 46 persons in the small towns, one death in every 58 persons in the mainland rural districts, but only one death in every 64 persons in the insular rural districts.' It is true that the birth-rate compensates the death-rate, the result being the production of a more and more numerous population, which goes on continually degenerating in physical if not also in moral and intellectual qualities. Yet, notwithstanding these deplorable facts, which are continually published on the highest authority, the country populations continue to pour into the towns both in this and, though in a minor degree, in other countries. The only remedy seems to consist in attempting, as far as possible, to counteract the now established law, that *the death-rate rises with the density of the population*, by spreading the cities over the country. It is a remedy which admits of extensive application, and which, there seems reason to hope, is now

beginning to be understood. The last census exhibits a very marked tendency in the poor population of London to migrate from the centre to the circumference, and the same tendency is perceptible in Edinburgh and in many provincial towns.

Capitals, in the modern meaning of the word, can hardly be said to have existed in ancient times; at least they were then only the seat of the sovereign, but not the centre of all the national activity, Rome only perhaps excepted; but this city was for a very long time the state itself, and, at a later period, the tyrant of the whole empire, rather than the head of a well-organised body. In Asia, there existed, indeed, in ancient times, capitals of very large empires; but they are not to be compared to the capitals of large modern empires, since the channels of communication and intercourse had not then reached that degree of perfection which enables them in our days to bring into close connection all parts of a country. Each province was, therefore, left much more to itself. It would be difficult to determine whether the good or evil consequences of large capitals in modern times are greater, and such an examination would far exceed our limits; otherwise, it would be very easy to point out, in every department of civilisation, in science, social intercourse, arts, &c. both salutary and pernicious effects resulting from the influence of capitals. It seems to us a matter of little doubt that it must be regarded as disadvantageous to any country if the capital ceases to be the concentration of the skill, genius, and strength of a nation, for the benefit of the whole; but by a disproportionate superiority it destroys the importance of the rest of the country, as we find to be the case with Paris, which, as has been often observed, contains France. In Germany, the state of things is quite the reverse. A multitude of university towns are scattered all over the country, and there is no city which may boast of being the point of intellectual concentration or refinement. The consequences have been very advantageous to science and literature. In politics, this want of a central point, as regards Northern Germany, has been remedied by the adoption of Berlin as the seat of the empire. London never exercised that degree of influence over England which Paris has over France; one reason of which may be, that the institutions for the diffusion of knowledge are not seated in the metropolis. The system of concentration has, there is little doubt, been carried to an extreme in Europe—the best of everything having been collected in the capitals, and the provinces having been almost stripped of pictures, libraries, &c. In many countries, this fault is acknowledged, and a return to a more equitable system is perceptible. The injury done to the provincial towns in Britain by the concentration of institutions of various kinds in the capital, is likely soon to be greatly modified, by the establishment of railways and other improved means of communication, which will tend to give all parts of the kingdom an equality of advantages.

GOVERNMENT.

If all mankind were naturally virtuous, and disposed to act justly and kindly towards each other, there would be little use in establishing any kind of government. According to ancient poets, there was once a period called the Golden Age, in which there prevailed universal peace and loving-kindness, and vice had no existence. Never was there such a period. The farther back we go in history, we find that society was the more rude. Civilisation has been a plant of slow growth, often retarded, and in particular countries almost rooted out for a time by erroneous conceptions of its character, and the conditions of its existence, but always springing up afresh. The world never was better than it is at this moment. According to all experience, society cannot exist without some species of government. It must possess a power to enforce order, to prevent the strong from oppressing the weak, to chastise vice, and perform many other necessary functions. The government may be better or it may be worse, but a government of some kind there must be. There will always, in every society, be some who have a desire to rule over others—to make others work out their purposes—and some who are satisfied to submit to the domination of those who are more ambitious. There will always be among those who are ambitious of governing, some who unite to the desire the talents necessary to enable them to attain their ends, and others who do not; some who seek to found their power upon their own force, or upon the prejudices of others, or upon their power of persuading or convincing men that they know better what is good for them than they do themselves. The propensities and faculties which induce and enable some men to aspire to be leaders, others to contest the leadership with them, and others, again, contentedly to follow the lead, are implanted in them by nature; they cannot help having or exercising them. But it is with these elements of our nature as it is with our instinctive propensities to eat and drink, to love or hate; by the proper use of their knowing and reflecting powers, men may so control and direct them as to render them instruments for producing great good and happiness to the whole human race. Government exists not to annihilate the power of individuals, but to direct it; for though the strong may be the greatest enemies of mankind, it is they only who can be great public benefactors.

FORMS OF GOVERNMENT.

The patriarchal and clanship systems of government have been already adverted to. With these, mankind may be said to have made a beginning. The next step in progress seems to have been a government by kings, which is only a more developed form of the patriarchal system, the kingly being a centralisation of the patriarchal or feudal power. In some ancient nations, a government of priests superseded that of kings. This species of government was called a *theocracy*, from *Theos*, the Greek word for God; it being represented by the priests that they ruled according to the will of God directly revealed to them. Although to a great extent based on superstitious fears, priestly governments were an advance on governments of mere fighting-men.

Out of these early systems of government, in conjunction with the experience of ages, all existing governments have sprung. Although, however, there is nothing of which mankind has had

so extensive or so varied an experience, the only fact which can be said to have been ascertained is the impossibility of devising any one form of government which shall be of universal application. Much has been written on the subject of what is called a 'perfect government;' but the result of all inquiry seems to be, that nothing is permanent except general principles or natural laws. Those, therefore, who contend for any particular model of government, without a due regard to circumstances, only pursue a delusive fancy. No species of government that could be devised will apply universally. The only practical rule of any value is, that every nation should possess a government in harmony with its state of civilisation, and the tastes and habits of the more enlightened portions of the community, to which the tastes and habits of the less enlightened may be expected gradually to conform.

As there is no such thing as a universally suitable form of government, so the form of government of any particular country requires to vary, and alter its character in adaptation to the advance or retrogression of society. In proportion as the people are ignorant and turbulently disposed, the government requires to be strong and arbitrary; and according as the people are enlightened, and disposed to live peacefully, the government may be mild and liberal. The ambition of kings and emperors, no doubt, is observed to sustain an arbitrary rule in circumstances where greater freedom should be accorded; but, as a general principle, it is evident that arbitrary military governments can only exist where the people at large are incapable of guiding and enjoying free institutions; or, in other words, where they are required. Sooner or later, the government of every country must bring itself into harmony with the society it rules, otherwise it will be overthrown. The cause for this is evident. Every government acts upon its subjects by means of themselves; it employs its subjects to keep its subjects in obedience. The consequence of this is, that in every country, and in all ages, the most seemingly despotic government is kept in check by the opinions of its subjects. No doubt, means, in some cases, are adopted to restrain the operation of public opinion; but, on the whole, the feelings and prejudices of the parties governed must ultimately be consulted.

Government being thus compelled to a certain degree to make justice and the good of the community its aim, it is important that the community be so enlightened and organised in opinions and wishes that it will easily and unobtrusively act on the controlling authority. There is another object to be gained by thus enlightening and organising the people, besides that of making them an efficient check upon government when it goes wrong; it is only by enlightening and organising the people that they can be rendered capable of lending due force to the operations of government, when these are what they ought to be. An unenlightened people is quite as likely to entertain mistaken notions of what is for its good as correct ones; it is quite as likely to oppose government when it tries to do what is right, and to support it when it tries to do what is wrong, as the reverse. The British government was in the right when, about the year 1780, it repealed some of the worst enactments against the Catholics; but the people were so far from heartily approving of this act of justice, that Lord George Gordon's riots in London, and the burning of Catholic chapels in Edinburgh, had nearly frightened government out of its good intentions.

The first step, then, in making such arrangements as are necessary for keeping government in its just and useful line of action, is to enlighten the people. There goes more towards *enlightening* the people than merely giving them school instruction, however thorough and extensive that may be. The people require to take every opportunity of acquiring knowledge, of extending their stock of ideas, of elevating their tastes, and of cultivating a brotherly benevolence. The great retarding influence in every nation has been less the arbitrary will of government, than the mass of voluntary ignorance which has nestled in the bosom of society. Nor is ignorance the only retarding influence. Mutual jealousy between the various classes into which society, by the action of natural laws, inevitably divides itself, may render even a comparatively well-instructed people totally incapable of self-government. In point of intelligence, the French have certainly always held a good place amongst the nations of Europe. But the selfishness, vanity, and exclusiveness of the higher classes in France had this effect up to the period of the Revolution, and vices of a character closely analogous on the part of the lower orders, have had the same effect ever since. The whole nation seems now to have become incapable either of governing or obeying; and, as has been wittily said, 'everything is impossible in France.' A consideration of this circumstance ought to temper observations on the strictly monarchical and aristocratic forms of government, and on the characters of those by whom they are attempted to be administered.

Aristocracies.

An *aristocracy*, a class of privileged persons, has its origin in the circumstance that greater skill, enterprise, intelligence, and perseverance, at first threw a comparatively great amount of wealth and power into the hands of a few families. That the management of that wealth, and the exercise of the power and influence which it conferred, were occupations calculated to give a greater practical development to the faculties of their descendants, than the routine drudgery of those who earned their daily food by their daily labour, is obvious, and these inherited qualities, or qualities at any-rate which were strengthened by the advantages of inherited position, were further strengthened by direct education. We have no desire to palliate the evils of aristocratic government, which more, perhaps, than even democratic government, tends to degenerate into government for the benefit of a class. But we must not, therefore, be blind to the fact, that aristocratic government is one of the stages through which all societies must pass on their way to something better; or that it has roots in nature, and consequent uses, which will always preserve it as an element, even in the highest forms of government to which mankind can attain. Inequality of civilisation, which gave rise to aristocratic power and influence, exists in many different forms and modifications. Even in our own country, an uncivilised class is found—that unfortunate class which supplies the precarious demand

for the lowest kinds of unskilled labour, and which fills our police-offices and courts of justice with the greater number of the victims to the security of society. Nor is there reason to believe that any future elevation of this class will ever bring it up to the condition of virtue and intelligence to which the higher class will then have attained. It is not of the lowest class alone that progress may be hoped; and if all classes progress, which is the only hypothesis on which the progress of the community as a whole is possible, the fact will afford no guarantee even for the diminution of the distance which at present divides them. To check the progress of the highest class would be to check civilisation itself, and if all classes progress *equally*, their *relative* positions will remain unchanged. But as one element of this, progress itself must consist in a better understanding of their relations to each other—that is, their respective rights and duties; the distinctions between classes will cease to be felt either as a source of pride on the one hand, or of humiliation on the other. Distinctions which are hedged in by impassable barriers are real impediments to progress, and justly excite indignation on the part of those whom they restrain. But these are not classes, but castes, which have always been repudiated by the constitution of this country, and even socially have never received any consistent recognition. So long as the son of a peasant may marry the daughter of a peer, and end by being a peer himself, whose son may marry the daughter of a queen, there is nothing really to complain of; and such is, and always has been, the relation of classes in this country. It is only want of mutual consideration on the part of individuals that sets them against each other, and the remedy demands no revolution.

The object of what are called constitutional governments is not to abolish classes, but to secure equally the privileges of all classes, by a definite arrangement, in place of leaving them to assert themselves on each occasion as it occurs. But no constitution will ever supersede the necessity for the exercise of citizen virtues on the part of the governed. Unless those to whom the function of government is intrusted are selected on the ground of fitness to represent the interests of the community as a whole, and not simply the interests of a particular class; and unless those who lead are somewhat in advance of those whom they lead, there can be no social progress, and there is not likely long to be even social stability.

Despotisms.

Out of Europe, the greater proportion of the governments throughout the world are of the character of *despotisms*. Of the multifarious despotisms which exist among barbarous nations, it is here needless to say anything; for the question of form of government only becomes interesting when applied to a wholly or partially civilised people. There is scarcely any country in Europe which can now be said to be governed despotically, the reforms of the present emperor having removed even Russia from that category. But when violent democratic outbreaks occur, despotic government usually appears as a temporary remedy. Of this character were the despotisms of the two Napoleons in France.

Though technically protected by codes of law, the subjects of despotisms are, in a great measure, at the will of a supreme authority, which has no check but public opinion. To insure obedience, a large military force is maintained, the press is under a censorship, the police act as spies on private actions, and travelling is regulated by passports. A leading feature of such despotisms is, that the whole system of government is *centralised* in a ministry in the capital of the empire, whence orders issue to all inferior authorities. By this means, the people, who are kept in order like children, do not acquire habits of self-government, and, except when exposed to some peculiar pressure, remain tranquil under a variety of restrictions. Offensive as such a system may appear to be, it often possesses qualities which for the time being recommend it to support: peace is thoroughly maintained; life and property are protected; the people, as objects of solicitude, are provided with public gardens and promenades, and allowed may other indulgences at the cost of the country; probably they are educated in the only possible way for the discharge of citizen duties, which, for the present, they are incapable of performing. Moreover, by bearing down factious opposition, and exerting a control over selfish private interests, a despotism is able to execute great and beneficial public works which seem to be beyond the reach of constitutional legislation; and it therefore commands a degree of respect which persons beyond its sphere do not readily appreciate. When it appears as a substitute for anarchy, the name technically applied to conditions of society in which there is no established government at all, and where the people are the prey of rival despots, who have sprung from their own ranks, the value of a single absolute ruler is still more obvious.

Constitutional Monarchies.

Europe abounds in constitutional monarchies—governments, that is to say, in which the king, or other chief ruler, is restricted in his powers by estates composed of representatives of, or delegates from different orders of the people. We should consider it quite useless to present detailed explanations of these constitutions. Those of them which are of modern origin, like that of Belgium and Italy, are more or less imitations of our own, and though in several—the Germanic Empire, for example—the monarchical element is imperfectly defined, and the reigning monarch can occasionally neutralise the will of the estates, they all afford extensive and substantial guarantees for popular rights. From the earliest period known to history, the Germanic races have possessed popular along-side of aristocratic and monarchical institutions. Tacitus mentions their existence amongst the tribes by whom the Roman Empire was overthrown, and they extended even to the island of Iceland. It is in these institutions that we must look for the origin of our own constitution of king, lords, and commons. This arrangement, in its general conception, would seem to be inseparable from the genius of the Teutonic races; it has rarely been successfully imitated by the other races of mankind. In Norway and Sweden, in Denmark, and in most parts of Germany, these old constitutions, which varied greatly in details, but rested always on some sort of widely extended, though graduated suffrage, and were frequently

very complicated, have since 1848 been greatly modified in the democratic direction, and made considerably more to resemble that of Great Britain, in its later form.

British Constitution.—In the constitution of this country we possess the most perfect example of a developed constitution of the Teutonic or Germanic type. The legislature, as is well known, consists of an hereditary sovereign (king or queen, as the case may be), an hereditary House of Lords, and an elected House of Commons. Previous to the Revolution of 1688, the sovereigns had assumed the prerogative of ruling by a divine, or inherent and indestructible, right. This unfortunate innovation on the old Teutonic or Germanic order of ideas was carried to so great an extent by the Stuart kings as to produce a violent reaction. This tendency resulted in the temporary establishment of the Commonwealth, or Republic, which, like most other republics in great countries, speedily degenerated into a despotism, in the person of the so-called Protector, Oliver Cromwell. Another reaction, ending in the restoration of the exiled royal family, was the consequence; and as they were no wiser after their return than before their banishment, we seemed at this period of our history in great danger of falling into the unsettled state of political life from which France and Spain have suffered and still suffer so much. The ultimate revolution, however, accomplished by William III. a Dutchman by birth, but the nephew and son-in-law of the exiled monarch, James II. was completely successful; partly, in consequence of the wisdom and moderation of that prince; but mainly because, on the whole, the Settlement, as it was called, was a return to the ancient constitution of England. According to the Revolution Settlement, the sovereign rules by a kind of bargain with the people. At his accession and coronation, he takes an oath to rule in terms of certain constitutional obligations; and by employing a ministry on whom the sole responsibility rests, he is presumed to take no part in public affairs, and is not held answerable for consequences. This is not merely a device for limiting the royal prerogative, but a remnant of the old mythical belief in royal infallibility, embodied in the phrase, 'The king can do no wrong.' As the ministry are amenable to the votes of the Houses of Parliament, they require to act in harmony with the wishes of the nation.

A *Parliament* is the term used to express the collective body of King, Lords, and Commons. The king, however, appears only by his ministers, and usually appends his signature to bills separately from the parliamentary business. By being composed of hereditary legislators, who are removed beyond the influence of popular clamour, the House of Lords is understood to impart a certain stability to the constitution. Between 1688 and the present time, two constitutional changes of considerable importance have been made, the one in 1832, the other in 1867-8. By the first, the Reform Bill of 1832, the English county constituencies were increased from 52 to 82; but in Scotland and Ireland the county representation remained as before. In England, 56 boroughs, containing a population, in 1831, of less than 2000 each, and returning together 111 members, were totally disfranchised; while 30 other boroughs, containing a population of less than 4000 each, were reduced to sending one member to parliament, instead of two. These boroughs, for the most part, had fallen off either in relative or in absolute population. On the other hand, 22 new boroughs, containing 25,000 inhabitants, received the privilege of returning two members; and 20 other new boroughs, containing each 12,000 inhabitants and upwards, that of returning one member. In Scotland, the town members were increased from 15 to 23, so that the number of representatives became 8 more than the number assigned to Scotland at the Union. As regards electoral qualifications, which were greatly reduced, the following were the provisions: In counties, an elector must be possessed of property in perpetuity or liferent to the value of £10 yearly, or lands held at a yearly rent of £50. In cities or boroughs, he must be proprietor of a house or shop valued, along with the land attached to it, at £10 yearly and upwards; or must occupy premises for which he pays a rent of at least £10 per annum.

In 1867-8 the changes were scarcely less momentous, though the measure was not called for by the same amount of popular excitement, or hailed with the same enthusiasm as the act of 1832. The most important provisions of this act, as regards England, are the clauses which establish household suffrage in boroughs, and the occupation franchise in counties. Clause 3 enacts that 'every man shall be entitled to be registered as a voter; and, when registered, to vote for a member or members to serve in parliament for a borough, who is qualified as follows: 1. Is of full age, and not subject to any legal incapacity. 2. Is on the last day of July in any year, and has during the whole of the preceding twelve calendar months, been an inhabitant occupier, as owner or tenant, of any dwelling-house within the borough. 3. Has during the time of such occupation been rated as an ordinary occupier in respect of the premises so occupied by him within the borough of all rates made for the relief of the poor in respect of such premises. 4. Has before the 20th day of July in the same year *bonâ fide* paid an equal amount in the pound to that payable by other ordinary occupiers in respect of all poor-rates that have become payable by him in respect of the said premises up to the preceding 5th day of January, and which have been demanded of him in manner hereinafter mentioned; or as a lodger has occupied in the same borough separately, and as sole tenant for the twelve months preceding the last day of July in any year, the same lodgings, such lodgings being part of one and the same dwelling-house, and of a clear yearly value, if let unfurnished, of £10 or upwards; and has resided in such lodgings during the twelve months immediately preceding the last day of July, and claimed to be registered as a voter at the next ensuing registration of voters: provided that no man shall, under this section, be entitled to be registered as a voter by reason of his being a joint-occupier of any dwelling-house.' The county clause (4) is this: 'Every man shall be entitled to be registered as a voter, and when registered, to vote for a member or members to serve in parliament for a county, who is qualified as follows: 1. Is of full age, and not subject to any legal incapacity; and who shall be seised at law or in equity of any lands or tenements or copyhold or any other tenure whatever,

except freehold, for his own life, or for the life of another, or for any lives whatsoever, or for any larger estate of the clear yearly value of not less than £5, over and above all rents and charges payable out of or in respect of the same, or who shall be entitled either as lessee or assignee to any lands or tenements of freehold, or any other tenure whatever, for the unexpired residue, whatever it may be, of any term originally created for a period of not less than sixty years, of the clear yearly value of not less than five pounds, over and above all rents and charges out of, or in respect of, the same. 2. Is on the last day of July in any year, and has during the twelve months immediately preceding, been the occupier, as owner, or tenant, of lands or tenements within the county, of the rateable value of £12 or upwards. 3. Has during the time of such occupation been rated, in respect of the premises so occupied by him, to all rates made for the relief of the poor in respect of the said premises. 4. Has before the 20th day of July in the same year paid all poor-rates that have become payable by him in respect of the said premises up to the preceding 5th of January.

The Reform Acts for Scotland and Ireland, passed in the session of 1868, differ in some important respects from that of England. By the Scotch act, the borough franchise is conferred upon every male person of full age, and subject to no legal incapacity, who has been for twelve months an occupier, as owner or tenant, of any dwelling, unless at any time during that period he shall have been exempted from poor-rates, or shall have been in receipt of parochial relief within twelve months. The lodger franchise, in Scotland, permits any lodger to vote who has occupied in the same borough separately, and as sole tenant, for twelve months, a lodging of the clear annual value, if let unfurnished, of £10 or upwards, and has claimed registration. In Scotch counties, the ownership franchise is £5, clear of any deduction in the shape of burdens, with a residential qualification of not less than six months. The Reform Act for Ireland made no alteration in the county franchise, but reduced that of boroughs to a £4 rating occupation, qualified as in England. It is now (1874) proposed to assimilate the county to the borough qualification by adopting household suffrage. With reference to these enactments, it is worthy of remark that, whilst a property qualification is to a certain extent retained as the test of fitness for the exercise of the franchise, not only is there no distinction of less and more, but owners and tenants are actually put on the same footing. The provision is intended to gratify the poorer classes, but it really inflicts a very great injury on the more industrious portion of the poorer classes themselves, by leaving the man who, by his honest exertions and praiseworthy self-denial, has succeeded in saving as much as to purchase his house or tenement, in precisely the same position as his idle and drunken neighbour, who has continued to be a tenant. It thus holds out no encouragement to industry and frugality, and were it to cease to be counteracted by the historical influences which are still so powerful in this country, it might land us in a revolution similar to that which has proved so disastrous to continental nations. That the sovereignty rests ultimately with the people, has always been the principle of our own, as of every free constitution; but it is a novelty in English politics, and a very unhappy one, borrowed from other countries, which identifies the people with the mere numerical majority, irrespective of means, as a guarantee for industry and frugality, or of education, as a guarantee for intelligence.

No monarchy on the face of the earth interferes so little with private conduct as that of Great Britain. Under its administration, the following important conditions are secured: Liberty of speech within constitutional limits; a similar liberty of the press in all its departments; liberty of personal locomotion, no passports being required; liberty of carrying on almost every branch of trade without inquiry or license; liberty of meeting in masses to be instructed by lectures on political or other subjects; liberty of meeting to discuss any political topic, general or local; liberty of presenting petitions to parliament, and memorials to the crown; religious toleration, and liberty for the performance of all forms of worship; liberty of setting up schools to instruct pupils in any branch of learning; protection from the law to life and property, without respect of person; privilege of trial by jury, and of forcing on a trial for any alleged offence; privilege of being held as innocent till proved to be guilty; incorruptibility of judges, these being no way exposed to intimidation either from power or popular prejudice, an advantage which is lost the moment that they are made elective, as in America, where the taking of bribes has recently prevailed to so fearful an extent as to render the successful litigant too often the litigant who has the longest purse. To these great bulwarks of civil liberty may be added the absence of military conscription; the non-existence of fortified or walled towns; the promptitude with which riotous proceedings are quashed and the peace preserved; and the absence of any restriction to prevent the most humble individual from rising to the highest rank and consideration. The drawbacks on all these advantages may be comprised in the following circumstances: The existence of a set of laws so complex as to be unintelligible, and so expensive in administration, that legal redress, so far as private interests are concerned, is almost beyond the reach of the lower classes; the too prevailing treatment of all great questions in parliament with reference to classes instead of to the whole people; and, till recently, the absence of a thoroughly national system of education, which might in time elevate the minds and morals of the people, and altogether produce a more wholesome social condition. Fortunately, these circumstances are all of a nature which admit of amendment; and they will, as a matter of course, be amended, as public opinion, enlightened by knowledge, is brought to bear upon them.

Republics.

A republic or commonwealth is a form of government in which the people, or at least a large portion of them, are acknowledgedly the source of power, and have the direct appointment of the officers, not only of the legislature but of the executive. There are few of this class of governments in existence. The oldest republics in the world are those of the Swiss cantons; each of which is a territory of generally a few square miles in size, and inhabited

by a few thousands of people, chiefly engaged in husbandry. In these cantons there are no great properties, and though there are many ancient families which enjoy much consideration, and to whose members, in the smaller cantons, magisterial offices are generally intrusted by a sort of tradition, there are none which in wealth are equivalent to the richer English landed gentry. There are some wealthy and intelligent merchants in the large towns; but the bulk of the population are a hard-toiling race of small farmers, who, in means and education, are little above a condition of mediocrity. The legislative and executive functions are conducted in accordance with this state of things; and it is no doubt owing to the smallness of its territory, and the comparative equality in wealth and intelligence of its inhabitants, that Switzerland has so long preserved its republican institutions. The constitutions of the separate cantons are divided into two classes, *absolute* democracies and *representative* democracies. In the former, the chief power belongs to the assembly of the whole adult male population, which meets once a year to pass laws and regulate the revenue and expenditure of the canton. Seven of the cantons have constitutions of this purely democratic kind. In the others, the people elect a council, to which they delegate their powers. These republics, centring in a general diet or congress, are greatly under the influence of the greater nations which surround them, by which, indeed, they are in a great measure tolerated only from mutual jealousy, and because the country is in some places almost inaccessible to hostile invasion. Since 1848, the power of the central element has been increased, and from being a league of semi-independent states, Switzerland has become a United Confederacy. The present constitution vests the supreme legislative and executive authority in a parliament of two chambers, a State Council and a National Council. The first is composed of forty-four members, chosen by the twenty-two cantons, two for each. The National Council consists of about one hundred and thirty representatives of the Swiss people, chosen in direct election, at the rate of one deputy to every 20,000 souls. Both chambers united constitute the Federal Assembly, and represent the supreme government of the republic. The chief executive authority is deputed to a Federal Council, consisting of seven members, elected for three years by the Federal Assembly.

On the continent of America, various republics have been founded on the wreck of the colonial institutions of Europe. The principal is the United States of North America, dating from 1776. The legislature and executive bear traces of their English origin; the main difference being an elective President as chief magistrate, instead of an hereditary sovereign, and the appointment of judicial and other functionaries by the people, instead of by the crown. The country is not one, but an aggregation of republics; each state being independent of the others as respects internal management. The power of legislation for the States, in their united character, is vested in a House of Representatives and a Senate, jointly forming a Congress. The House of Representatives is composed of members chosen every second year by the vote of all male citizens over the age of twenty-one, of the several states of the Union. Representatives are apportioned among the several states of the Union according to their respective numbers, which are determined by the census taken every ten years. A law passed in April 1872, after the results of the ninth census of the United States, taken in June 1870, had been ascertained, provides that from and after March 3, 1873, the House of Representatives shall consist of two hundred and eighty-three members. When new states are admitted to the Union, it is provided that their representatives shall be additional to the number of two hundred and eighty-three, which otherwise shall be the limit till the tenth census. No person is eligible as representative who has not completed his twenty-fifth year, and been seven years a citizen of the United States, and who is not, when elected, resident in the state for which he is chosen. In addition to the representatives from the States, the House admits a 'delegate' from each organised territory, with right to debate on subjects in which his territory is interested, but not to vote. Delegates are chosen in the same way as representatives, except in the territory of Wyoming, where the franchise is accorded to women. The Senate of the United States is composed of two senators from each state, elected by the legislature thereof for six years. One-third of the Senate goes out, and is replaced by a new election every two years. A senator must be thirty years of age, nine years a citizen, and resident in the state for which he is elected. All members, both of the general and state legislatures, are paid for their services.

The President is elected by the whole people, for a term of four years: at the close of that period, he may be re-elected; and, with two or three exceptions, all the presidents of the United States have been re-elected for a second term. Each state appoints a number of electors, equal to the whole number of senators and representatives to which the state may be entitled in the Congress; but no senator or representative, or person holding an office of trust or profit under the United States, can be appointed an elector. These electors meet in their respective states, to vote for President and Vice-president, one of whom at least shall not be an inhabitant of the state. In Delaware, South Carolina, and Tennessee, the legislature chooses the electors; in Maine and Maryland, electors are chosen by the people voting for one or more in each district; in all the rest of the states, they are chosen by a 'general ticket,' upon which the whole of the electors vote. The electors transmit sealed lists of all the persons voted for as President, and all those voted for as Vice-president, to the President of the Senate, who opens the lists, and counts the votes, in the presence of the Senate and House of Representatives. If for the person having the greatest number of votes for President, a majority of the whole electors have voted, he is declared President; if fewer, the House of Representatives elects by ballot one of the three who stand highest on the list. If for the person having the most votes for Vice-president, a majority of all the electors have voted, he is declared Vice-president; if not, the Senate names one of the two who stand highest on the list. The President and Vice-president must be natural-born citizens, thirty-five years of age, and fourteen years resident within the United States. The principle of electing representatives to the state legislatures is

almost that of universal suffrage; in most instances, every male citizen above twenty-one years of age who has resided a year in the state is an elector.

With an immensely large unoccupied territory, and general thinness of population, it is impossible to draw any just inference as to the stability of this still comparatively new and untried republican government. It has exhibited many forms of corruption, and the most respectable citizens have, for the most part, entirely withdrawn from political life. For the present, however, it is perhaps as suitable as any other form of government to the condition of the country; but whether it will maintain this character after the population of the United States has become as dense as that of England, and great diversities of wealth and intelligence have arisen, is a question which time alone can determine.

Revolutions.

A revolution is the overthrow of a government by some kind of convulsion out of the usual course of law, generally followed by the more or less permanent establishment of a new one in its stead. Modern history contains several examples of revolutions. The deposition and execution of Charles I. and the establishment of a Commonwealth, with Cromwell as dictator, formed the greatest revolution which has occurred in England, though it is never spoken of under that definition. The change of dynasty in 1688, with the guarantee of a constitution, is referred to as *the Revolution*. This revolution had the singular merit of being effected with little or no violence, a fact which, like the stability of the form of government which it introduced, was probably owing to the circumstance of its being, in the main, a return to the ancient institutions of the country. The revolt of the American colonies, and their assumption of independence, was a distinctly marked revolution, effected by military force, and crowned with a degree of success which astonished Europe. It was shortly followed by the revolution in France in 1789, to the violence and consequences of which no parallel is found in history.

Revolutions are almost invariably a result of misgovernment. Tenaciously clinging to old usages, and opposing themselves to every species of equitable reform required by alterations in society, or ruthlessly invading ancient privileges, governments sometimes, as in the foregoing instances, become so repugnant to the feelings of the nation, that at length a rebellion ensues, and if successful, it becomes a revolution. The revolution which placed Cromwell at the head of affairs in England, originated in Charles I. levying taxes without the concurrence of parliament, contrary to the constitution. The revolution of 1688 was caused by James II. assuming arbitrary powers vexing to the nation, and equally at variance with established rights. The American revolution occurred in consequence of government imposing taxes on the colonists, while they were not represented in parliament, and therefore in violation of the constitutional maxim of—no taxation without representation. The cause of the French Revolution, in 1789, was an entire disorder in society; but it was precipitated by the refusal of the clergy and nobility to contribute to the national taxes. A timely concession on the part of these bodies to aid the declining finances, by giving up a portion of their unjust exemptions from taxation, might perhaps have averted the terrible calamity which ensued.

From every revolution which has occurred, all governments may learn the valuable lesson of acting with a prudent regard to national traditions on the one hand, and on the other to constantly changing circumstances and feelings. Without respecting every antiquated prejudice, or yielding to every clamour, it is their duty and interest to adapt themselves to and even to stimulate the progressive views of mankind; graciously advancing with the intelligence of the age, keeping, if possible, rather before it than behind it. Lessons equally useful may be learned by the people from revolutions. To step in the slightest degree beyond the limits of constitutional law, and assume an attitude hostile to government, is always dangerous in the extreme—treasonable if defeated, and perhaps productive of unspeakable horrors if successful. Judging from the Cromwellian and the French Revolution, besides some successful revolts of lesser note, it would appear that a revolution in general circumstances runs a certain specific course. First, the old government is overthrown, and one thought to be more liberal is established. Second, the new government, being composed of men who acted from a conscientious conviction of evils to be redressed, is soon found not to go far enough in its measures; it is accused of being too moderate, and is overthrown. Third, a violent set of men, animated by feelings of vengeance, and professing boundless liberality, construct a fresh government. Fourth, anarchy sooner or later ensues, the nation is in universal disorder, and life and property are no longer secure. Fifth, out of the convulsion arises an individual, who, by his military genius, conquers inferior demagogues, and brings back a degree of tranquillity at which every one rejoices. Sixth, this tranquillity is speedily found to be a military despotism: a Cromwell or a Napoleon is at the head of affairs. And, brought to this condition, a long course of suffering is endured before the nation returns to the constitutional point whence it set out. Varied according to circumstances, such is likely to be the progress of every revolution occurring from heedless, though well-intentioned, democratic invasion. An expectation that the original movers of a revolution will be suffered to conduct it to a conclusion, is pretty nearly hopeless. The agitation brings all sorts of wild schemers into play, and one party after another is remorselessly trampled down in the contest.

It is now a settled political principle, that for revolutions to be attended with the good results anticipated by their promoters, they must, independently of other favouring circumstances, refer to a people who are qualified not only for self-government, but possessed of the nerve to unite and defend themselves against the anarchic forces which are almost certain to spring up. A usual cause of failure in the revolutions of continental Europe has been the political incapacity of the people—an incapacity amounting in some instances to an ignorance even of the forms necessary for regulating public assemblages of citizens. The revolution which gave independence to the United States was successful, because, among other favourable circumstances, it was promoted by an

intelligent and order-loving people, accustomed to freedom by a preliminary training under a constitutional monarchy. It is often loudly maintained by continental politicians, and tacitly assumed by those at home, that, however frightful may have been the horrors of the French Revolution, its ultimate results were a vast stride in advance in the direction of liberty, not for Frenchmen alone, but for mankind. That France has suffered more than she has gained, is a conviction which has been gradually forced upon most people, as each fresh page in her troubled history unfolded itself. But the impression of the general value of the revolution remains, and many have been brought by reiterated assertion to regard it as marking the point at which mankind fell heir to liberties of which even our own forefathers never dreamed. Yet can we put our finger on a single point in which the creed of the Revolution was really an advance on that which had been held, and more or less perfectly realised, by Englishmen for ages? We are told, for example, that 'it transferred the ultimate sovereignty from the king to the people;' but the people was the ultimate sovereign in England, as Mr Freeman has proved to us, from Anglo-Saxon times downwards. Then 'it broke up exclusive and privileged classes;' but we never had any exclusive classes at all, or privileged classes either, except the peerage, and even their privileges did not exempt them from citizen duties. It declared 'all careers open to talent;' but all careers, the throne only excepted, always were open to talent in England. It made 'all men equal before the law;' but therein it only recognised one of our oldest constitutional maxims. The moment it went farther, it went wrong. It no doubt declared all men equal in a sense unknown to us: it declared them equal in rights, however unequal they were in merits; whereas we had always followed more or less consistently the Aristotelian rule of making merits the measure of rights. But did it thereby lay the foundation of a wider liberty and a fairer order than ours; or did it simply offer to mankind the option of anarchy or despotism? The latter, as yet, must be the response.

Concluding Remarks.

In considering the nature and supposed influence of different forms of government, of which the preceding notices afford examples, it is important to guard ourselves against the too common error of mistaking names for things. A despotism has been described as the government of an irresponsible individual; and a republic, as a government formed by the concurrence of the whole people. We should, however, be liable to commit an error did we at once rush to the conclusion, that a despotism was invariably tyrannical; and that a republic was certain to be in every instance tolerant. It may happen that a despotism is really the more liberal of the two. This will occur when the despot is an intelligent and benevolent man. Instead of tormenting his subjects, he will take a pleasure in seeing them happy and prosperous; while, by a sleepless and undistracted vigilance, he will conduct the government with a degree of firmness and efficiency not to be equalled by a miscellaneously composed body. Such a beneficent government as this, is said to be *paternal*; the sovereign acting as if he were the father and guardian of his people. Could it be possible to secure a continuance of sovereigns of this character, we might almost arrive at the conviction that despotisms were the best forms of government; but, unfortunately, there is no security on this score; an evil may follow a well-disposed ruler, and suddenly the nation may be thrown into confusion. On this account, it should be the object of despotisms of the paternal character to prepare the people for the degree of self-government incidental to a constitutional monarchy; and having done so, to grant a constitution which will insure good government on a permanent basis.

That republics may be liberal and tolerant only in name, we have too many examples in history. Not to go farther back than the French Revolution of 1789–1793, what despotism ever equalled, or came within many degrees of, the republican Convention, which for years oppressed and deluged France in blood! Not even the tyranny of Nero or Caligula could be compared to the disregard of all public and private rights manifested by that iniquitous and popularly constituted body. The only historical episode that approaches it in atrocity is the brief reign of the Commune in Paris in 1871. The weak point in all republics is, that the most noisy and forward, who are usually the most ignorant, gain the ascendency, and, under colour of constitutional privilege, tyrannise over the more quietly disposed and intelligent citizens, many of whom, shrinking from the turbulence of faction, retire altogether from public affairs; so that, finally, the much admired republican government is found to be a mere government by venal and presumptuous demagogues. The same danger, in kind, if not in degree, attends all states, whatever their form, in which the ultimate sovereignty rests with the numerical majority. All this we mention, in consequence of the value which we attach to liberty as a reality, and in order to put people on their guard against the illusions of a name. Let it be remembered that government is a complex machine, fulfilling a wide variety of purposes, and that it is to be judged of less from the precise nature of its construction, than the quality of the work it performs. Another conclusion we arrive at is—That good government, although it certainly promotes the civilisation of a country, is much more its consequence than its cause; and that attention to the conduct and constitution of government, although a duty of the citizen, is only one of many public duties not less important and necessary both to the general wellbeing of society and the happiness of the individual.

GOVERNMENT ADMINISTRATION.

Whatever be the form of government, it requires to be conducted by a set of functionaries capable of superintending the different branches of the public service. The chief officials at the head of affairs, and who act as the cabinet council of the sovereign, are usually styled *ministers*, a word signifying servants; and collectively they are called the *ministry*. In constitutional governments the ministry are appointed by the sovereign, and take on themselves the entire responsibility of all acts of the crown. The British ministry, which is constructed on no broad principle, but is merely a result of occasional additions

dictated by special circumstances, is as follows: 1. First Lord of the Treasury; 2. Lord High Chancellor; 3. Chancellor of the Exchequer; 4. Lord President of the Privy Council; 5. Lord Privy Seal; 6. Home Secretary; 7. Foreign Secretary; 8. Colonial Secretary; 9. War Secretary; 10. Indian Secretary; 11. First Lord of the Admiralty; 12. President of the Board of Trade; 13. Chief Secretary for Ireland; 14. President of Local Government Board; 15. Vice-president of the Committee of Council on Education; 16. Chancellor of the Duchy of Lancaster. Such usually compose the cabinet; but there are nearly twenty other ministers—as Lord Chamberlain, Postmaster-general; and occasionally several of these are included in the cabinet, while one or two of those above specified are excluded. There is, in short, no distinctly settled ministry in England. The whole affair is a matter of arrangement at each change of ministry.

The First Lord of the Treasury is in general Prime-minister, and sometimes, as at present, Chancellor of the Exchequer. The Secretary of State for the Home Department may be said to stand at the head of the executive as far as the internal affairs of the country are concerned. The appointment of judges, sheriffs, and other functionaries is in his hands. Military affairs come under the jurisdiction of the Secretary at War and Commander-in-chief. The royal navy is similarly regulated by the First Lord of the Admiralty, and other members composing his council. The finances come under the cognisance and responsibility of the Chancellor of the Exchequer.

For the sake of local administration, the country is divided into counties, divisions anciently under the charge of earls or counts, but now committed to sheriffs and other officers. The *sheriff*, however, is a functionary of old standing. The title is derived from *shire* and *reeve*—the reeve of the shire. Reeve is an old title for an officer of justice inferior in rank to an alderman, and is derived from the Anglo-Saxon term *gerefa*. In Scotland, the sheriff of a county is a judge ordinary of his bounds, besides being intrusted with the execution of writs issuing from the crown. Towns possessing burghal privileges are exempted from the administration of sheriffs, and are governed by town-councils, including a burgh magistracy—such councils being annually elected by the parliamentary voters or qualified inhabitants. The chief magistrate of a town in England is entitled *Mayor;* in Scotland, *Provost*. In the principal cities only, the prefix *Lord* is added. In towns, and also in the rural districts, there is a miscellaneous magistracy, styled *Justices of the Peace*, who are nominated by the crown, and who possess a limited jurisdiction in civil and criminal matters.

The British is the least centralised government in the world, and in no other country is so much unpaid labour performed for the public, or performed so well.

Diplomacy

Is in all countries a separate branch of administration, which relates to intercourse with foreign powers. The persons deputed to act as foreign ministers are of several classes. Those of the highest class, called *ambassadors*, are not merely the agents of their governments, but represent their sovereign personally, and receive honours and enjoy privileges accordingly. The second class are envoys extraordinary and ministers plenipotentiary. A third class are called residents and *chargés d'affaires*. Consuls, of whom there are various grades, are confined in their duties to commercial affairs, and conduct no correspondence in relation to state-policy; yet, along with the whole ambassadorial class, they are expected to succour all subjects of the power which they represent, and facilitate their journey as to passports, &c.

Ambassadors, and even ministers plenipotentiary, have young gentlemen with them called *attachés*, who have no particular charge, but merely this title, to connect them with the legation, and to give them admission into the highest society. Sometimes they are sons of noble families, who are preparing themselves for diplomatic offices, and to whom the lighter duties of the embassy are intrusted. The suite of ambassadors always includes more individuals than the business of the embassy requires, a certain degree of pomp being considered necessary. An ambassador has generally three, always two secretaries of legation; other ministers often but one. A foreign minister receives letters of credence from his court, of which he delivers an attested copy to the Secretary of State, and afterwards gives himself to the monarch, or head of the government—if he is an ambassador, in a public audience; if not, in a private audience. After the reception of the credentials, the minister is said to be acknowledged. In some countries, he puts the arms of his nation or sovereign on his mansion. After his credentials have been received, he makes formal visits to the other ambassadors, to be recognised by them as such. These arrangements have been to some extent modified in this country in recent times, and as the Foreign Office is now far more exacting than formerly, our embassies have become comparatively hard-working institutions. From the moment that a minister enters the territory of the sovereign to whom he is sent, his person is held sacred and inviolable, and he acquires important privileges. To these belongs, first of all, his freedom from territorial restrictions—that is, he is not regarded as an inhabitant of the country; but his person, suite, house, equipage, &c. are considered as never having left the country to which he belongs, and as being without the jurisdiction of that in which he actually resides. From this follows the freedom of foreign ministers from the civil and criminal law; and the same applies to their suite; and all property belonging to a minister is free from taxes, &c. No common police-officer, tax-gatherer, or other public servant, can enter his hotel and make inquisition, as in the house of a private citizen. One of the especial privileges of ambassadors is that of worshipping according to the forms of their own religion in countries where their religion is not tolerated. In general, an embassy is considered as ended from the moment when the minister shews his letters of recall, or receives his passports for his journey home. When these are furnished him, he must leave the country; but his person remains inviolable even in case of war, and he is allowed to retire unmolested. The same inviolability of person is enjoyed in time of peace, by couriers and

expresses, as also by persons who, without any public character as envoys, are intrusted by their governments with the transaction of affairs of importance, and requiring secrecy and despatch; but these are not allowed to assume the state of a minister, and, in their relations to other citizens, are regarded as private persons merely.

Forces.

Every government employs force in the execution of its orders, or in defence of its rights. This force is divided into two departments, civil and military. The civil force consists of constables and other functionaries usually employed in the execution of legal judgments, in the maintenance of public peace, and in the enforcement of municipal regulations. Military force is quite a different thing: it is an organisation of men armed with weapons capable of inflicting wounds and death. In forces of this latter kind are included an army and a navy (see MILITARY AND NAVAL ORGANISATION). In the present day, with all its enlightenment, every civilised community less or more feels itself obliged to maintain an army; although many look forward to a time when international law and arbitration will supersede war.

HERALDRY—RANKS—TITLES.

No characteristic distinguishes so strongly a civilised from a barbarous people as the preservation of historical memorials. Savages have no history, and even their traditions lose all distinctness when they extend beyond the generation immediately preceding. And as historical nations retrograde in civilisation, they forget their past, even whilst they retain many traces of the culture which they owe to it. The Kabyles, or Berbers of the northern coast of Africa, whom their long contact with Phœnicians, Carthaginians, and Romans had raised to a high degree of culture, and who had been the hearers of Augustine and Tertullian in their day, have continued in some parts of the country to produce a species of poetry which it was supposed might throw light on their own conceptions of their history. But when translated by the industry of European scholars, these effusions were found to have reference almost exclusively to quite recent events—chiefly to the French conquest of Algeria. It is the same with families as with nations. Cultivated and progressive families retain, ignorant and retrograde families lose, the memory of the generations that have passed away. It is as a means of preserving family history, and of marking the relationships in which the different branches of families stand to each other, that the curious science of heraldry has kept its place in modern life. Originally, it was used for a different purpose. It consisted of an ingenious system of emblems and marks, which were painted on the shields of knights and nobles, in order that they might be readily distinguishable in battle. After these emblems ceased to serve their original purpose, they were retained by the families to whose heads they originally belonged, and are still cherished by their descendants as precious memorials. In the first instance, it is probable that each warrior adopted whatever emblem he fancied. But such license, it is obvious, must very soon have led to endless confusion, and defeated the whole objects of the institution. With a view to obviating this inconvenience, the right of granting armorial ensigns suited to the rank and condition of the wearer, was, at an early period, assumed by the sovereigns of this and all other European countries, and penalties were imposed upon those who arrogated to themselves emblems which they had not derived from this source. As the duty thus undertaken could not, except in very rare instances, be performed by the sovereigns in person, they delegated their authority to their heralds, who, in general, had made a study of what had now become a very refined and complicated branch of knowledge. It was thus that the heralds, whose function had been to proclaim within the lists the armorial bearings which individual knights had assumed, came to be government officials intrusted with the duty of conferring them and adjusting them to the condition of the wearers in the community at large. Jurisdiction in questions of arms has long been, and is now, vested, in England, in the Heralds' College; in Scotland, in the Lyon Court; and in Ireland, in the College of Arms. No one is entitled to bear arms unless he can claim them either by hereditary male descent from a person who has obtained them, or has himself obtained them by grant from the competent authority. Penalties, in Scotland, of rather a severe kind, may be enforced against any one by whom arms are assumed. The unauthorised use even of a crest renders the assumer legally subject to these penalties, whilst it involves the payment of assessed taxes equally as if the crest were genuine. Penalties for the use of false arms are seldom enforced, except in the case of a formal complaint being made to the Lyon by some one whose rights have been invaded. The social ridicule attending an act which in kind is the same as if a commoner were to call himself a lord, is generally found a sufficient deterrent, and practically, false arms are assumed only by ignorant and vulgar persons.

HISTORY AND NATURE OF LAWS.

A LAW, in its strict and original sense, is a rule of action contained in a command of a sovereign, addressed to and enforced upon his subjects; or, in other words, it is a rule of action prescribed to and enforced upon inferiors by their acknowledged superior. As the only universal superior is the Creator and Governor of the universe, all laws, in their last analysis, are divine, or, what amounts to the same thing, are natural laws. The conditions of the commands of a superior being laws, appear from this definition to be, that he has a competent authority—such as his subjects must obey, from whatever cause—and superior power, so as to be able to enforce his commands. Power and law are thus coincident, first in the divine, and then in the human lawgiver. Human or positive laws are attempts, necessarily more or less imperfect, to discover divine or natural laws by means of human intelligence, and to bring them into operation in special circumstances by means of human power. Their discovery belongs to, or rather is, the science of jurisprudence; the discovery of the means by which they may be enforced is the science of politics, or legislation in the general, and of jurisdiction in the special instance; their ultimate enforcement being the function of the executive, which is, as it were, the weapon with which power vindicates reason. In all states, the power of enforcing laws springs from and depends on the *consensus* of the subjects, which maintains the sovereign's authority. A real despotism, in the sense of a state in which the sovereign is absolutely independent of his subjects, is thus an impossibility. Even in the case of a foreign conquest, the subject population, in ceasing to govern, cease to constitute the state, and a new state arises.

A system of laws—or the law of a country—consists of the whole body of rules by which a people are bound together in civil society. It must always include CONSTITUTIONAL LAWS, to determine and regulate the political system and the public service; CIVIL LAWS, determining the subjects' rights of person and property; and CRIMINAL LAWS, defining and prohibiting offences. Human nature is such that men cannot continue in society without adopting, or being constrained to observe, a system of laws; and we know from history, that not only is society itself a growth and development, but that the laws which secure the coherence of its members grow and are developed with it so long as it progresses.

The rudimentary form of law is *custom*, while as yet there is no governmental agency to enforce it. At this stage, the system of laws is composed of modes of dealing and rules of conduct established by usage, and observed by the people, to avoid trials of strength. When the perception of the advantages of association, and of subordination to leadership, to reap these advantages to the full, conspiring with other causes, brings about government, there arises a regular agency for giving effect to the rules of custom. The sovereign or his functionaries interfere to suppress disturbances arising from the non-observance of these rules; and to judge between disputants, in order to prevent such disturbances, and to settle amicably cases unprovided for by custom. The advance of civilisation gives the strict character of law to custom, by prescribing the penalties under which it must be observed; and enacts new laws to meet new cases, or amends old rules to suit them to new circumstances. In the progress of time, in most countries the mass of the law—its rules constantly multiplying with the variety of new experiences—becomes cumbrous, and the rules themselves become indistinct; when to restore them to distinctness and certainty, a legislator—a Solon or Lycurgus, a Justinian or Bonaparte—arises, and rears up a homogeneous and systematic body of law, a code, out of the mass of popular usages and legislative enactments. This body thereafter undergoes successive changes as popular habits change with new occupations and circumstances, till, in the round of time, the necessity for codification recurs. 'For law, as for language,' says Savigny, 'there is no moment of absolute cessation; it is subject to the same movement and development as every other popular tendency . . . . it grows with the growth, and strengthens with the strength of the people, and finally dies away as the nation loses its nationality.' All positive law, whether codified or not, is thus necessarily variable, dependent on every variation in the character of the subjects with which it deals, and of the circumstances in which they are placed, whether these variations arise from race, stage of development, local situation, or any other cause. And yet all these variations are called for only in order that in various circumstances the same fundamental principles, or natural laws, may be vindicated. We thus perceive the necessarily variable character of positive, and the necessarily invariable character of divine or natural law, however much our conceptions of it may vary. From these remarks it will be apparent that the progress of jurisprudence depends on two factors. The first is the progressive discovery and more accurate definition of principles; and second, the more careful investigation of the circumstances in which these principles are to be vindicated.

The principal objects of law are personal safety, marriage, property, government, corresponding to universal necessities of human nature; and with these objects, laws are to be found in every society. While every society has within itself the causes of the growth, and materials for the nourishment, of law, none has ever been so isolated as not to owe some of the principles of its system to the laws of other nations. The first mercantile nations first develop mercantile laws, which, if they are not entirely copied, are more or less imitated by nations which subsequently turn their attention to

commerce. Thus the world, so far as we know, may be said to owe the first hints for a mercantile code to the Phœnicians; and to the Rhodians the earliest regulations applicable to shipping. But the ancient system which more than all others has influenced the laws of modern Europe, is the Roman.

ROMAN LAW, AND THE SYSTEMS DERIVED FROM IT.

Most European nations having risen from the ruins of the Roman Empire, have obtained the basis of their laws from the Roman law, which is therefore, by the common consent of Europe, denominated the *Civil Law*. In Europe, there was but one other system, at an early period, to combine with it; this was that code of usages which had sprung up in European nations before they received the civil law, and latterly became known as the *Feudal Law*. It is, after all, only in some countries that the feudal law exists: in other cases, the civil law has established a proportionate, and in some a preponderating influence. In Holland and Germany, the principles of the civil law have largely influenced the municipal systems, and have been studied with such zealous care, that the writings of the lawyers of those countries are quoted as the highest authorities on the law of Rome. In Spain, the system has been grafted on the feudal law, and on some peculiar customs derived from the Moors. In France, previously to the Revolution, the civil and the feudal law were united, as in most other nations of Europe; and in the Code Napoleon, to which we shall hereafter more particularly advert, there are many regulations from the jurisprudence of Rome allowed to exist, or revived, while many of the feudal customs which were formerly so prominent are abolished. England distinguished herself from the other nations of Europe by rejecting the civil law as authority, but many of her institutions were derived from its spirit and practice. 'With all its imperfections,' says Sir William Jones, 'it is a most valuable mine of judicial knowledge; it gives law at this hour to the greatest part of Europe, and though few English lawyers dare make such an acknowledgment, it is the true source of nearly all our English laws that are not of a feudal origin.' In Scotland, the Roman law has always been a special subject of study; and though the number of native decisions, the extent of statute law, and the necessary adaptation of the system to a state of society very different from that in which Justinian promulgated his code, have rendered references to this source comparatively unfrequent, the civil law is still authority where the particular law of Scotland does not contradict it. To complete the general outline of the influence of this system in modern Europe, it must be mentioned as the source of the canon law, which was created into a system by the Church of Rome, and still exists, more or less, either separately or incorporated with other systems, in all countries where the papal authority was acknowledged.

Writers have divided the legislative sources from which the laws of Rome sprung into five. Among the first of these is generally classed the people, and the laws sanctioned by them are technically divided into the *Lex* or *Populiscitum*, and the *Plebiscitum:* the former including the acts of the whole people; the latter, those of the plebeians convened by their tribunes. It would appear that, in the earlier periods of the monarchy, the authority of all classes was in this description of legislation tolerably equal. Servius Tullius, however, the sixth king, introduced the well-known divisions into centuries and classes, by which ninety-eight votes were secured to the first class, while ninety-five only were allotted to the remaining five, of which the lowest and most numerous possessed only one. The tribunes, who were officers chosen for the ostensible purpose of protecting the people from the tyranny of the aristocracy, were, by the exclusive and important power they possessed, again the means of restoring popular election. They procured the assembling of the people by tribes, in which their votes were given individually, and without the necessity of a property qualification. All direct popular legislation, however, soon disappeared with the authority of the emperors. Augustus, except in one instance, found the popular assemblies profoundly obedient, and under his successor they ceased to exist; so that, long before the Roman laws had become the grand system of jurisprudence into which they were formed under the auspices of Justinian, the direct popular source of legislation had been dried up.

The decrees of the senate (*Senatus consulta*) are another source of the Roman law. The legislative power of this body seems to have grown out of its judicial, which was at first its proper province. By the original constitution, the people alone were understood to be the makers of the laws, and their authority seems to have been gradually engrossed by the senate, the interference of which, from having been confined to mere advice and paternal assistance in legislation, gradually extended itself to that of making laws. It was not till the days of Tiberius that these decrees were publicly promulgated as laws; but the senate had by that time lost its independent authority, and become merely an instrument in the hands of the emperor. The proceedings of the senate were generally suggested by some public officer, and a majority decided for passing or rejecting. In later times, it became the practice for the emperor to propose a new law, either by a message or letter laid before the senate, or by an oration delivered; and as there was no opposition intended or permitted, the legislative body became the mere registrars of the monarch's will.

Another source of the civil law is the constitutions and rescripts of the emperors. At what time they commenced the practice of making laws without the nominal concurrence either of the senate or the people, is not very distinctly known. A passage in the *Pandects*, the authenticity of which, long doubted, has been confirmed by late discoveries, states that the will of the emperor is law, and that, by a particular act, the people had conferred upon him all their own power, which was thenceforth absolutely to remain in his hands —one of those transactions under the guise of which rulers are so fond of concealing their lust of power, by representing as a free gift that which no one can venture to refuse. Hadrian is believed to be the first emperor who exercised the authority of a supreme legislator.

Edicts of the prætors are another, and not the least important source of Roman jurisprudence.

Of these high magistrates, there were different numbers at different times; but the supreme authority vested in two, one having jurisdiction over the city, the other over the provinces. The prætor held his office for a year; and as a provision against his adapting his judgments to his own personal views, the Cornelian law obliged him to issue a sort of proclamation at the commencement of his magistracy, embodying the general principles to which he should adhere in his judgments; and thus, at the moment when he was least acquainted with the duties of his office, he had to fix the plan on which he was to execute them. The prætor was not originally vested with legislative power—it arose in the exercise of his judicial authority. He was merely the interpreter of the laws; but when they seemed to him to be hard, or otherwise erroneous, he did not scruple to suspend or alter their execution. The prætorian law has been compared to the equity system in England—a distinct system of law, arising out of those instances in which it was necessary to give relief from the strict interpretation of the common law. The common law had fixed a particular rule; a case would arise in which its application would be very oppressive; the common-law judges, bound by their system, could give no relief; but the chancellor took upon him to modify the evil, not by altering or developing the common law, so as to meet such cases in future, but by giving an equitable decision in the particular case, which decision was followed in like cases. By an enactment of the Emperor Hadrian, called the 'Perpetual Edict,' this doubtful and fluctuating branch of the law—at least as much of it as the emperor chose to sanction—received what might be called the royal assent, and was incorporated with the other portions of the civil law, as a distinct branch of the system.

It is a peculiarity of the civil, as distinguished from the English jurisprudence, that, according to the former, a law may be tacitly abrogated by long disuse. This, like many other principles of the civil law, was adopted by the law of Scotland.

The last fountain of Roman jurisprudence is the *Responsa Prudentum*—literally, the answers of the wise men—the opinions of the sages of the law. Even in England, where interference with the doctrines of the common law is so jealously opposed, the early commentators are the only authority for its provisions; and there is no doubt that they gave the hue of their own opinions to the doctrines they laid down. In Scotland, still greater influence has been exercised by the Text writers. In Rome, however, where the profession of the law conferred a high rank in society, the opinions of leading counsel had a much more extensive range. At an early period, the relation of lawyer and client was that of patron and dependent. Patricians alone could act as lawyers, and the science was involved in riddles to which they only possessed the key. The poor client was dependent on the good-will of his patron for such protection from oppression, whether through the law or otherwise, as the influence of the latter might enable him to afford. When population and transactions increased, and the laws, instead of a mystery, became a serious study, which depended more on laborious application than simple initiation, the profession was opened to plebeians. It became not an unusual case, at a still more advanced period, for the patron and lawyer to be separated—the former being chosen for his influence; the latter, for his skill. The forms which regulated the intercourse between patron and client, however, still retained some relics of their origin; and it is a striking illustration of the influence which Roman jurisprudence has exercised over the human race, to find these still existing. To this day, it is against etiquette to bargain with a barrister for his work. The law gives him no claim for remuneration, which it views as unworthy the dignity of his profession; and it is usual to pay him beforehand for his legal assistance. On the other hand, though he has been paid beforehand, he cannot be compelled to perform any duty in return, for he is presumed to assist the client from his own free good-will.

Under the earlier emperors, the privilege of promulgating authoritative opinions was confined to a limited number of lawyers, of equestrian rank, licensed by the government; but the profession was again thrown open to the public by Hadrian. The most brilliant era of legal wisdom commences within a short period of the decline of the republic, and terminates with the reign of Alexander Severus. Mucius Scævola, the tutor of Cicero, was one of its earliest ornaments; and it included the celebrated jurisconsults, Paul, Ulpian, Papinian, Capito, and Labeo. The last two of these, who lived in the age of Augustus, were the founders of the two sects called after two of their disciples—the Proculians and Sabinians. The former advocated the doctrine that the laws should be amended at discretion, to meet circumstances as they occurred; the latter maintained the theory of their strict interpretation, be its inexpediency in the particular instance what it may. Capito, conforming his doctrines to the inroads which the emperors were gradually making in the freedom of the republic, was a supporter of this species of innovation, and his followers were enrolled among the ready tools of despotism. Labeo sought to support the ancient freedom of the republic by an adherence to the letter of the old laws, and his sect became the champions of what may be termed constitutional freedom.

Having now enumerated the principal sources of the Roman law, we may notice its remarkable epochs. The laws enacted during the reigns of the kings exercised too little influence on the civil law, as handed down to modern Europe, to be of much practical importance. During the administration of the decemvirs, the celebrated laws of the Twelve Tables were adopted. The traditionary history connected with this code is, that the Roman government, conscious of the want of a proper legal system, sent commissioners to Greece, who, after studying the laws of that comparatively civilised nation, produced the Twelve Tables for the acceptance of the Romans. The tradition, like many others connected with the Roman history of the period, has not sufficient historical evidence to support it. Like the first laws of other rude states, they are simple and brief in their enactments. The bankruptcy system—which has so sadly shocked several benevolent scholars, that they have endeavoured to explain it as a merely symbolical

provision—is certainly very severe. It enacts that the insolvent debtor shall be cut in pieces, and that his body shall be distributed among his creditors. When law became a science openly studied, the Twelve Tables became the subject of many commentaries. It was not, however, till the Romans had been for some time degenerating, that those great collections of legislative wisdom which have come down to modern times were commenced. The first attempt to construct a code seems to have been the Perpetual Edict of Hadrian already alluded to. Two private individuals, Gregorius and Hermogenes, appear to have collected the imperial constitutions into a system, or code, of which some fragments are still preserved. Nothing whatever is known of the biography of these compilers: it has not even been discovered in what reigns they respectively lived, though their labours received high commendation at the hands of Theodosius the Younger. Under this emperor, the celebrated Theodosian Code was promulgated, in the year 438. The compilation of this body of laws was committed to eight individuals, who were allowed considerable latitude in explaining and abridging, and even in supplying deficiencies. It contains the legislative acts of sixteen emperors, from the year 312 to 438. Fragments of this code have been rescued from oblivion inch by inch, by modern scholars, whose labours, it may safely be calculated, have amounted to some twenty or thirty times more than those of the original compilers. The celebrated Godefroy of Geneva spent thirty years in the task; and more recently, the discovery of some further fragments induced the celebrated Angelo Mai to study the Roman law for the purpose of editing them.

We may now notice those great collections to which the above may be considered only preparatory. In 529, ten commissioners, appointed by Justinian, prepared the *Code* or *Codex*, as it is termed, from the collections previously made and the intermediate enactments. Soon after its promulgation, the emperor issued several new constitutions, and the whole were consolidated and reissued in 534. This great task was superintended by the celebrated Tribonian, whose eminent learning and discrimination, allied with untiring industry, but stained by the vices of corruption and partiality, have afforded a fruitful theme of praise and obloquy. This was by no means Tribonian's only labour. In the year 530, he was appointed the chief of a commission of sixteen, whose duty it was to cull the choice and useful passages from the authors of comments and opinions. The various authorities which, we are told, would have made several camel-loads, were thus reduced within a compass which, if it do look somewhat formidable to the consulter, is still manageable. Such are the fifty books which constitute the celebrated *Pandects*, or *Digest* of the Roman law—a work without which modern Europe would have known but little of the subject. Along with Theophilus and Dorotheus, the indefatigable commissioner was able to prepare, in conjunction with this great digest of the law, an abridgment or manual of its leading principles, which bears the well-known name of *The Institute*. This condensed and elegant little work was sanctioned by the emperor in 533. It has become the subject of innumerable comments, and has afforded the model on which the legal writers of most modern nations have desired to prepare their treatises. Justinian continued, during the remainder of his life, to promulgate new laws; and these, collected together under the title of *Novellæ*, or 'Novels,' form the remaining department of the '*corpus juris*,' or body of the civil law.

With Justinian we reach the climax of the Roman law; and to trace its further progress in the Empire has been more a subject of curiosity to the antiquary than of importance to the lawyer. Some fragments by later commentators, chiefly in the Greek language, have been disentombed by zealous searchers. The Roman law was nominally respected by the northern conquerors of Rome. Alaric, king of the Visigoths, indeed, caused a compendium to be prepared for the use of his dominions, consisting chiefly of an abridgment of the codes of Gregorius, Hermogenes, and Theodosius. Towards the end of the ninth century, Basilius, emperor of the East, issued a new code, intended to supersede the labours of Tribonian, termed the *Basilica*.

In the dark ages, however much of the Roman law may have remained in practice, it had died away in literature, and was neither studied nor commented on. At the taking of Constantinople in the fifteenth century, only one copy of one of the Justinian labours, the *Novels*, seems to have been discovered. It was long believed, indeed, in the learned world, that from the period of the *Basilica* to the twelfth century, the very existence of the Roman law was among the things forgotten. The circumstances of its resuscitation were found in a traditional anecdote, that at the siege of Amalfi, in 1137, some Pisan peasants discovered a complete copy of the *Pandects* among the plunder, the comprehensive philosophy and clear definitions of which so charmed the readers of that barbarous age, that its contents were immediately devoured with avidity and propagated with zeal. In Florence, a manuscript is still preserved, said to be the identical book with which this anecdote is connected, taken at the siege of Pisa in 1406. The essence of the tradition has been disproved by late discoveries, which shew that the civil law was known previously to the siege of Amalfi.

The real revival of the civil law is to be traced in the history of the universities. Of these, Bologna, Paris, and Leyden took the lead in the department of jurisprudence. Contemporary with, or immediately after the siege of Amalfi, lectures were given on the *Pandects* in the university of Oxford, by a teacher of the name of Vacarius. For reasons which we shall have to state when we come to treat of the laws of England, the civil law, thus early commenced, never made much progress in England. In the seventeenth and eighteenth centuries, the study was pursued with zeal. A prodigious number of civil-law books issued from the press during that period; Holland especially produced many eminent civilians—Grotius, Matthæus, Schulting, Noodt, Voet, and Huber belonged to that country. To Germany belonged the philosophic jurist Puffendorf, and Heineccius, whose elementary works—as the clearest and most methodical of the commentaries—have been popular as class-books of civil law. Grotius, Puffendorf, and Heineccius, however, are still more celebrated for their labours in the law of nature and nations. In modern times, the

German lawyers have taken the lead, and the name of Savigny stands venerated in Europe.

To give a general outline of the Roman law, would be to describe the common principles of the majority of the codes of civilised mankind. Although the progress of commerce and manufactures has introduced a number of new transactions and forms of creating obligations—such, for instance, as insurance and bills of exchange—which the Roman lawgivers could never have contemplated, yet their system is the foundation of all the commercial laws of Europe—a circumstance which has probably facilitated the uniformity so necessary in transactions which involve inhabitants of different countries. From the same source, Scotland and the greater part of continental Europe have derived a marriage law so different from the ceremonious system that prevails in England. Its leading principle is, that the consent of the parties alone is necessary to a valid marriage, and that when that is proved, nothing more is necessary; and that a child born between parties who are subsequently married, becomes legitimate by that act. The law of trusts and of the mutual rights and obligations of guardian and ward, have found their way more or less into every modern system, and even into the statute law of England. Prescription, or the principle that claims are limited by the lapse of time, has come down to us from the Romans. The law of testaments and the descent of movable property, is mainly derived from the same quarter. It is in the case of the tenure and transmission of land, indeed, that the person versed in modern systems will find himself least at home in the Roman, from the effect which the feudal institutions of the various nations of Europe have produced on that branch of the law. The subjection in which children were placed to their parents is apt to create surprise, even when compared with the strict filial etiquette of our own ancestors. A revolting feature of the *corpus juris* is the portion of legislation devoted to the subject of slavery and the property in slaves.

The Roman law may be mentioned as one of the sources of the law of nations, or, as it is more justly called, *international law*, in modern Europe. This law of nations, or law of the relations of separate communities, has been investigated by many ingenious men, and has, since the time of Grotius, taken rank as an independent branch of jurisprudence, though it can scarcely yet be said to have attained to the character of positive law. Great practical difficulties stand in the way of the establishment of an international legislature, tribunal, and executive; but till it is furnished with these, which are the organs of all true positive law, the opinion of each individual state must be the measure of the law of nations, and war the method of its enforcement. It is not to be supposed, however, that there are absolutely no courts where what professes to be the law of nations is enforced. Each country in Europe has generally a court where its own views on the subject are laid down. England has, for instance, the prize jurisdiction of the Court of Admiralty, which, by a misnomer, arising out of the fact that its judges and advocates were civilians, is called a civil-law court.

THE CANON LAW.

The Canon (Greek, from *kanon*, a rule) Law is, properly speaking, the ecclesiastical law of the Roman Catholic Church. In its more limited acceptation, it may be called the laws of the church as a separate corporation; but its field widened with the influence of the hierarchy. It embraced many subjects of pure civil and municipal law, such as the distribution of property between married persons, succession, &c. by linking them with ecclesiastical matters; and thus the clerical tribunals came to rival, if not to excel in importance, those of the state. The canons of the Greek Church, a portion of which were said to be the work of the apostles, added to and explained by general councils, were sanctioned by the *Novels* of Justinian, and have so been viewed as a portion of the body of civil law. A collection of canons was made in the year 520; and this work, with the papal decrees, and the privileges conceded to the church by Charlemagne, formed the chief subject-matter of the canon law down to the twelfth century. It was then that this law ceased to be the mere regulations of a peculiar body, and became a general system of jurisprudence. About the year 1114, a collection of the decrees of popes and cardinals was commenced by Ivo, bishop of Chartres, and was revised and completed in 1149 by Gratian, a Benedictine monk. Another element in the system consisted of the Decretals, which were rescripts or epistles by the pope, or by the pope and cardinals, deciding how the law of the church stood concerning disputed matters referred to them. These were first collected and edited in 1234 by Raimond de Renafort, chaplain to Gregory IX. This work was divided into five books, to which a sixth was added under the auspices of Boniface VIII. in 1298. These two great works, with some additions made to them by succeeding popes, formed what, in imitation of the collected works in the law of Rome, was called the *Corpus Juris Canonici*, or Body of the Canon Law. Besides these general statutes, there were local canon laws passed by the clergy of various countries, at national or provincial assemblies, held under the auspices of papal legates or archbishops. In the reign of Henry III. there were assemblies of the former kind; and under the respective archbishops of England there were frequent provincial synods. In Scotland, two provincial synods, held at Perth in 1242 and 1269, passed some important laws regarding tithes.

A great rivalry existed between the civil and the canon law; but it was in the main a friendly rivalry. In the north of Europe the clergy were the repositaries of both systems, and they had to decide how much should be assigned to the one, and how much to the other. The canon law borrowed largely from the civil, of which it is sometimes considered a mere branch; it was naturally, indeed, the object of the clergy not so much to change the law itself, as to take the administration of it into their own hands. To be *juris utriusque doctor*, or doctor of either law, civil and canon, was a common distinction; and hence has come down to us, though entirely diverted from its original meaning, our modern degree of LL.D. During Henry VIII.'s reign, lectures on the canon

law were abolished in England, and with them the corresponding degree. Jealous as the English were of the encroachments of the civil law, they still more determinedly opposed that of the canon. What the powerful court of Rome had set its heart upon, could not be wholly resisted; but it was always a principle, that though the civil authorities of England might take laws from the ecclesiastical system, the canon law was not to be obeyed within the realm.

THE FEUDAL LAW.

The feudal system and the Roman law—the one representing the Teutonic, the other the Romanic element in the organisation of modern states—may be said to have struggled for supremacy through nearly the whole of modern Europe. Of the influence of the latter, we have already taken a cursory view. The former was an ingredient in the constitution of the continental and British monarchies. It was the source of those popular or aristocratic assemblies which shared more or less, according to circumstances, the government of the various states in which they existed; and it was thus the ostensible origin of the British parliament. The constitution of the German Empire was essentially feudal; and the customs, or peculiar local laws of the various provinces of France, previously to the Revolution, were models from which the system was studied. The English law, especially that of real or landed property, is full of feudal usages, though their operation has often been checked. In Scotland, very many forms of the feudal system still exist, though, as we shall hereafter see, they have been adapted, perhaps as far as they are capable of being so, to the wants of civilised times.

The essential elements of the feudal system were land, and military service given for the use of it, by the vassal who held it, to the superior of whom it was held. It would be wrong to speak of either of these two parties as the absolute proprietor of the lands; for in the more perfect stage of the system, each had his own peculiar privileges, with which the other had no right to interfere, except where the law permitted him. The vassal was not the slave of the superior. The duties and services he had to perform were regulated by compact or custom. On the other hand, however, he was not the independent proprietor of the lands he held. He could not convey them to a purchaser, nor could he pledge or bequeath them, without obtaining the sanction of the superior to the person to be substituted for him. Land was thus completely removed from the unrestricted operation of commerce; and in those countries where the feudal system continued to exist, it was only by fictions and connivances—by bribing the superior, or getting the courts of law to compel him to give his consent—that sales and pledges could be effected. The lands held in this manner were termed *fiefs*. When they became hereditary, as they did apparently by custom, arising from the tacit consent of the parties interested, the superior was still presumed to give an assent to the change from father to son; and before he acknowledged the latter as his vassal, he exacted from him a fine. When the successor was a minor, and on that account unable to fulfil the military duties of the fief, the superior in some cases became his guardian, drawing the rents of the estate, and compelling him to marry whom he should point out, under a penalty. In some countries, females could not succeed. In others, where their right was acknowledged, the superior claimed the privilege of assigning husbands to them; and exacted a fine, sometimes for admitting the husband as a new vassal, sometimes as the price for permitting him to marry his ward.

The proper return of the vassal for his lands and the protection of his lord was, as already stated, military service. Where this system was established as a fixed law, the quantity of service to be so given was regulated. The church enjoyed lands which were not exempt from the ordinary feudal services. In the earlier ages, churchmen in many cases assumed the spear and buckler. When it was considered inconsistent for churchmen to fight, it was held as by no means unsuitable for the church to employ soldiers. A clerical establishment would sometimes appoint a patron, or chivalrous assistant, in the person of a neighbouring baron, who would be called the 'advocate' of the establishment It is not unfrequent to find in old tenures that a particular monastery is to supply so many archers and spearmen for so many days.

Borough communities were another class to whom military service seems inapplicable, but who, nevertheless, almost universally held by that tenure. They obtained certain privileges, and in return they had generally to keep watch and ward in their respective towns—a service in which their own safety might not be less interested than the ambition of their lord. As the privileges conceded to these communities were large and important, they did not, in general, escape taxation along with their military duties; and in later times, these exactions became generally commuted for a money payment. The privileges usually conceded to these commercial communities consisted of an exemption from the more vexatious of the feudal exactions, to be shortly noticed. These were generally conceded to them by the monarchs, as a counterpoise to the growing power of the feudal aristocracy; and within these sanctuaries commerce and civilisation created a power by which both kings and nobility were effectually held in check.

Among those who were placed in the position of feudal vassals to the seignior, or lord, were his own domestic servants, whose power and influence would be, to a certain extent, measured by that of their master. To perform the menial duties of his household, a Roman emperor employed a slave, just as a senator or a pro-consul might do. The barbarian conquerors, however, gave lands to those who performed these functions; and the person who performed for Charlemagne the office of butler, valet, huntsman, or groom, got for his services the commodity most readily at his master's hands—portions of conquered territory. It is important to observe, however, that the personal relation preceded the feudal one, and that it was the latter which grew out of the former. This point has been much insisted on by Mr Freeman, in its political bearings, in his *History of the Growth of the English Constitution*. 'Among the Teutonic nations,' he says (page 46), 'the personal relation coloured everything. . . . We are now accustomed to see this kind of service

paid in the case of royal personages only; a few centuries back, men of any rank deemed themselves honoured by paying the like service to men of the rank next above their own, or even to men of their own rank who had the start of them in age or reputation. The knight was served by his esquire, and the master by his scholar.' Apart from its more special political effects altogether, may it not be owing to this principle, or the spirit which engendered it, that we and the other nations whose blood is in a preponderating measure Teutonic, have escaped the allurements of a false equality which has been so ruinous to the Romanic races? The esquire might become a knight, the scholar a master, but the one was not ashamed of acknowledging that he was an esquire, or the other a scholar, so long as such was the fact. The right which he claimed was the right to rise, not the right to be treated as if he had risen, which is that for which the Romanic races so keenly contend, and which the French Revolution is supposed to have vindicated. Ultimately, no doubt, services were performed as the consideration for feudal benefices, which would not otherwise have been rendered. The menial servant of the monarch might have tenants and retainers under him; and from this relation to the crown which pervaded the whole system, the wages ennobled the functions, and were ennobled by them. Hence we have had in modern Europe masters of the robes, grooms of the stole, masters of the horse, &c. held by the highest nobility of the realm. The *graf*, or land-steward of a district, was an important personage. Instead of attending to the letting of paddocks and the rotation of crops, he was intrusted with the power of life and death over the inhabitants. The humble grieve, who has the management of a small landed estate in Scotland, and the shire-reeve, or sheriff, who performs judicial functions in the same part of the empire, have divided, as it were, between them the original duties of the feudal officer from whom their names are derived.

To the necessity of having acts regarding the fiefs of a superior witnessed by his vassals, can be traced two of the most important institutions of modern times. The great vassals of a king, met together in public assembly to discuss what aids they might afford for their fiefs, how they were to defend them, &c. merged into a great council or legislature; and it is to such a body that the British parliament partly owes its origin. Vassals of the lower grade were often summoned to attend at the hall of their lord as assessors, or assizers, to give, partly opinion, partly evidence, concerning some matter connected with the fief, or the conduct or rights of a fellow-vassal. With this institution, the system of trial by jury is intimately connected. A jury of perambulation, for the purpose of ascertaining boundaries—a sort of body lineally descended from the assemblage of co-vassals who were present at the investiture, and witnessed the extent of the gift—has been known in modern times. It was with a view to the preservation of evidence to be produced before such juries, or, according to the older custom, to have witnesses who should form part of them, that the singular practice, still observed in some places in England, of 'beating the bounds' by a band of schoolboys with white wands, was instituted; and the still quainter practice of beating the boys themselves, in order to fix the transaction in their memories.

It is probable that if the feudal system had only established a relation between the monarch and his immediate vassals, the influence it would have exercised over the state of Europe would have been comparatively slight. The distribution of land as the reward of services, is frequently exemplified in history; but that which chiefly distinguished the feudal system, is the numerous grades of dependence, and the manner in which all parts of society, from the emperor to the lowest serf, were bound together in one system of lord and vassal. The highest feudal noble was the Heretoch or Herzog, the leader of the Heer, or army, who, from the Latin *dux*, a leader, received amongst the Romanic nations the designation of duke: this class was intrusted with the administration of large provinces. The graf, who had a smaller charge, was called *comes*, or count; and one class of graf, who was intrusted with the marches, was called the *mark-graf*, *mar-grave*, or marquis. These nobles generally held lands of their sovereign, while they were authorised to represent his person over the districts to which they were assigned, administering justice in his name, levying his feudal exactions on his vassals, and receiving their homage.

From these high personages, vassalage went through many gradations, till it reached a condition not greatly superior to slavery. There were the *vavassors* and *châtelains*, dependents on the higher nobility, but who themselves had large estates and fortified their houses. There were the burghers of free towns, whose privileges have been already mentioned. Of rank corresponding in the rural districts, were the *socage-holders*, and the class so well known in England by the designation *yeomen*. The lowest grade were the *villains* or *serfs*, to whom was committed the task of tilling the lands which the soldier gained or protected.

THE LAW OF ENGLAND.

England has already been mentioned as an exception to the general prevalence in Europe of the civil and canon laws. So in the parliament held at Merton in 1236, the barons of England refused to admit the canon law legitimation by subsequent marriage, giving as their sole reason, 'Nolumus mutari leges Angliæ.' This resistance was due to the existence of a different and hostile system, called the common law, and the large power exercised by parliament of making new laws or statutes. The three great elements of the jurisprudence of England have for many centuries been the common law, equity law, and the statute law.

Common Law.

Speaking of the common law, Sir Matthew Hale, its historian, says: 'This is that law by which proceedings and determinations in the king's ordinary courts of justice are directed and guided. This directs the course of descents of lands, and the kinds, the natures, and the extents and qualifications of estates; therein, also, the manner, forms, ceremonies, and solemnities of transferring estates from one to another; the rules of settling, acquiring, and transferring of properties;

the forms, solemnities, and obligations of contracts; the rules and directions for the exposition of wills, deeds, and acts of parliament; the process, proceedings, judgments, and executions of the king's ordinary courts of justice; the limits, bounds, and extent of courts, and their jurisdictions; the several kind of temporal offences and punishments at common law, and the manner of the application of the several kinds of punishments; and infinite more particulars, which extend themselves as large as the many exigences in the distribution of the king's ordinary justice require.'

The origin of this system is involved in obscurity. Its progress subsequently to the reign of Edward I. called the English Justinian, is well known; but when we read those portions of English law-books which attempt to carry the history to an earlier period, we cannot help feeling disappointed at the result. The more marked features of the system were, doubtless, the customs of the Anglo-Saxons. A collection of the laws of England during the heptarchy, or laws of the Anglo-Saxons, was published by an eminent antiquary, David Wilkins, in 1731, but they may be best studied in the translation of Mr B. Thorpe, or, so far as they relate to constitutional history, in the extracts given by Professor Stubbs of Oxford in his *Select Charters and other Illustrations of English Constitutional History*. The fragments of Anglo-Saxon legislation which they contain refer chiefly to: (1) Criminal law, which included a variety of practices then common to all Teutonic races, but now unknown, such as 'wergeld,' or compensation in money or kind paid for murder or assault; ordeals by fire, iron, or water, supposed to be infallible tests for the detection of the guilty; compurgation, or the oath of a certain number of persons, according to the rank of the accused, in his favour, which was held conclusive proof of his innocence; (2) Ecclesiastical law, which included such subjects as the immunity of the persons and estates of the clergy from the ordinary courts, and the sanctity of holy places, persons, and things; and (3) Constitutional law, relating to the public assemblies and courts of the *witan*, or wise men, for the whole kingdom, and of the shire, hundred, or township for smaller districts, to the rank of persons, and to taxation. Concerning private rights, there is scarcely anything, except what relates to the tenure of land. The reason of this is partly, that much was regulated by unwritten customs, and still more, that private rights were less complex than in modern times. Several of the Anglo-Saxon kings, as Ethelbert, Ina, Edward the Elder, Athelstane, and Edgar, did no more than modify existing customs; Alfred, Canute, and Edward the Confessor, aimed at framing codes. The laws of the last are the most famous, but we have them only as written down in the reign of William the Conqueror.

The Conquest first firmly settled the feudal system, and the connection between vassal and superior became one of the most important features of the common law. The Saxons could not escape the influence of a system which had deeply rooted itself among the kindred nations of the continent; and many feudal institutions are to be found existing under the Saxon kings. The increase of the spirit of feudalism under William the Conqueror was, however, so great, that many authors have attributed its origin in England to this era. The Conqueror brought with him the system of his own province, for which he was a vassal to the king of France, and could not admit the possession of landed property in England, except as held from himself in the capacity of lord-paramount. The greater nobles naturally held the lands he liberally bestowed on them of him as superior, and they compelled all who lived upon their lands, or even in their neighbourhood, to acknowledge them as liege lords. Several of the Norman monarchs cleared large tracts of country of inhabitants, that they might enjoy the regal pleasures of the chase in undisturbed tranquillity. The Saxons had their own county courts, but the greater part of the causes were, after the Conquest, removed from them, to be pleaded in the court of the monarch, which attended on his own person. Legal proceedings were conducted in the Norman dialect of the French, which was afterwards changed into Latin. The use of a tongue unknown to the people at large continued down to the days of Oliver Cromwell, and at the Restoration was restored. It was finally abolished in 1731, by 10 Geo. IV. c. 26.

The charters that were so often granted by the earlier kings to the importunity of their subjects, were restrictions of the tyranny of the feudal law, and promises to adhere to the old Saxon customs—promises which would not have been so often exacted if they had not been continually broken. The most celebrated of these is that conceded by King John, called Magna Charta, or the Great Charter. Its privileges are in a great measure constitutional, and it has often been said that it was procured for the advantage of the aristocracy, and not of the people; but it is not without stipulations in favour of the latter, protecting them both from the crown and from the nobility. It restricts the tyrannical forest laws, and the arbitrary exactions by feudal lords from their vassals. The clause which has attracted chief interest is that which says that no freeman shall be affected in his person or property save by the legal judgment of his peers, or by the law of the land. The judgment by peers refers to jury trial, and the whole clause strikes against arbitrary imprisonment, and involves the principle of the *habeas corpus*—a form of procedure first introduced under that name in the reign of Charles II. —by which every man, whose liberty is restricted, may demand to be brought before some competent court, in order that he may be either convicted or liberated.

The progress of civil liberty in England has been in a great measure attributed to the division of interests in the country. The crown had an interest in checking the power of the great nobility, and the nobility that of the crown. That the exercise of this power was essential to the liberty that has existed in England, must be apparent to those who contemplate the state of France and Germany, where the aristocracy made themselves either quite or nearly independent of the crown, and often acted as tyrants to the people. A very important blow to the power of the aristocracy was accomplished by Edward I. in 1290, by the abolition of the system of sub-feuing. From that date, no vassal of the English crown could grant lands to be held of himself, as

he may to this day in Scotland—he could only put a new vassal in his own place, as an immediate dependent of the crown. There is a similar law in the Scotch statutes of Robert the Bruce, but it is doubtful whether it was ever enforced. The disputes with the church were also not without service. The attempts of the ecclesiastics to urge the claims of the civil and canon law, caused the common lawyers to resist their encroachment with true professional hatred. It was in the universities that the clergy had their chief influence; and the students of the common law formed themselves into rival institutions—the Inns of Court. Then there was in the boroughs a separate interest, possessed of an influence always increasing. The tendency of all these circumstances seems to have been to lead to a gradual return to Saxon freedom, and a fixing of the common law in conformity with the long-cherished feelings of the English people.

The repositories of the common law are the treatises of eminent lawyers and the reports of decisions. Of the former, there are several of the thirteenth and fourteenth centuries—Glanvil, Bracton, Hengham, and the book called *Fleta*, by an unknown author, Thornton, and Britton. Lyttleton's treatise on Tenures, the work of the more matured system of the close of the fifteenth century, was long the text-book in the practice of the feudal law. It was in the form of a comment on this work that Chief-justice Coke issued in 1628 the vast treasury of legal learning known as 'Coke upon Lyttleton.' The next great name is Blackstone, a man who wrote a book remarkable for perspicuity, but with several defects, of which the chief are unphilosophical arrangement, and eulogy of bad as well as good parts of English law; nor is his reasoning always accurate, as was shewn by Bentham in his essay on Government. With all its defects, Blackstone's work has not been superseded by any better book, unless it be the Commentaries of the American lawyer Kent, which, of course, contain much that is only applicable to the United States. The respect of English lawyers for whatever is ancient in the common law, is singularly apparent in the majority of law-books. If any great authority, such as Coke or Blackstone, has treated of a particular subject, whoever afterwards writes upon it seems to be held bound to incorporate all that he has said, not only in spirit but in words. Of the reports of cases, there is now a vast collection. From the time of Edward I. to that of Henry VIII. they were annually collected by officers appointed for the purpose, and were called year-books. They were latterly published by private reporters, and are now superintended by a council of lawyers chosen by the Inns of Court and the Society of Solicitors. As they are all precedents in succeeding cases, and therefore the source to which the public look for the interpretation of the laws they must obey, it may be questioned whether they should not be officially recorded by persons responsible for the accuracy of their reports, as is the case to a certain extent in America.

Equity Law.

This second great division of English law was originally a system by which relief was given in cases where a strict interpretation of the common law would have produced injustice. It could look to the influence of accident, error, and fraud when common law could not. A deed, for instance, was lost. The common-law courts could hear nothing about what might have been its contents, and as the deed could not be found, the party must suffer. Here the court of equity came to his relief, by compelling a 'discovery' of the terms of the agreement. When a trustee was put in possession, common law could not look at him in any other light but as holding for his own behoof; but equity compelled him to do his duty to his employers. Where an obligation was to pay, common law could exact performance; but if it was to perform any other act, the assistance of equity was generally necessary to enforce it. Again, the courts of law might give a remedy for a mischief, but they could not interfere to prevent it. This necessary branch of legal administration came likewise within the jurisdiction of the judge in equity, who, on cause shewn, could issue his 'injunction.'

The existence of equity, which in the technical sense attached to it is peculiar to England, though a similar distinction existed at an early stage of Roman law, is a singular monument of the imperfection of common law. The origin of this system is as obscure as that of the common law, though of more modern date. The earlier law-books do not mention it, and it was probably long in operation as a sort of exception to the ordinary course of law, before lawyers would acknowledge it as a system. It originated in persons who had suffered manifest injustice, which the ordinary courts could not remedy, applying for redress to the sovereign in person. The king's conscience-keeper, or chaplain, became referee on these occasions, and what he did he sealed, by way of testimony of the royal authority, with the king's seal. Hence the origin of the lord chancellor with his great seal, whose office, in some form, has been traced so far back as the days of Edward the Confessor. In early times, the chancellors were ecclesiastics, and they thus were in the habit of adjusting their equity, and the form in which they administered it, to the civil and canon law. Whatever may have been the origin of equity, it became at last a fixed system of law. It is a popular mistake that a judge in equity gives his decision according to what is called 'the general principles of equity and justice,' without reference to strict rules. He is bound down by precedents, and there are many acts of parliament which regulate his proceedings; so that in reality equity has become a department of the general system of law. It is a department, however, in which recent legislative effort has been steadily, though not as yet very successfully, directed to the amalgamation of the two systems; the law of Scotland, in which they never were separated, being in this, as in other instances, the real, though seldom the acknowledged model of imitation.

Statute Law.

The third branch of the law consists of statutes, or acts of parliament. The constitution of the legislature by which they are passed does not belong to the present subject; it need only be observed, that to be law, every word of an act requires to have the consent of the three branches of the legislature—Sovereign, Lords, and Commons. In very early times, acts seem to have been petitions by the parliament acceded to by the sovereign. The

parliament was convened to supply the king with money, and while it kept him in suspense, it sometimes prepared a petition against grievances, to which a needy monarch found it prudent to accede. It became a practice for the judges, at the end of a session of parliament, to convert the substance of the 'petitions,' or 'bills,' which had been acceded to by the king, into acts. This practice was dangerous, the judges having the power, when parliament had ceased to sit, of altering the intended provisions. To remedy this, the plan now followed was adopted, of making the bill contain the exact words which it was intended should constitute the act. Singularly enough, the bill is still in the form of a petition, and when made an act, the only alteration is, that the words 'May it therefore please your Majesty' are struck out.

A bill may be introduced either in the House of Commons or in the House of Lords. It is a rule that all bills affecting personal status—such as bills of attainder for treason, bills for naturalising foreigners, bills for divorce, until the establishment of a Divorce Court by 20 and 21 Vict. c. 85, &c.—make their first appearance in the House of Lords. The Commons possess the more substantial privilege of originating all bills of supply, or for the levying and appropriation of taxes. The privilege is jealously guarded, and it is usual, should the House of Lords amend such a measure, for the House of Commons to refuse to take it into consideration again, and to authorise their Speaker to throw it over the table. All measures involving taxation originate in what is called 'a committee of supply,' in which the house is presumed to be sitting, not to debate great questions, but simply to transact pecuniary business. In the case of the introduction of any ordinary bill, amending the law, into the House of Commons, the first stage is, to obtain leave from the house to 'bring it in.' In the House of Lords, a member may move a bill without previously obtaining leave. On a bill being brought in, the next step is the first reading. A member moves that it be read a first time. If there be a party in the house strenuously opposed to the principle of the measure, it may be opposed in this stage, and a debate and division will of course ensue. Objections to the details are reserved for a future opportunity.

The next and principal ordeal is the second reading, after which the bill is referred to a committee of the whole house. In this committee, as in a committee of supply, the body is the same in every respect as that which constitutes the House of Commons, but the members are considered as having assembled, not to debate general questions, but to enter on a business-like examination of the various clauses of the measure. When the committee have examined all the clauses, they report to the house. It is then moved that the bill be read a third time. This stage is, in disputed measures, generally the last trial of party strength. If the third reading is carried, there is still another motion, to the effect 'that the bill do pass,' but this motion is seldom opposed. On the bill passing one house, it is conveyed to the other, where it has to pass through the same succession of readings. When amendments are made on a bill after it has passed through one of the houses, in that to which it is then sent, it must be re-transmitted to the house where it first passed. That house may accede to the amendments, and so let the bill pass; or it may reject the whole measure in consequence of them; or it may, adhering to its first opinions, hold a conference with the other house, with a view to a settlement of differences. When a bill has passed both houses, its next step is the royal assent, which may be given either by the sovereign personally or by commission.

A bill that has received the royal assent becomes a law, the operation of which commences when the consent is adhibited, unless another point of time be stated in the act. All the statutes of a session are ranked in order, according to the date at which they have received the royal assent; and the whole set are distinguished from others by the year of the reign in which they have been passed. Technically, the whole legislation of a session is called one act, and each statute or act, according to the common acceptation of the term, a chapter of it. In the printed edition of the statutes, each chapter is divided into sections, but in the original copy of the act there is no such division—the whole is a continuous manuscript without break. Nor is the division into chapters even authoritative. The consequence is, that when a new act is passed, making alteration on some part of a previous one, instead of specifying the chapter and section that is altered, it describes the act vaguely, as an act passed in such a session, for such a purpose. Thus, in 1839, an act was passed to alter a section of the Patents Act, passed in 1837. For any ordinary purpose, this would have been called an act to amend the seventh section of the act 5 and 6 William IV. chapter 83; but as there are no such things as chapters and sections known in law, the legislature could only give a roundabout description, thus—'An act to amend an act of the fifth and sixth years of the reign of his late Majesty William IV. intituled an act to amend the law touching letters-patent for inventions.' Sometimes there is a series of acts, the latter ones amending those that have preceded them, so that the titles are involved in confusion. Even where the acts are divided into sections, as they are by the printers, it is found difficult for lawyers to unravel their meaning, and to unprofessional people they are often a sealed book. A section generally consists of but one sentence; and as it has often to give a long narrative of things that must be done, independently of circumstances, and others that must be done in particular cases, and others that may be done, but are not imperative, and others that must not be done, &c. the comprehension of the full meaning of the sentence requires a strong mental effort.

There are some acts which are passed every session in the same terms, such as the Mutiny Act, the indemnity for neglecting to take the oaths, &c. Independently of these, the statutes now passed in a single year are often over 100 in number, and generally fill a quarto volume of about 500 pages, very closely printed. Besides these acts, which generally either apply to the whole empire, or to some one of the great national divisions of it, there are annually passed several folio volumes of statutes called 'Public Local Acts,' consisting of the police acts of the various towns, and acts for the construction and management of harbours, turnpike roads, bridges, gas-works,

water-works, railways, &c.; and Private Acts, which relate to private and personal interests, such as naturalisation, restitution of honours, change of family name and arms, exchange or sale of entailed property, and the like.

The necessity of arranging and consolidating the statutes has from time to time been felt and expressed by statesmen. Lord Bacon, in whose days the statute law did not occupy a twentieth part of its present bulk, spoke with alarm of its overgrown size, and recommended that the whole be abridged, in order to its being made manageable. Something at last has been done to this end, and the existing statute law has been revised and compressed, down to the 10th of George III. or the year 1770, into two octavo volumes. The whole is expected to be completed in four volumes.

The necessity for the reform of the whole system of law, the introduction of one comprehensive code, and for the revision of judicial procedure, has now become very apparent. Although we must still wait for some time longer for a code of the whole law, a step of the greatest importance towards it has been taken by the passing of an act (afterwards explained) during the session of 1873, which amalgamates the jurisdiction of the common law and equity courts, and must before long result in removing all distinction between the two systems, the existence of which was the greatest defect in English law. This act was carried through parliament by Lord Chancellor Selborne, formerly Sir R. Palmer.

English Law-courts.

We have now to notice the various courts of law in England. The House of Lords might be considered, until the passing of the Judicature Act of Lord Selborne, just mentioned, as the general court of appeal from the whole kingdom. There is only one set of superior judicatures from which a reference may not come before it in some form or other—the criminal court of Scotland. The origin of parliament is connected with the great council of the feudal kings, which gave them advice both in legislative and judicial matters. When parliament was separated into two houses, the judicial business was kept by the upper, and, probably at the instigation of the bishops, the Lords adopted the power of administering oaths, not possessed by the Commons—a circumstance which more distinctly marked their judicial character. But though the appeal is nominally taken to the House of Lords, it is heard and decided on by one or more of the eminent lawyers, of whom there are always several in the house, and generally by the Lord Chancellor. Until the case of O'Connell in 1844, the lay or non-legal lords occasionally exercised their privilege of judging in appeals. Independently of their powers as judges of appeal, the Peers act as a criminal court in all cases where a peer of the realm is tried for a capital crime, presided over by a judge, called the Lord High Steward. This official is properly the judge, the peers acting as a jury, and giving their verdict on the question of guilt. The directly feudal origin of this rule of ancient practice will be at once recognised.

The principal courts were divided into courts of common law and courts of equity. The former were three in number: the King's or Queen's Bench, the Common Pleas, and the Exchequer. Each had a chief, and four assistant judges, called puisne or junior judges. These courts date their origin from the Conquest. On feudal principles, the Norman kings called all the principal causes which had, under the Saxons, proceeded before the county courts, to be decided in their own hall, or court, by their own great council, which was presided over by an officer called the Justiciar. This court, called the *Aula* or *Curia Regis*, the King's Court, at first followed the king's person—a great inconvenience, removed by Magna Charta, which fixed it permanently in Westminster. Under Edward I. the system was adopted of sending deputations from the court twice a year to try cases in various parts of the country—the origin of the present assize or circuit courts. Under the same monarch, the jurisdiction of the court was split into three parts. To the justiciar, afterwards called Chief-justice, were assigned the pleas of the crown, as they were termed, involving all the graver offences; and as he was the highest judicial officer in point of rank, his court was appointed to have cognisance over the two others. The matters connected with the exchequer—the regulation of the royal domains, the collection of duties and other taxes—were committed to judges called Barons, presided over by a Chief-baron. All questions about the possession of land, and other litigations between one citizen and another regarding matters of property, were called 'common pleas,' and were committed to certain justices, presided over by a Chief-justice.

The King's or Queen's Bench was thus the chief criminal court, and the Exchequer the principal tribunal for revenue matters; but these courts were by no means restricted to the departments to which they were so assigned—possessing, concurrently with the common pleas, a jurisdiction in all ordinary questions of common law.

An appeal lay from any one of the courts to the judges of the other two, who, when met to decide on such appeals, constitute a court called the Exchequer Chamber. Fourteen of the fifteen judges who form these common-law courts hold assizes in the various county towns—in some of them twice, and in others thrice a year. Here they act both as civil and criminal judges. Offences committed in London and its vicinity are tried by a tribunal lately created, called the Central Criminal Court. From the assizes, an appeal is competent to the court in London by a motion for a new trial on the ground that the judge misdirected the jury, or that the verdict was contrary to the evidence.

The principal equity tribunal in England was that of the Chancery. It had in it three distinct courts, and three judges—the chancellor, the vice-chancellor, and the master of the rolls; latterly, the number of vice-chancellors was increased to three. At one time, all proceedings in bankruptcy centred in the lord chancellor, but the increasing importance of this class of business rendered it necessary to appropriate a separate court to the purpose. This was accomplished in 1832 by Lord Brougham; and since then, the utility and importance of the Insolvent Debtors' Court have been materially enlarged. Another court is called the Judicial Committee of the Privy-council. It consists of selected judges of the other courts, and retired

Indian or colonial judges. Its principal jurisdiction is in appeals from the colonial courts and the Court of Admiralty. The Court of Admiralty has jurisdiction in maritime contracts and crimes committed on the high seas. It professes to follow, not the special law of England, but the general commercial law of modern Europe, founded on the principles borrowed from the Roman law, but modified by the practice of merchants and the decisions given in the principal Admiralty courts of Europe and America, particularly in that of England when presided over by Lord Stowell, the brother of Lord Chancellor Eldon. In time of war, the court receives a commission to adjudicate regarding prizes taken from enemies, or from neutrals committing breaches of neutrality. The Judicial Committee also determines appeals from the ecclesiastical courts.

Besides the tribunals mentioned, there are ecclesiastical courts in the two archiepiscopal provinces of Canterbury and York. In the former, there are the Court of Arches, the Prerogative or Testamentary Court, and the Court of Peculiars; in the latter, the Prerogative Court and the Chancery Court. There are also many inferior ecclesiastical courts. If we were to complete the list of English tribunals, it would be necessary to include the justices of peace, who, besides many special powers in revenue and other matters conferred by act of parliament, sit, at the general and quarter sessions, as judges in minor cases. In addition to all these, there are various courts, of greater or lesser jurisdiction, connected with cities and boroughs.

An important tribunal, called the County Court, was instituted by an act of Lord Brougham, 9 and 10 Vict. c. 95, for cases of minor value. Its jurisdiction was originally confined to common-law cases, but has since been extended to certain equity and bankruptcy suits.

Changes effected by the Judicature Act, 1873.

Such was, and still is, the system of the administration of law in England; but by the act before referred to, passed in 1873, called the Judicature Act, the following changes will come into operation on 2d November 1874. By this statute: (1.) The whole superior courts both of common law and equity, the Courts of Admiralty, Probate, and Divorce, the London Court of Bankruptcy, two peculiar courts of common pleas which formerly existed at Lancaster and Durham, are united into one supreme court. (2.) This court is to be divided into two branches—the High Court of Justice, for the exercise of original jurisdiction; and the Court of Appeal, with an appellate jurisdiction from the High Court. (3.) The appellate jurisdiction of the House of Lords in all English appeals is transferred to this new appeal court, as well as the appellate jurisdiction of the Committee of Privy-council in all Admiralty causes. Power is also given to the sovereign by orders in council to transfer to it the jurisdiction of the Privy-Council in ecclesiastical and colonial causes. It was proposed by the bill to transfer to the new appeal court the jurisdiction in Scotch and Irish appeals, but this was thrown out by the Conservative leaders in the House of Lords, and that jurisdiction will still, probably for a short time only, remain vested in the House of Lords. (4.) The new High Court is to recognise all rights, whether legal or equitable, which were recognised by any of the courts to whose jurisdiction it succeeds, and may give all remedies which it was in the power of any of them to afford to a suitor. (5.) A uniform procedure is to be followed in all the branches of this new High Court, which is intended to combine and adapt the best parts of the procedure in the equity and common-law courts. The pleadings under the new system will nearly resemble those of the English Admiralty Court and the Scotch Court of Session, in which the suitor or plaintiff has to give a short statement of the facts on which his claim is founded, and the defendant an answer thereto, with a similar statement of any defence independent of a mere denial of the claim. Jury trial is still retained, but provision is made for trying before a judge, or remitting to referees, cases more suited for that form of tribunal. (6.) The substance of the English law is in several important particulars expressly altered in favour of equity, and it is generally provided, that wherever the rules of law—*i. e.* the common law and equity—come into conflict, the rules of equity shall be preferred. (7.) The High Court is to be divided into five divisions—called the Chancery Division; the Queen's Bench Division; the Common Pleas Division; the Exchequer Division; and the Probate, Divorce, and Admiralty Division. These divisions are in the first instance to receive the business which belonged to the old courts from which they take their names, but provision is made for the transference of business from one division to another whenever necessary for its due despatch. (8.) The judges in the High Court are to be the existing judges in the supreme courts, but their number is to be reduced by vacancies to twenty-one. The judges in the Court of Appeal are to be five—the Lord Chancellor, the Lord Chief-justice of England, the Master of the Rolls, the Lord Chief-justice of the Common Pleas, and the Lord Chief-baron of the Exchequer; there is also provision made for the appointment, as additional judges, of certain retired judges, but no provision is made for any salary to be paid to these additional judges. (9.) Finally, it is provided that a council of the judges of the High Court is to meet at least once a year, under the presidency of the chancellor, to consider the operation of the act, and what changes may be necessary in it; and if such changes require the authority of parliament, they are to report their opinion on them to one of the principal secretaries of state. It is evident that, though the act directly deals with the constitution of courts and forms of procedure, it really introduces a complete change in the substance of English law. No measure of equal magnitude relating to the law has ever before been passed by the parliament of Britain, and we may entertain a hope that persons wise enough to devise, and skilful enough to carry so valuable a change, may proceed still farther, and produce a code of British law. If they do not attempt or succeed in this, they will at least leave an example to encourage those who come after them, and a proof that, though difficult, it is not altogether impossible to reform the law by the agency of the English parliament, most of whose members are ignorant in regard to it. To attain this desirable

object, efforts should be made to educate all citizens, and specially those who aspire to become members of parliament, in the laws of their country.

English Legal Usages.

Two English legal usages have played so important a part in preserving the liberties of the people, as to deserve separate notice.

1. *Trial by Jury*, in criminal cases, is of great antiquity, having its foundation in certain Anglo-Saxon forms favourable to individual liberty, and specially in the practice of compurgation, formerly referred to, for the compurgators, who were originally witnesses, became afterwards judges of the matters of fact in criminal trials. It was sanctioned by Magna Charta, and has ever since continued a marked characteristic of the law of England. During the present century, it has been adopted in criminal cases by most of the states of the continent. A jury originally consisted of persons in a rank as nearly as possible analogous to that of the party charged with an offence. Practically, it is composed of individuals miscellaneous in rank, so as to insure impartiality in decision. In England, the jury, in criminal cases, is of two kinds, the grand and the petty jury. The *grand jury* consists of twenty-four persons summoned by the sheriff, to attend the court and present all offences committed within the county; that is, determine whether the cases of criminal accusation shall go before the petty jury. The jury so called examine witnesses on oath, and receive other evidence; if satisfied that there are grounds for trial, they *find a true bill*, as it is called, and the trial proceeds. The object of this institution is to prevent the oppression or damage of innocent persons; but, in practice, it is a clumsy method of investigation and deliberation, and liable to error, from the vast quantity of business to be hurried through, as well as burdensome to the lieges. The time seems to have arrived when it will require to be superseded by the more efficient institution of a responsible public prosecutor.

The *petty jury*, for the trial of those against whom a true bill is found, consists of twelve men, drawn by lot from a larger number summoned. This jury is the sole judge of the fact or facts charged, and its decisions require to be unanimous. In many instances, a jury cannot conscientiously arrive at a unanimous conviction, in which case either one or more must yield to the majority; or the whole, after experiencing the pangs of hunger for one or two days, require to be discharged, when a new trial must ensue.

Trial by jury is usually considered to be the palladium of our rights and liberties; but this favourable view of its character needs modification. It is principally useful as a safeguard against vindictive attempts at oppression on the part of the crown or other powerful accusers; yet even in this respect it has on various occasions proved faulty. In Ireland, for example, where the English forms of grand and petty jury have been introduced, it is observable that there is scarcely a possibility of procuring a conviction where the state is the complaining and injured party, although the facts charged be proved beyond the possibility of cavil. It can command respect only where there is a deep sense of rectitude, and a disregard of public clamour.

2. *Habeas Corpus.*—Only the law, not the sovereign or any functionary of government, can imprison the person of a subject, who can reclaim against wrongful or unconstitutional seizure and incarceration by an action of *habeas corpus*, introduced in the reign of Charles II.; that is, an action before a competent court to be released, or have the custody of his own person, unless a legal warrant can be shewn for imprisonment. In periods of civil commotion, the habeas corpus is occasionally suspended by an act of the legislature; by which means the state can imprison without challenge, and dismiss without trial. As may be supposed, this serious infringement of the constitution is resorted to only in extreme cases. In Scotland, a law with a similar object was passed in 1701.

After this brief sketch of English law, it is unnecessary to describe that of Ireland, which is in most respects copied from it.

LAW OF SCOTLAND.

In its earliest form the law of Scotland bears a close analogy to that of England, and of the other Teutonic nations of Northern Europe. Amongst the external causes which modified it at a more recent date, two are the most important: the intimate connection which subsisted for several centuries between this country and the continent of Europe, more particularly France; and the union with England. First—to the French connection, we trace a large infusion of the principles of the Roman civil law into the Scottish law of marriage, of guardianship, of contracts; and the adoption of judicial arrangements peculiarly French, such as the constitution of the College of Justice on the model of the parliament of Paris, and the institution of a public prosecutor. Much of the legal and official terminology of the law of Scotland, which seems mysterious to English lawyers, is to be ascribed to the same cause. The *ouverture* of the French Estates still lives in the overture of the ecclesiastical courts; the English mayor and alderman, both familiar to our earlier statute law, became a provost (prévôt) and bailie respectively; the barrister is an advocate (avocat), and the attorney a procurator (procureur), and the like. Second—to the union with England is due the assimilation which has already taken place, and which is daily going on, between the laws of Scotland and England.

As in England, the law first became a matured system under the influence of feudalism. Little is known of the Anglo-Saxon, and still less of the Celtic customs, which undoubtedly existed, but have now almost entirely disappeared. The origin and progress of feudalism in Scotland are very obscure. The chroniclers attribute the foundation of the system to Malcolm II. in the eleventh century. It is more likely that, with the resort of foreigners, Saxon and Norman, to the court of the Scottish king Malcolm Canmore and his sons, the system was gradually introduced. The monarchs, who were ambitious of presiding over a distinguished court, gave encouragement to the Normans, to whom they granted large fiefs or lordships; and it was natural that they should retain the same usages to which they were accustomed in the country of their origin. The whole of the Lowlands and part of the Highlands became nearly as thickly adorned with Norman

names as England. There appear to have been many points on which the earlier laws of the two divisions of the island were identical. In England, however, the feudal system received many checks, while in Scotland it was allowed to grow rank, and the deference paid to the civil law in all matters not directly governed by the feudal law, served to widen the distinction between the legal institutions of the two countries.

Little information has yet been collected concerning the practice of the law in Scotland previous to the sixteenth century. Edward I. probably destroyed some vestiges, through which its history might have been traced; but he seems to have been charged by antiquaries with the destruction of more than ever existed. The earliest collection of the laws, the *Regiam Majestatem*, bears so near a resemblance to the English work of Glanvil, noticed above, that it is evidently copied from that work; for the view of some Scotch lawyers, that Glanvil copied the *Regiam*, is now abandoned. There is also an old collection of burgh laws, probably of the reign of David I. The first Scottish legal writer whose works are quoted is Balfour, who prepared, about the latter end of the sixteenth century, a compendium, chiefly derived from the *Regiam Majestatem*, the acts of parliament, and the decisions of the court. In the reign of James VI. a commission was appointed to make inquiry into the laws, of which Sir John Skene was a member. The commissioners collected and published many acts of parliament, the *Regiam Majestatem* and other consuetudinary laws, such as the customs of the royal burghs; and Skene wrote an interesting treatise on the meaning of technical legal expressions. Much labour has been bestowed on these subjects in quite recent times, and more accurate editions of them have been published.

The first scientific writer on the law of Scotland, however, was Sir Thomas Craig, whose book on the Feudal Law was published in 1655. It is a work of learning, in which the reader is somewhat surprised to find that, though the work professes to be a Scottish law-book, it should derive so much from the practice of continental nations. The next great authority is Lord Stair, the statesman of the reigns of Charles II. James VII. and the first years of William III. whose *Institute* is remarkable for the depth of its legal principles, and the acuteness with which they are applied. Sir George Mackenzie, called 'the bloody Mackenzie,' from his prosecution of the Covenanters as Lord Advocate of James VII. wrote treatises both on the civil and criminal law, but these are not of much value. Soon after the middle of the eighteenth century, a second *Institute* was prepared by Mr Erskine, Professor of Scottish Law in the university of Edinburgh, on the model of Stair's work, and better adapted to modern times. Sir Walter Scott has justly denominated Erskine's *Institute* the Scottish 'Coke upon Lyttleton.' There were formerly few opportunities of acquiring a legal education in Scotland, and it was the practice for Scotch students to repair to one of the continental universities, of which Paris and some of the other French universities in the sixteenth and seventeenth centuries, Leyden and Utrecht in the seventeenth and eighteenth centuries, were preferred. On the occasion of the appointment to a chair of law in Aberdeen, in the seventeenth century, Spalding the Chronicler says, it was 'strange to see ane man admitted to teach the lawes who was never out of the countrie studieing and learning the lawes;' thus expressing his astonishment that any man could be presumed to become acquainted with the system of law on the spot where it is administered. The first law-chair in the university of Edinburgh, that of Public Law, was instituted in 1707; five others have since been added; and the legal school of Edinburgh, though still far inferior to those of the German universities, is the most complete in this country. The German universities are still, however, resorted to by Scotch students for the study of Roman law. The civil law is still studied in Scotland, but its ancient influence has sunk, from the progress of commerce and the increase of statutory regulations.

Scotland has a considerable quantity of early statute law, but not nearly so much as England. Down to the Revolution, the general principles only of the acts had the assent of the assembled parliament—the details were prepared by a committee called the Lords of the Articles. The older acts are remarkable for their brevity and precision, which was commended by Lord Bacon. It must be confessed, however, that in some cases the brevity of the Scotch statutes has produced obscurity, which it has required many litigations to remove. According to a usage derived from the civil law, acts of parliament become repealed by disuse in Scotland, a principle unknown in English law.

The earliest tribunals in Scotland were either the parliament, as the great council of the realm, or committees of it, acting with the delegated powers of the whole body, and the king's privy-council. There was likewise, as in England, a king's justiciar, whose authority was large, and before the institution of the Court of Session, extended to civil as well as criminal matters, although the limits of his jurisdiction in the former were not well defined. Committees of parliament were, in the fifteenth and the beginning of the sixteenth century, sometimes formed into regular courts of justice. In 1532, the present Court of Session was constituted, on the model of the parliament of Paris. The chancellor, whose principal duties disappeared at the Union, was chairman of this body. It consisted of fifteen judges, including a president, who was chairman in absence of the chancellor. In 1830, the judges were reduced to thirteen, which is the present number of the court. It consists of two divisions, which are separate tribunals of equal authority. Five of the judges also act as individual judges in courts of their own, in which capacity they are termed 'lords ordinary.' An ordinary case, on coming into court, is discussed before a lord ordinary, from whom there is an appeal to one of the divisions of the 'Inner House,' as it is termed, where the remaining judges sit collectively; and from the Inner House there is an appeal to the House of Lords. There is no such conventional distinction as that between law and equity known in Scotland, and hence the Court of Session is sometimes called a court 'both of law and equity.' There are two very useful descriptions of action peculiar to this court: the one is called an action of 'declarator,' which a person may bring, to have the law as to his rights

declared; another is called a 'multiplepoinding,' which may be raised by a man having money in his hands which more than one person is claiming, that he may know to whom he can legally pay it: by a fiction analogous to those we have seen in the law of England, this action may also be raised, in the name of the holder of the money, by any of the claimants. Trial by jury was not, until lately, added to the jurisdiction of this court. It is limited to certain descriptions of cases, and has never become popular. The functions of the Court of Exchequer for revenue cases, and of the Court of Plantation of Kirks and the allocation of Teinds, have now been practically united with the Court of Session, though the Court of Teinds is still nominally a separate tribunal.

The principal criminal court is the Court of Justiciary, consisting of seven judges of the Court of Session, who sit in Edinburgh, and hold circuits in the country. The most remarkable peculiarity in Scottish legal usages is the practice of criminal prosecution, which is clear, simple, and effective. All crimes of a high class are prosecuted at the instance of the *Lord Advocate*, or chief public prosecutor, at the expense of the country. Lesser crimes are prosecuted by *procurators-fiscal*, of whom one is attached to each sheriffdom. In no case is the party injured put to any trouble or expense. The Lord Advocate, appointed by the crown, along with crown-counsel, judges of the propriety of prosecuting for crimes, there being no grand jury. The right of private parties to prosecute still exists, but is scarcely ever exercised. The jury before whom cases for trial are brought consists of fifteen persons selected by lot from forty-five summoned jurors, and the decision or verdict is by a majority. The Scottish criminal law is partly statute, partly founded on long usage. There are many offences punishable with death, if the prosecutor do not restrict the extent of punishment to be awarded, which he now does in almost every case except murder. The sheriffs, or local judges of counties, have important judicial powers, both civil and criminal. The former extends to every description of dispute regarding property, except such as depend on the title to land. The powers of these judges have lately received extensive additions, especially in matters of insolvency and bankruptcy. They do not employ a jury, except in criminal cases, in which their power of inflicting punishment does not exceed imprisonment. The *sheriffs*, called *sheriffs-principal*, or sometimes *sheriffs-depute*, because they were originally deputes of the hereditary sheriffs of the Scottish counties, are advocates, practising before the supreme courts, not honorary functionaries, as in England. In each county there are, besides, one or more resident sheriffs, or *sheriffs-substitute*, who issue warrants and hold civil and criminal courts. An appeal lies from the decision in civil cases to the sheriff-depute, and from him to the Court of Session.

THE FRENCH CODES.

The ancient laws of France were a mixture of the civil, canon, and feudal law, but there was a great distinction between the law of the northern and southern provinces: in the former, called *pays coutumier*, the customs, as in England, formed the basis of the law, and the civil law of Rome was only applied where these were silent or doubtful; in the latter, called *pays du droit écrit*, the Roman, which for long was the only written law, was the basis, though modified by particular usages and the feudal law. Partly they were the doctrines of the authorities on the civil law, and partly they were the ordinances issued by the various monarchs. By far the greatest portion, however, in bulk, consisted of the peculiar feudal customs of the various provinces. In these the feudal system was sometimes retained in so high a state of purity, that the collections of provincial customs are esteemed excellent authorities on the subject. But it was not merely in each province that there was a local custom. The power of the crown, or any other paramount legislature, was so feeble, that wherever an assembly of men were held together by one common tie, as where they were co-vassals of one lord, or members of the same civic community, they had in some measure a code of laws of their own. The royal codes were estimated at about 300, but of the number of inferior local customs it would be impossible to make an estimate. Voltaire observes, that a man travelling through his country has to change laws as often as horses, and that the most learned barrister in one village will be a complete ignoramus a few miles off. The principal courts of law were the parliaments of the respective provinces. Seats in them were generally held by purchase, or were in the hereditary succession of great families, who thus constituted a species of professional nobility. The decrees of these bodies were often baffled or reversed by the royal authority. These alterations of the decisions of the courts, however, were performed, not as a judicial revision, but by the simple authority of the king; and thus the parliaments, being subject to no judicial control or responsibility, adhered but slightly to fixed rules of law, and often acted according to their own will and discretion. The jury, even so much of it as may have existed under the old feudal form, had entirely disappeared, and proceedings were conducted in secret. Criminal investigations, instead of terminating in a conclusive trial, as in England, were greatly protracted; the torture was extensively employed, but in the general case, only when there was as much circumstantial evidence as would justify a conviction in this country.

The whole of this system was swept suddenly away by the Revolution. In 1800, Napoleon appointed a commission to draw up a project of a civil code. The project, when prepared, was circulated for comment and suggestion, and was afterwards, along with the observations made on it by the different courts of law, discussed in the council of state and the tribunate. Thus was formed the *Code Civil*, or civil code of France, more generally known by the term *Code Napoleon*, which was applied to it under the Empire. Nearly at the same time, and in the same manner, was framed the *Code de Procédure Civile*, or code for regulating the form of process in civil actions, and specifying the jurisdictions of the various courts. Being a subject more connected with technical detail, and involving less of general principle than the civil code, its provisions were left almost entirely to the arrangement of the lawyers. Besides the technical directions, there are in this manual many which concern the ordinary

proceedings of citizens at large, such as directions for the order to be taken regarding the effects of a deceased person, &c. This code is generally accompanied by a table of fees in law proceedings. In 1807, another code was promulgated, called the *Code de Commerce*, regulating partnership, bills and notes, banking, shipping, bankruptcy, &c. By this code, provision is made for merchants choosing boards or courts from among their own number, called *Tribunaux de Commerce*. The jurisdiction of these courts, which are very numerous, extends to questions between merchants, and disputes arising out of commercial transactions. In criminal legislation, a different order was pursued from that adopted in the civil; the procedure code was prepared and adopted before the crimes to which it was to apply, and the punishments it was to enforce, were defined. The *Code d'Instruction Criminelle* was promulgated in 1808, and the *Code Pénal* in 1810.

Such were the laws issued under the government of Napoleon, commonly called *Les Cinq Codes*, or the Five Codes. There are other collections of regulations, which should be added to make up a complete body of French laws—a military code, issued by Napoleon; regulations concerning woods and forests, issued under Charles X.; various laws as to the press and theatrical exhibitions, and alterations of the penal code, issued under the government of Louis-Philippe; and, lastly, the enactments under the Republic of 1848 and the Empire of Napoleon III. It is in the Five Codes, however, passed under Napoleon, and confirmed at the Restoration, that the modern laws of France are known to Europe at large. They are distinguished by the conciseness, clearness, and elegance of their language, and their intrinsic merits. Independently of the division into books and sections, the paragraphs in each code are numbered from the commencement—an arrangement which gives facilities for reference. Thus, there are in the civil code 2281 consecutively numbered paragraphs. In a country where the material of the law is so gigantic as it is in England, it is of the highest interest to mark the practical working of this. To an unlearned person in this country, it is a much easier thing to know the law of France on any particular point, than the law he is living under.

The French codes adopt the phraseology of the Roman law, and many of its principles. The most striking deviation from the previous law of France and the present system of other countries, is perhaps in the rules respecting succession. The children succeed to equal shares of the parents' property, whether it consist of land or movables; and if there be no legitimate children, illegitimate children may succeed. The parent is limited in the disposal of his property by will. He can only bequeath the half, if he have one legitimate child; and the third, if he have two. Restrictions somewhat similar are to be found in other countries with respect to movable property, but not as to land. The effect which the extensive partition, naturally occasioned by this law, has effected, and may effect in France, is a subject of great interest to political economists. In the mercantile law, there are several provisions unknown in this country, such as registers for hypothecs or securities held over movable goods or merchandise; and societies *en commandite*, or partnerships in which certain managing members are responsible for the obligations of the company to the extent of their whole property, while the sleeping partners who advance money are not responsible beyond the amount of their shares. The chief improvement in the criminal law effected during the Revolution, and sanctioned by the code of instruction, was jury trial, to which Napoleon was much opposed: the system, as finally settled, bore more resemblance to the Scottish than to the English form, prosecutions being conducted by public prosecutors, there being no grand jury, and the jury of final trial deciding by a majority. In other respects, the criminal law is more remarkable for its austerity than for its subserviency to the general good of the public. With Napoleon, though that object was not neglected, it was made secondary to the consolidation of his own power; and offences are measured less by their pernicious effects on society at large, than by the trouble or danger they might occasion to rulers. Hence was adopted in many cases the stern and simple method of putting arbitrary power over criminals into the hands of the administrators of the law, while punishments of the highest kind were reserved for offences against the authorities.

Ruins of Persepolis.

(Copied from Fergusson's *Palaces of Nineveh and Persepolis Restored.*)

HISTORY OF ANCIENT NATIONS.

AS the memory of a man extends back only to some point in his early boyhood, so the memory of our race extends back only to from 3000 to 4000 years from the present date, leaving an indefinite space before that, during which the infancy of the species must have been transacted. The researches of the geologist, indeed, lead to the conclusion that the appearance of man upon our earth is comparatively a recent event in its history; but cannot assign even an approximate date in years or other measurable periods. Nor does the Scriptural account of the creation settle this point. As many as two hundred different calculations as to the age of our species have been founded, by different divines, on the statements of the sacred records—the discrepancy arising from the uncertainty of those texts of the Old Testament in which *numbers* occur. The longest of these calculations dates the creation of man at about 8800 years from the present time, or about 7000 years before the birth of Christ; the shortest at about 5300 years from the present time, or 3500 years before the birth of Christ: the system usually adopted by historians is that of Archbishop Usher, which fixes the event at 4004 B.C. or 5874 years from the present date.

At the earliest period to which authentic history reaches back, the greater part of the known world was more or less densely peopled by human beings, who were divided into races or varieties differing in physical conformation and in language pretty much as at the present day. Nevertheless, it is the prevalent opinion among ethnologists, who make these physical peculiarities and varieties of language a special study, that, altogether independently of Scripture, the great probability is that the race sprung from a single pair, and that from one primitive centre the most distant parts of the earth have been colonised. In the classification adopted in the article ANTHROPOLOGY the human race is divided into three primary groups, viz.—(1) The Mongolidæ, including Chinese, Japanese, Tibetans, Oceanic races, &c.; (2) The Atlantidæ, including the African races and Semitic races; and (3) The Japetidæ, including the Indo-European and Celtic races. Whilst we have said that there is no proof that any race is cursed with an inherent incapacity for improvement, we must also admit that it is only the Indo-European variety of the Japetidæ, and the Semitic variety of the Atlantidæ, who have had planted in them the germ of mighty progress, or made history on a large and lofty scale. From this and other causes they were long grouped together ethnologically as the Caucasian race, and this grouping is still convenient for historical purposes. The Mongolidæ have had at best but a material influence on the history of the world, and their highest civilisation is almost fixed and stationary. The Negro and Mongolian nations have been for the most part the hewers of wood and drawers of water to the pioneers of civilisation, which has been carried on chiefly by the Semitic and Indo-European races. Let us therefore glance first at the history of these humbler varieties of the human race.

ETHIOPIAN OR NEGRO HISTORY.

A German historian thus sums up all that is known of Ethiopian history—that is, of the part which the great Negro race, inhabiting all Africa with the exception of the north-eastern coasts, performed in the general affairs of mankind in the early ages of the world: 'On the history of this division of the species, two remarks may be made: the one, that a now entirely extinct knowledge of the extension and power of this branch of the human family must have been forced upon even the Greeks by their early poets and historians; the other, that the Ethiopian history is interwoven throughout with that of Egypt. As regards the first remark, it is clear that in the earliest ages this branch of the race must have played an important part, since Meroë—in the present Nubia—is mentioned both by Herodotus (408 B.C.) and

Strabo (20 A.D.); by the one as a still existing, by the other as a formerly existing seat of royalty, and centre of the Ethiopian religion and civilisation. To this Strabo adds, that the race spread from the boundaries of Egypt over the mountains of Atlas, as far as the Gaditanian Straits. Ephorus, too (405 B.C.), seems to have had a very great impression of the power of the Ethiopians, since he names in the east, the Indians—in the south, the Ethiopians—in the west, the Celts—in the north, the Scythians, as the most mighty and numerous peoples of the known earth. Already, in Strabo's time, however, their ancient power had been gone for an indefinite period, and the Negro states found themselves, after Meroë had ceased to be a religious capital, almost in the same situation as that in which they still continue. The second remark on the Negro branch of the human race and its history, can only be fully elucidated when the interpretation of the inscriptions on Egyptian monuments shall have been further advanced. The latest travels into Abyssinia shew this much—that at one time the Egyptian religion and civilisation extended over the principal seat of the northern Negroes. Single mummies and monumental figures corroborate what Herodotus expressly says, that a great portion of the Egyptians of his time had black skins and woolly hair; hence we infer that the Negro race had combined itself intimately with the Caucasian part of the population.'*

MONGOLIAN HISTORY—THE CHINESE.

Overspreading the great plains of Asia, from the Himalaya to the Sea of Okhotsk, the Mongolian variety may be supposed to have occupied the area known as China, to have crossed into Japan, and to have reached the other islands of the Pacific, and either through these, or by the access at Behring Strait, to have poured themselves through the great American continent; their peculiarities shading off in their long journey, till the Mongolian was converted into the American Indian.

We find this variety broken up into subdivisions (see ANTHROPOLOGY), of which subdivisions circumstances have given a higher degree of development to the Chinese and the Japanese than to the others, which are chiefly nomadic hordes, some under Chinese rule, others independent, roaming over the great pasture-lands of Asia, and employed in rearing cattle.

There is every reason to believe that the vast population inhabiting that portion of Eastern Asia called China can boast of a longer antiquity of civilisation than almost any other nation of the world; a civilisation, however, differing essentially in its character from those which have appeared and disappeared among the Japetidæ. This, in fact, is to be observed as the grand difference between the history of the Mongolian and that of the Japetic variety of the human species, that whereas the former presents us with the best product of Mongolian humanity, in the form of one great permanent civilisation, the Chinese, extending from century to century, one, the same, and solitary, through a period of 3000 or 4000 years; the latter exhibits a succession of civilisations—the Chaldæan, the Persian, the Grecian, the Roman, the modern European (subdivided into French, English, German, Italian, &c.), and the Anglo-American; these civilisations, from the remotest oriental to the most recent occidental, being a series of waves falling into each other, and driven onward by the same general force. A brief sketch of Chinese history, with a glance at Japan, will therefore discharge all that we owe to the Mongolian race.

The Chinese imagination has provided itself with a mythological history extending many ages back into the unknown past. Unlike the mythology of the Greeks, but like that of the Indians, the Chinese legends deal in large chronological intervals. First of all, in the beginning of time, was the great Puan-koo, the founder of the Chinese nation, and whose dress was green leaves. After him came Ty-en-hoang, Ti-hoang, Gin-hoang, and several other euphonious potentates, each of whom did something great towards the building up of the Chinese nation, and each of whom reigned, as was the custom in these grand old times, thousands of years. At length, at a time corresponding to that assigned in Scripture to the life of Noah, came the divine-born Fohi, a man of transcendent faculties, who reigned 115 years, teaching music and the system of symbols, instituting marriage, building walls round cities, creating mandarins, and, in short, establishing the Chinese nation on a basis that could never be shaken. After him came Shin-ning, Whang-ti, &c. until in due time came the good emperors Yao and Shun, in the reign of the latter of whom happened a great flood. By means of canals and drains, the assiduous Yu saved the country, and became the successor of Shun. Yu was the first emperor of the Hia dynasty, which began about 2200 B.C. and may be said to commence the purely historical period of Chinese development. Even in the story of his reign there is more fiction than fact. After this dynasty came that of *Shang*, the last of whose emperors, a great tyrant, was deposed by Wu-wong, the founder of the Tchow dynasty, which began in 1100 B.C. from which period many date the beginning of real Chinese history.

In this Tchow dynasty, which lasted upwards of 800 years, authentic Chinese history commences. It was during the reign of Ling-wang (571–544 B.C.), one of this dynasty, and most probably about 550 B.C. that the great Con-fu-tse, or Confucius, the founder of the Chinese religion, philosophy, and literature, was born. His name was Kong, but his disciples called him Kong-fu-tse; that is, 'Kong the Master or Teacher.' In the year 248 B.C. the Tchow dynasty was superseded by that of Tsin, the first of whose kings built the Great Wall of China, to defend the country against the Tatar nomades. By rooting out all the petty dynasties, and bringing the whole under one dominion, he may be considered the real founder of the Chinese monarchy; the very name China, or Tsina, is derived from him. When the Tsin dynasty had overpowered all rivals, one of its kings, for the first time in Chinese history, assumed the title of Hoang, or Emperor. The Tsin dynasty was a short one: it was succeeded in 206 B.C. by the Han dynasty, which lasted till 238 A.D. Then followed a rapid series of dynastic revolutions, by which the nation was frequently broken into parts;

* F. C. Schlosser's *Universalhistorische Uebersicht der Geschichte der Alten Welt und ihrer Cultur.*

and during which the population was considerably changed in character by the irruptions of the nomad hordes of Asia who intermingled with it. Early in the seventh century, a dynasty, called that of Tang, acceded to power, which ended in 897. After half a century of anarchy, order was restored under the Song dynasty, at the commencement of which, or about the year 950, the art of printing was discovered, five centuries before it was known in Europe. 'The Song dynasty,' says Schlosser, 'maintained an intimate connection with Japan, contrary to all Chinese maxims; the emperors of this dynasty imposed no limits to knowledge, the arts, life, luxury, and commerce with other nations. Their unhappy fate, therefore—on being extinguished, in circumstances of special horror, by the Mongol conqueror, Kublai Khan (1279 A.D.)—is held forth as a warning against departing a hairbreadth from the old customs of the empire. From the time of the destruction of the Song dynasty by the Mongol monarchy, the intercourse between China and Japan was broken, until again the Ming, a native Chinese dynasty (1368 A.D.), restored it.' Under this dynasty, Peking became the capital of the empire (1408), as a post of defence against the eastern Tatars, who, under the name of Mantchus, established (1644) the Ta-tsing dynasty, which yet occupies the throne. The Tae-ping rebellion is the most extraordinary event in recent Chinese history. Their leader, Hung-sew-tseuen, was a rejected candidate for a post in the civil service. He came across some Christian tracts, which impressed him so much, that he renounced idolatry, founded a society of Deists, and in 1850 revolted against imperial rule. Hung held that he had a divine mission to uproot idolatry, expel the Tatar intruders and existing dynasty, and establish a new dynasty, that of Tae-ping, or universal peace. After a wonderful career of success, he was finally put down by a native army under the 'ever-victorious Gordon,' a colonel in the Indian army.

We may therefore say that China, a country more extensive than all Europe, and inhabited by a population of more than 300,000,000, is an aggregation of matured Mongolian humanity, surrounded by Mongolian barbarism. Chinese history does not exhibit a progress of the Mongolian man through a series of stages: it exhibits only a uniform duration of one great civilised Mongolian empire, sometimes expanding so as to extend itself into the surrounding Mongolian barbarism, sometimes contracted by the pressure of that barbarism, sometimes disturbed by infusions of the barbaric element, and sometimes shattered within itself by the operation of individual Chinese ambition, but always retaining its essential character. In this region Mongolian humanity has been able to cast itself but into one civilised type.

The more salient features of Chinese civilisation may be thus described: China is governed as a despotism, with an emperor as head of the state. Subordinate authority is conducted by mandarins. The laws are exact, and administered with great severity. The bamboo is an instrument of punishment in universal use. The citizen is liable to be stripped and whipped by the orders of the mandarin; and the mandarin himself is liable to the same punishment by the orders of his superiors. Corporal punishment does not involve the same ideas of disgrace as in European countries; and every day in every province of China, thousands of grown-up men are flogged. The full number of strokes mentioned in the sentence is, however, rarely inflicted, part being usually commuted into a fine. Besides corporal punishment, the penalties most common in Chinese criminal procedure are imprisonment, banishment to Tatary, or death in one of the three forms of strangulation, decapitation, or slow torture. Of all offences, treason is the most severely punished; the relatives of the guilty party, and sometimes the neighbourhood to which he belongs, being condemned to share his fate. We may be assured that a people who submit to this species of injustice, and do not murmur under the degrading infliction of blows, are at a low stage of moral and intellectual development.

Properly speaking, the Chinese have no national religion; that which they profess as such is, more strictly, a system of ethical philosophy. They possess a code of morals, which, while it does not deny the existence of God and of a spiritual world, concerns itself chiefly with the business of the present life. The founder of this philosophy, and the most illustrious hero of the Chinese nation, was Confucius, who is supposed to have lived about the year 550 B.C. He appears to have been a man of the highest intellect and virtue; and the doctrines which he taught while alive, and which are also inculcated in numerous writings attributed to him and to his disciples, form at the present day the religious creed of most of the Chinese.

In the religion, or proverbial wisdom, of Confucius, filial mildness and courtesy of demeanour towards all, veracity, upright dealing, and forgiveness of injuries, are sedulously recommended; but from the general deceitfulness and roguery of the Chinese, as experienced by strangers, it would appear that this formal morality exercises but a feeble influence on the conduct. The most remarkable feature in the religion of Confucius is, that it prescribes a code of manners and etiquette to be observed in the general intercourse of society. Hence, in no country are politeness and attention to form and ceremony carried to such an extent as in China. There are, it is said, 3000 rules of manner which an educated Chinese is expected to observe; including rules for saluting a friend in the street, rules for sending gifts, and so forth. Respect for these rules characterises all ranks in China, though in their intercourse with foreigners they are frequently rude and inhospitable.

Cold and nearly atheistic as the philosophy of Confucius is, it recognises the practice of worship; or at least this practice has been ingrafted on it. Deities of three classes—the highest, to whom are offered the *Ta-sze*, or great sacrifices; the middle, to whom are offered the *Choong-sze*, or middle sacrifices; and the inferior, to whom are offered the *Seaoo-sze*, or least sacrifices—have temples in Chinese cities. This worship is in many cases only a profession of reverence for departed human worth. Among the highest objects of worship, besides the heavens and the earth, are the deceased Chinese emperors; among the medium gods are the sun, the moon, and the greater Chinese sages; among the inferior gods are the striking phenomena of nature—such as rain and thunder, as well as eminent Chinese

statesmen and scholars. Confucius is an object of special veneration. In every important town there is a temple to his honour, where sacrifices are regularly offered and sticks of incense are burned. The posterity of Confucius, who are very numerous, are highly revered. Religious homage is also paid to the reigning monarch, who is the supreme pontiff, as well as the civil despot of China; and, on the whole, the ecclesiastical routine of China is but a part of the system of secular government.

Dissatisfied with so ungenial a system, many of the Chinese have sought consolation in the religions of *Buddha* and *Taou*—two rival systems of faith which are tolerated, though not encouraged, by the Chinese government. Buddhism (see MOHAMMEDANISM, &c.) made great progress in China during the earlier part of the Christian era; and at present, thousands of lofty pagodas in honour of the Indian deliverer are scattered over the empire, many of which have extensive monastic establishments attached to them. The sect of Taou was founded by Laou-tsze, who was born in 604 B.C. 54 years before Confucius, and died in 523 B.C.—a Chinese philosopher who seems to have taught doctrines having a far higher scope than those of Confucius. He aimed at making man immortal by constant contemplation of God and repression of the passions. His moral code was good, but it has of late degenerated into all sorts of quackery, and has no hold on the educated people. Although neither sect receives any endowment from the state, she exercises control over both, and directs prayers to be offered at her pleasure in their temples. Nor is the profession either of Buddhism or of Taou inconsistent with orthodox Confucianism, which is more a system of morals than a theological creed.

Where women are treated with indelicacy or harshness, or not allowed to be the companions of men in ordinary affairs, society is in an abject condition. Such is the case in China. The practice of female infanticide is tolerated, and women are exposed to many indignities; the most degrading of which consists in deforming their feet, and rendering them lame by bandaging. Like the women of other Asiatic nations, they are shut up in domestic privacy; and though education is not denied them, they exercise no direct social influence, and are wholly dependent on the will of their husbands, fathers, or brothers.

At present, however, there seems little prospect of any reorganisation of the Chinese mind, except by means of a Caucasian stimulus applied to it. That Mongolian civilisation *is* capable of advancement, is, we think, proved by the recent progress of Japan, and a study of the history of that empire. Till lately, its organisation was purely military, war being, with the exception of the priesthood, the only occupation thought worthy of honour. Trade and agriculture were pursuits only fit for the lower classes. Since 1854, all that has been changed. Japan has opened itself to the influence of western ideas with wonderful rapidity, and is now organised on the type of the imperial system of France. The recorded history of Japan begins with the foundation of a dynasty of emperors by Zen Mou, in 600 B.C. A succession of rebellions under feeble sovereigns followed, till in 1192 A.D. the Tycoon (Chinese *Tai Koon*, or great lord), or chief of the army, usurped supreme authority on all temporal matters, leaving the Mikado, or emperor proper, only a shadow of suzerainty over him, and with possession of supreme authority in spiritual affairs only. Thus there was a double sovereignty—the Tycoon who governed, and the Mikado who reigned. The court of the former was at Yeddo; that of the latter at Miako. Up till 1854, Japan was, in other respects, very like England under the feudalism of the Plantagenets, Daimios, or feudal lords, ruling under the Tycoon with despotic authority the various provinces. In 1549, Francis Xavier introduced Christianity into the country, and the Portuguese opened up a trade with it; but in 1683, both Catholic missionaries and Portuguese traders were expelled, and a rigid policy of isolation adopted. In 1853, the Americans forcibly extorted a treaty from the Tycoon, and, much to the disgust of the Daimios, the country was opened up to foreign trade. Then it entered on a career of marvellous progress. The unification of the nation under the Mikado was first resolved upon, and the Tycoon abdicated after a *coup d'état* and short civil war in 1867–68. The Daimios, by a patriotic act of self-sacrifice, gave up their powers, and an imperial system was founded under the Mikado, who once more assumed supreme authority in temporal as well as spiritual matters. He has an executive ministry, a senate, a council of state; and the Daimios gave way to provincial prefects, who administer provincial affairs pretty much as they do in France. The army and navy were organised on European models. Railways, telegraphs, the arts, sciences, and inventions and industries of the West, were introduced; and it is even now in contemplation to institute an elective parliament; a national code on the mode of the *Code Napoleon* is being drawn up. The religions of Japan are Sintuism and Buddhism, the latter being a comparatively modern importation. The hierarchy of the former, or Sin-syu, consists of the Mikado—who, as descendant of the sun-goddess, unites in himself the attributes of the Deity—two ecclesiastical judges, monks and priests. The chief object of worship is *Ten-sio-dai-sin*, the great Sun-goddess; but there are hosts of demi-gods, for every patriot, warrior, or great man is made one after death. The chief tenets are purity of heart and abstinence from all that leads to impurity, diligent observance of holy days, and pilgrimages to holy places; according to some, mortification of the flesh. The worshippers first wash in a font, pray before the sacred mirror—which, as a symbol of purity, is placed on the altar—then drop a few cash in the money-box, and strike a bell to indicate that their devotions are finished. The social and political progress of Japan has progressed at such a wonderful rate since 1868, that some incline to think it has been too rapid—that, having been the result of forcing rather than growth, it wants the elements of enduring stability. The fact, however, that it *has* progressed under the stimulus of western ideas and influences, is a sufficient proof that a stationary condition is not the inseparable characteristic of Mongolian civilisation, and that the Mongol is not racially incapable of progress.

INDO-EUROPEAN AND SEMITIC HISTORY.

While the Negro race—if we except the ancient Ethiopians—seems never to have emerged out of

barbarism; while the Mongolian has, until quite recently, afforded the spectacle of a single permanent and pedantic civilisation retaining millions within its grasp for ages in the extreme east of Asia; the so-called Caucasian, as if the seeds of the world's progress had been implanted in it, has worked out for itself a splendid career on an ever-shifting theatre. Originating, according to the current view, in Asia, the Caucasian civilisation has shot itself westward, if we may so speak, in several successive throes, adding one country of Europe after another to the stage of history; and, lastly, in modern times, crossing the Atlantic, and meeting in America with a diffused and degenerate Mongolism.

Ancient India.

For the relation of the inhabitants of India to the so-called Caucasian family, we must refer to ANTHROPOLOGY. At what time the vast peninsula of Hindustan could first boast of a civilised population, it is impossible to say; all testimony, however, agrees in assigning to Indian civilisation a most remote antiquity. Another fact seems also to be tolerably well authenticated regarding ancient India—namely, that the northern portions of it, and especially the north-western portions, which would be nearest the original Caucasian seat, were the first civilised; and that the civilising influence spread thence southward to Cape Comorin.

Notwithstanding this general conviction that India was one of the first portions of the earth's surface that contained a civilised population, few facts in the ancient history of India are certainly known. The Hindus themselves, although they have abundance of early literature, have no history. What appears to be history, is a mass of fable, without the means of fixing a date, or extricating the possible facts from the fictions. Such accounts as we have from external sources, merely resolve themselves into the general information, that India, many centuries before Christ, was an important member in the family of Asiatic nations; supplying articles to their commerce, and involved in their agitations. Accordingly, if we wish to form an idea of the condition of India prior to that great epoch in its history—its invasion by Alexander the Great, 326 B.C.—we can only do so by reasoning back from what we know of its present condition, allowing for the modifying effects of the two thousand years which have intervened, and especially for the effects produced by the Mohammedan invasion, 1000 A.D. This, however, is the less difficult in the case of such a country as India, where the permanence of native institutions is so remarkable; and though we cannot hope to acquire a distinct notion of the territorial divisions, &c. of India in very ancient times, yet, by a study of the Hindus as they are at present, we may furnish ourselves with a tolerably accurate idea of the nature of that ancient civilisation which overspread Hindustan many centuries before the birth of Christ—and this all the more probably that the notices which remain of the state of India at the time of the invasion of Alexander, correspond in many points with what is to be seen in India at the present day.

The most remarkable feature in Hindu society is its division into castes, a system so intimately bound up with their religion, that we say no more on this head, referring to the article on HINDUISM &c. for further information.

A hundred millions of people professing this system, divided into castes as now, and carrying the Brahminical ritual into all the occupations of lazy life under the hot sun, and amid the exuberant vegetation of Hindustan—such was the people into which Alexander the Great carried his conquering arms; such, doubtless, they had been for ages before that period; and such did they remain, shut out from the view of the rest of the civilised world, and only communicating with it by means of spices, ivory, &c. which found their way through Arabia or the Red Sea to the Mediterranean, till Vasco da Gama rounded the Cape of Good Hope, and brought Europe and India into closer connection. Meanwhile, a Mohammedan invasion had taken place (1000 A.D.); Mohammedans from Persia had mingled themselves with the Hindus; and it was with this mixed population that British enterprise eventually came into collision.

History of the Eastern Nations till their Incorporation in the Persian Empire.

Leaving India, and proceeding westward, we find two large masses of the human species filling in the earliest times the countries lying between the Indus and the Mediterranean—namely, an Indo-Persian mass, filling the whole tract of country between the Indus and the Tigris; and a Semitic mass, filling the greater part of lesser Asia and the whole peninsula of Arabia, and extending itself into the parts of Africa adjoining the Red Sea. That, in the most remote ages, these lands were the theatres of a civilised activity, is certain, although no records have been transmitted from them to us, except a few fragments relative to the Semitic nations. The general facts, however, with regard to these antehistoric times, seem to be: *1st*, That the former of the two masses mentioned—namely, the population between the Indus and the Caspian—was essentially a prolongation of the great Indian nucleus, possessing a culture similar to the Indian in its main aspects, although varied, as was inevitable, by the operation of those physical causes which distinguish the climate of Persia and Cabool from that of Hindustan; *2d*, That the Semitic mass divided itself at a very early period into a number of separate peoples or nations—the Assyrians, the Babylonians, the Phœnicians, the Jews, the Arabians, &c.—and that each of these acquired a separate development, and worked out for itself a separate career; *3d*, That upwards of a thousand years before Christ, the spirit of conquest appeared among the Semitic nations, dashing them violently against each other; and that at length one Semitic fragment—that is, the Assyrians—attained the supremacy over the rest, and founded a great dominion, called the Assyrian empire, which stretched from Egypt to the borders of India (800 B.C.); and *4th*, That the pressure of this Semitic power against the Indo-Persic mass was followed by a reaction—one great section of the Indo-Persians rising into strength, supplanting the Assyrian empire, and founding one of their own, called the Persian empire (536 B.C.), which was destined in its turn to be supplanted by the confederacy of Grecian states in 326 B.C.

Beginning with Egypt, let us trace separately the career of each of the Eastern nations till that point of time at which we find them all embodied in the great Persian empire:

The Egyptians.

Egypt, whose position on the map of Africa is well known, is about 600 miles long from the Mediterranean to the First Cataract. Through its whole length flows the Nile, a fine large stream, rising in the equatorial regions of Africa, and, from certain periodic floods to which it is subject, of great use in irrigating and fertilising the country. A large portion of Egypt consists of an alluvial plain, similar to our meadow-grounds, formed by the deposits of the river, and bounded by ranges of hills on both sides. The upper part of the valley seldom exceeds ten miles in width, and in some places is barely two; the lower part spreads out into a delta about eighty miles at its greatest breadth.

A country so favourably situated, and possessing so many advantages, could not but be among the earliest peopled; and accordingly, as far back as the human memory can reach, we find a dense population of a very peculiar character inhabiting the whole valley of the Nile. These ancient Egyptians seem, as we have already said, to have been a mixture of the Semitic with the Ethiopic element, speaking a peculiar language, still surviving in a modified form in the Coptic of modern Egypt. In the ancient authors, however, the Egyptians are always distinguished from the Ethiopians, with whom they kept up so close an intercourse, that it has been made a question whether the Egyptian institutions came from the Ethiopian Meroë, or whether, as is more probable, civilisation was transmitted to Ethiopia from Egypt.

The whole country is naturally divided into three parts—Upper Egypt, bordering on what was anciently Ethiopia; Middle Egypt; and Lower Egypt, including the Delta of the Nile. In each, there were numerous cities in which the population was amassed: originally Thebes, a city of Upper Egypt, of the size of which surprising accounts are transmitted to us, and whose ruins still astonish the traveller, was the capital of the country; but latterly, as commerce increased, Memphis in Middle Egypt became the seat of power. After Thebes and Memphis, Ombi, Edfou, Esneh, Elephantine, and Philœ seem to have been the most important of the Egyptian cities.

Our accounts of the Egyptian civilisation are derived chiefly from the Greek historian Herodotus (408 B.C.), who visited Egypt and digested the information which he received from the priests as to its ancient history; and Manetho, a native Egyptian of later times, who wrote in Greek. From their accounts, it is inferred that the country was anciently divided into thirty-six sections or provinces, called *nomes*—ten in Upper, sixteen in Middle, and ten in Lower Egypt. Of this kingdom, the population, according to a rough estimate, may have been about seven millions. The government was a monarchy based on an all-powerful priesthood, similar to the Brahminical system of India; and, as in India, the most striking feature in the Egyptian society was the division of the people into hereditary castes. 'The population of Egypt,' says Mr Grote, in his *History of Greece*, 'was classified into certain castes or hereditary professions, of which the number is represented differently by different authors. The priests stand clearly marked out as the order richest, most powerful, and most venerated, distributed all over the country, and possessing exclusively the means of reading and writing,* besides a vast amount of narrative matter treasured up in the memory, the whole stock of medical and physical knowledge then attainable, and those rudiments of geometry—or rather land-measuring—which were so often called into use in a country annually inundated. To each god and to each temple throughout Egypt, lands and other properties belonged, whereby the numerous band of priests attached to him were maintained. Their ascendency, both direct and indirect, over the minds of the people was immense; they prescribed that minute ritual under which the life of every Egyptian, not excepting the king himself, was passed, and which was for themselves more full of harassing particularities than for any one else. Every day in the year belonged to some particular god, and the priests alone knew to which. There were different gods in every nome, though Isis and Osiris were common to all; and the priests of each god constituted a society apart, more or less important, according to the comparative celebrity of the temple. The property of each temple included troops of dependents and slaves, who were stamped with "holy marks," and who must have been numerous, in order to suffice for the service of the large buildings and their constant visitors.

'Next in importance to the sacerdotal caste were the military caste or order, amounting, when the population was at its maximum, to upwards of 400,000 men. To each man of this soldier-caste was assigned a portion of land, equal to about 6½ English acres, free from any tax. The lands of the priests and the soldiers were regarded as privileged property, and exempt from all burdens; while the remaining soil was considered as the property of the king, who, however, received from it a fixed proportion—one-fifth of the total produce—leaving the rest in the hands of the cultivators. The soldiers were interdicted from every description of art and trade.'

The other castes are differently given in different authors; the most probable account, however, is that which assigns them as three—the caste of the husbandmen, that of the artificers, and that of the herdsmen, which last caste included a variety of occupations held in contempt, the lowest and most degraded of all being that of swineherd. The artificers, constituting the vast town population of Egypt, were subdivided into a great variety of occupations, weavers, masons, sculptors, &c. who were compelled to these professions by hereditary obligation. It was by the labour of this vast town population, assisted by that of herds of slaves, that those huge works were accomplished, the remains of which still attest the greatness of ancient Egypt. These skilled artificers may be supposed to have acted as foremen and overseers of the great numbers of labourers who

* Mr Grote subjoins the following important note: 'The word *priest* conveys to a modern reader an idea very different from that of the Egyptian ἱερεῖς, who were not a profession, but an order *comprising many occupations and professions.*'

were employed in public works, such as the Pyramids. In the construction of these works, no degree of labour for any length of time seems to have intimidated the Egyptians. The huge blocks of stone, sometimes weighing 1000 tons each, were dragged for hundreds of miles on sledges, and their transport, perhaps, did not occupy less time than a year; in one case which is known, 2000 men were employed three years in bringing a single stone from a quarry to the building in which it was to be placed. Usually, the sledges were drawn by men yoked in rows to separate ropes, all pulling at a ring fixed to the block. See INLAND CONVEYANCE. Where it was possible, the blocks were brought from the quarries on flat-bottomed boats on the Nile. But the transport of these masses was much more easily accomplished than the placing of them in elevated situations in the buildings. They were raised by the power of levers and inclined planes at immense trouble and cost. The waste of human life in these gigantic works must have been enormous. About 120,000 men are said to have perished in the digging of a canal, which was left unfinished, between the Red Sea and an arm of the Nile; and according to Herodotus, the Egyptian priests of his day described the building of the Pyramids as a time of extreme exhaustion and hardship to the whole country.

The religion of the Egyptians seems to have been, in its popular form at least, a mere gross Fetichism, whose principal characteristic was a worship of teeming animal life—the bull, the cat, the ibis, the crocodile, &c.; different animals in different nomes. Whatever profounder meaning lay hid under this gross ceremonial the priest-caste reserved to themselves, as one of the mysteries the possession of which severed them from the rest of the population. Among these mysteries was the art of writing, which was practised both in the alphabetic and the hieroglyphic form; the latter being used for special purposes. Some vague notion of the immortality of the soul, resembling the Hindu tenet of transmigration, seems to have pervaded the Egyptian religion; and this belief appears to have lain at the foundation of the Egyptian practice of embalming the dead. The business of embalming was a very dignified one, and was aided by a host of inferior functionaries, who made and painted coffins and other articles which were required. The bodies of the poorer classes were merely dried with salt or natron, and wrapped up in coarse cloths, and deposited in the catacombs. The bodies of the rich and great underwent the most complicated operations, being wrapped in bandages dipped in balsam, and laboriously adorned with all kinds of ornaments. Thus prepared, they were placed in highly decorated cases or coffins, and then consigned to sarcophagi in the catacombs or pyramids. Bodies so prepared have been called mummies, either from the Arabian word *momia*, or the Coptic *mum*, signifying bitumen or gum-resin.

Although the 'manners and customs' of the early Egyptians have, in recent times, been disinterred, and set vividly before us in the sculptures, paintings, and embalmed monuments preserved in their tombs (see following wood-cut), we know little of the details of their history, properly so called, anterior to the time when the country was thrown open to the Greeks. Herodotus and Manetho, indeed, have given us retrospective lists of the Egyptian kings, extending back into the primitive gloom of the world; but portions of these lists are evidently constructed backwards on mythical principles. Thus Manetho, preserving, doubtless, the traditions of the sacerdotal Egyptian caste to which he is supposed to have belonged, carries back the imagination as far as 30,000 years before the birth of Christ. From this date, till 5702 B.C. great divine personages ruled in Egypt; then (5702 B.C. or, according to others, 3553 B.C.) it came into the possession of human kings, the first of whom was Menes. From the accession of Menes down to the incorporation of Egypt with the Persian empire (525

B.C.), Herodotus assigns 330 kings, or, as they are called in Scripture, Pharaohs, whose names, he informs us, were read to him out of a papyrus manuscript by the Egyptian priests, who pledged themselves to its accuracy; and Manetho reckons up twenty-six dynasties, some of them native and others foreign, which divided the long period into portions of different lengths. The earlier of these dynasties were for long looked upon as purely imaginary; but the names of many of the alleged Pharaohs from the fourth dynasty (3000 B.C.) downwards, have been recently identified with names actually existing, in hieroglyphics, on monuments believed to be as old as the times they refer to. Thus, Manetho ascribes the building of the greatest pyramid to Souphis (the Cheops of Herodotus), of the fourth dynasty; and in the interior has been found a royal name which scholars agree in reading *Shufu*. Between 2700 and 2000 B.C. occurred the invasion of the *Hyksos*, or 'Shepherd-kings,' a conquering people from the east, probably of Arabian or Phœnician lineage. It was in one of the three dynasties of these Shepherd-kings—the fifteenth in Manetho's list—that Abraham is supposed to have visited Egypt (1920 B.C.), and they were still reigning when Jacob and his sons settled in the country (1706). At length they were expelled by a native dynasty of Thebans, which ranks as the eighteenth, and the head of which is supposed to have been the Pharaoh 'who knew not Joseph.' The exodus of the Israelites from Egypt is believed to have taken place 1491 B.C. under the reign of the Pharaoh of the eighteenth dynasty, named Thothmes III.—the Pharaoh whose heart was hardened, and who was drowned in the Red Sea. This Theban dynasty produced many able sovereigns; and of almost all of them records have been discovered on existing monuments. One of them,

Rameses II. was a great conqueror, and extended the Egyptian dominion far into Asia. The twenty-sixth dynasty was from Sais. The first of its kings was Psammetichus I. whose reign (650 B.C.) constitutes an epoch in Egyptian history. Having attained to the throne by the aid of Greek mercenaries, he broke down the barriers which Egyptian exclusiveness had hitherto kept up against foreigners, greatly to the disgust of many of his subjects, especially of the priestly caste, whose trammels in other respects he threw off, and of the military caste, who found their places occupied by Ionian and Carian colonists. The successors of Psammetichus involved themselves in war with the Chaldæans or Assyrians of Babylon. The fourth of them, named Amasis (570–526 B.C.), rivalled Psammetichus in liberality of policy. He allowed the Greek merchants who visited the port of Naucratis to establish a privileged emporium, called the *Hellênion*. Under Amasis, Egypt attained to a great degree of prosperity, which was remembered the more that immediately after his death the country was subjugated by Cambyses, and annexed to the Persian empire (525 B.C.).

Arabia.

The great peninsula of Arabia was in the earliest times inhabited by a population of the Semitic stock, in all essential respects similar to that which inhabits it now, partly concentrated in cities, partly wandering in tribes through the extensive deserts which mark the surface of the country. The inhabitants of the towns subsist by agriculture and commerce; the wandering tribes by cattle-rearing and pillage. In ancient times, as now, the Arabs were celebrated for their expert horsemanship, their hospitality, their eloquence, and their free, indomitable spirit. In religion, however, the modern Arabs, who are Mohammedans, differ from the ancient Arabs, who were idolaters, chiefly worshippers of the celestial luminaries, nowhere so beautiful as in the sky of an Arabian desert. The Arabs themselves trace their history back, the older tribes to Kahtan (the Joktan of the tenth chapter of Genesis); the later, to Adnan, a descendant of Ishmael, the offspring of Abraham. It is unnecessary, however, to enter into this history, as Arabia was not incorporated with the Persian empire, and only assumed historical importance in later times, when it sent forth the religion of Mohammed over the East. See HISTORY OF THE MIDDLE AGES.

Syria.

The Semitic or Aramaic population overspreading Syria—which name is generally applied to the country lying between the Euphrates and Arabian desert on the east, and the Mediterranean on the west—had early divided itself into various independent states or kingdoms, which ultimately resolved themselves, it would appear, into three. These were *Phœnicia*, a narrow strip of coast-land, extending from Mount Carmel to the river Eleutherus; *Palestine*, or the *Holy Land*, including the country south of Phœnicia, between the Arabian desert and the Mediterranean, as well as the inland district lying between Mount Carmel and Mount Hermon; and *Syria Proper*, whose capital was Damascus, and which, when the power of the Damascan kings was at its highest, included all the country except Palestine and Phœnicia. Syrian history possesses no independent importance; we pass, therefore, to the history of the Phœnician and Jewish nations.

The Phœnicians.

Phœnicia was an exceedingly small country, its length being only about 120 miles, and its breadth nowhere greater than 20 miles. Indeed, it may be described as a mere slip of coast-land sufficiently large to accommodate a range of port-towns, such as a merchant-people required. The most northern of these Phœnician cities was Aradus, situated on a small island; the most southern was the famous Tyre; and between the two were situated many others, of which the chief were Sidon, Berytus, Tripolis, and Byblus. The greater part of the population was contained in these cities, the rural population being small in proportion.

Originally, Phœnicia was divided into a number of little states or communities, each having a town for its metropolis, with an hereditary king of its own; and ere the country was restricted by the formation of the Jewish nation, the number of these Phœnician or Canaanitish principalities must have been considerable. The Phœnicians were a fragment of the Canaanites of Scripture; and doubtless in the annals of the separate Phœnician towns, such as Tyre, Sidon, and Aradus, were preserved records, from the Phœnician point of view, of many of those ancient transactions which are related in the Scriptural account of the settlement of the Jews in Canaan.

The Phœnicians were the great trading nation of antiquity. Situated at so convenient a point on the Mediterranean, it devolved on them to transport to the sea-shore the commodities of the East, in which they employed Arabian caravans, and from the sea-shore to distribute them among the expecting nations of the West. Nor were they without valuable products of their own. The sand of their coasts was particularly suitable for the manufacture of glass; their bays abounded in a species of fish which produced a fine purple dye—the celebrated Tyrian purple of antiquity; and in various parts of the country there were excellent mines of iron and copper. It was, in fact, essential for the general interests of the race that the people inhabiting that portion of the Mediterranean coasts should devote themselves to commerce. In anticipation of this, as it might seem, the mountains of Libanus, which separated the narrow Phœnician territory from Syria, were stocked with the best timber, which, transported over the short distance which intervened between these mountains and the sea, abundantly supplied the demands of the Phœnician dockyards. There was something in the Phœnician character, also, which suited the requirements of their geographical position. Skilful, enterprising, griping in their desire for wealth, and in other respects resembling much their neighbours the Jews, to whom they were allied in race, and whose language was radically identical with their own—theirs was essentially the merchant type of character.

Standing, as the Phœnicians did, as the people by whom the exchange between the East and the West was managed, a complete view of their life and manner of activity should embrace *first*, their relations with the East—that is, their overland

trade with Assyria, Arabia, Egypt, Persia, and India; *secondly*, their relations with the West—that is, their maritime trade with the various nations of the Mediterranean and Atlantic coasts; and *thirdly*, the peculiar character of mind which either accompanied or resulted from the consciousness of such a position in the great family of mankind.

With regard to the overland trade of the Phœnicians with the eastern countries, it is probable that the Phœnicians managed this commerce not in their own persons, but as wealthy speculative merchants, dealing in a skilful manner with the native Egyptian, Assyrian, or Arabian caravan proprietors, with whom they maintained an understood connection. It was in their maritime trade with the West, however, that the Phœnicians chiefly exhibited the resources of their own character. Shipping the oriental commodities, as well as their native products, at Tyre or Sidon, they carried them to all the coasts of the Mediterranean as far as Spain, selling them there at immense profit, and returning with freights of Western goods. With some of the nations of the Mediterranean, their intercourse would be that of one civilised nation with another; with others, and especially with those of the West, it must have been an intercourse similar to that of a British ship with those rude islanders who exchange their valuable products for nails, bits of looking-glass, and other trifles. Whether their customers were civilised or savage, however, the Phœnicians reaped profits from them. Their aim was to monopolise the commerce of the Mediterranean. 'If at any time,' it is said, 'their ships bound on a voyage observed that a stranger kept them company, or followed them in their track, they were sure to get rid of him, or deceive him if they could; and in this they went so far as to venture the loss of their ships, and even of their lives, so that they could but destroy or disappoint him; so jealous were they of foreigners, and so bent on keeping all to themselves. And to add to the dangers of the sea, and discourage other nations from trading, they practised piracy, or pretended to be at war with such as they met when they thought themselves strongest.' This policy succeeded so far, that hardly a merchant-ship was to be seen in the Mediterranean not manned by Phœnicians.

From this extension of the Phœnician commerce throughout the Mediterranean, resulted, by necessity, an extensive system of colonisation. In process of time, Phœnician colonies were established at all available points of the Mediterranean—on the coasts of Africa, Sicily, Sardinia, and Spain, and in the Balearic Islands; the rising maritime spirit of the Greeks excluding the Phœnicians from the Ægæan and the coasts of Asia Minor. Among the most ancient of the colonies from Tyre were Carthage and Utica on the African coast, and Gades (Cadiz) in Spain; all of which were founded before the first of the Greek Olympiads (884 B.C.). From these afterwards arose smaller settlements, which diffused the Phœnician agency still more extensively among the uncivilised nations of Africa and Western Europe. Gades, in Spain, situated, according to the ancient mode of navigation, at a distance of seventy-five days' sail from Tyre or Sidon—a distance larger than that which now divides Liverpool from Bombay—was a colony of special importance; first, as commanding the inland Spanish trade, particularly valuable at that time, inasmuch as the gold and silver mines of Spain caused it to be regarded as the Mexico or Peru of the ancient world; and, secondly, as forming a point from which the Phœnician commerce could be still further extended along the extra-Mediterranean shores. From this point, we are told, the Phœnician ships extended their voyages southward for thirty days' sail along the western coast of Africa, and northward as far as Britain, where they took in tin from the mines of Cornwall, and even as far as the Baltic, where they collected amber.

As might be expected, this great merchant-people were among the most cultured of antiquity, and especially skilled in all the arts of luxurious living. The 27th chapter of the book of Ezekiel presents a most striking picture of the pride and magnificence of the Tyrians, and embodies many minute particulars relative to Phœnician customs and mode of life. Indeed, it has justly been pronounced the most early and most authentic record extant relative to the commerce of the ancients.

Among the contributions made by the Phœnicians to the West, were alphabetical writing, the Greek alphabet being a derivative from the Phœnician; scale of weight; and coined money. Phœnicia began about 700 B.C. to decline in importance; the Ionian Greeks, and latterly the Egyptians, becoming its commercial rivals on the Mediterranean; and the invasions of the Assyrians from the east depriving it of independence. Subdued by the Assyrians and Babylonians, Phœnicia was transferred with them to the Persians. Among the last of the Phœnician achievements was the circumnavigation of Africa, 600 B.C.—a feat undertaken by Phœnician sailors at the command of the Egyptian king Neco, one of the immediate successors of Psammetichus, and, as is now believed, really performed; the course pursued being from the Red Sea round Africa to Spain—the reverse, therefore, of that followed by Vasco da Gama 2000 years later. About the time that Phœnicia began to wane, her colony, Carthage, assumed her place in the affairs of the world. Carthaginian civilisation was essentially a mere repetition of the Phœnician, although under a different form of government: its history interweaves itself with that of the Romans (see HISTORY OF ROME).

Palestine—the Jews.

Palestine extends from north to south a length of about 200 miles, its breadth being 50; and is therefore, in point of size, of nearly the same extent as Scotland. The general character of the country is that of a hilly region, interspersed with moderately fertile vales; and, being thus irregular in surface, it possesses a number of brooks or streams, which for the most part are swollen considerably after rains, but are almost dry in the hot seasons of the year. The present condition of Palestine scarcely corresponds with its ancient fertility. This is chiefly attributable to the devastating effects of perpetual wars; and some physical changes have also contributed to the destruction of agricultural industry. Yet, after all, so excellent would the soil appear to be, and so ample its resources, that Canaan may still be characterised as a land flowing with milk and honey.

The history of the extraordinary nation which once inhabited this land, must be so much more familiar to our readers than that of any other ancient nation, that all that is necessary here is a brief sketch, such as will assist the imagination in tracing with due completeness the general career of the East till the establishment of the Persian empire. From the accounts given in Scripture, and from the *History* of Josephus, we learn that the Jews were descended from Abraham, the tenth in descent from Noah, through his second son Shem. According to Josephus, Abraham, who was born in the 292d year (according to other authorities, in the 352d year) after the Deluge, 'left the land of Chaldæa when he was seventy-five years old, and at the command of God, went into Canaan, and therein he dwelt himself, and left it to his posterity. He was a person of great sagacity, both for understanding of all things and persuading his hearers, and not mistaken in his opinions; for which reason he began to have higher notions of virtue than others had, and he determined to renew and to change the opinion all men happened then to have concerning God; for he was the first that ventured to publish this notion, that there was but ONE God, the Creator of the universe; and that as to other gods, if they contributed anything to the happiness of men, that each of them afforded it only according to His appointment, and not by their own power. For which doctrines, when the Chaldæans and other people of Mesopotamia raised a tumult against him, he thought fit to leave that country, and, at the command of God, he came and lived in the land of Canaan. And when he was there settled, he built an altar, and performed a sacrifice to God.' After the death of Abraham's son Isaac, *his* younger son, Jacob, remained for a number of years in Canaan, surrounded by a family of twelve sons, one of whom, Joseph, as related in Scripture, became the cause of the removal of his father and brethren, and all belonging to them, into Egypt. The Hebrew emigrants were seventy in number, and formed at the first a respectable colony among the Egyptians. Jacob died after having been seventeen years in Egypt, and his body was carried by Joseph to Hebron, and buried in the sepulchre of his father and grandfather. Joseph also died in Egypt at the age of 110, and at length his brethren died likewise. Each of the twelve sons of Jacob became the progenitor of a family or tribe, and the twelve tribes, personified by the term ISRAEL, continued to reside in Egypt, where they increased both in number and in wealth. Their rapid increase and prosperity soon excited the jealousy of the masters of the country; and from being in high favour, the different tribes gradually fell under the lash of power, and came to be treated as public slaves.

The entire body of Israelites, guided by Moses, fled from Egypt in the year 1490 before Christ, at a time when Thebes, Memphis, and the other magnificent cities of that country, were in all their glory. Proceeding in a north-easterly direction from Rameses (near the site of modern Cairo), they went through the level region of the land of Goshen (now a barren sandy plain) to the head of the Gulf of Suez, the western branch of the Red Sea. Here they crossed in a miraculous manner to the opposite shore, to a spot now called the Wells of Moses, where, according to the Scripture narrative, they sang their song of thanksgiving for their deliverance. The country in which they had now arrived was a portion of Arabia Petræa, consisting of a dismal barren wilderness, now called the Desert of Sinai, from the principal mountain which rises within it. From the point at which the Israelites had crossed the Red Sea from Egypt, they were conducted by a most circuitous and tedious route towards the Promised Land of Canaan. Their tiresome journey extended over a period of forty years, and was not completed till all the Hebrews who were above twenty years of age when they left the land of Egypt (excepting Caleb and Joshua) had died, and a new generation, possessing greater courage and confidence in the Almighty, had succeeded them. In the trackless wilderness through which they were led, their multitudes, as we learn from Scripture, could neither have traced their way nor procured subsistence without a continued miracle. The hand of God brought for them streams of water out of the flinty rock; rained manna or bread from heaven; and gave a pillar of cloud to direct their journeys through the day, and a pillar of fire by night. He delivered the tables of a moral law, comprehending the ten commandments, to Moses their leader; and promulgated a set of regulations for the ceremonies of worship, the establishment of a separate order devoted to religion and learning, and for the civil government of the nation. The Hebrews had thus a regular polity and written laws when most other nations knew only the law of the sword, or of savage animal superiority.

The country on the shore of the Mediterranean which was allotted as a settlement to this people, was at that time occupied by many warlike tribes, who had grown strong in its fertile plains and valleys; and the generation of the Hebrews who were conducted into it were compelled to fight for its possession. The struggle was not of long continuance. The whole land was conquered in the year 1450 B.C.

According to the account given in the 26th chapter of the Book of Numbers, the Hebrew nation thus brought out of the land of Egypt and settled in Canaan amounted to 601,730 souls, unto whom the land was divided for an inheritance, according to the number of individuals in the respective tribes. The tribe of Levi (to which belonged Moses, Aaron, and Eleazar the high-priest), amounting to 23,000 males from a month old and upwards, received no share of the land: being set apart for the priesthood, the tenth or tithe of the general produce was assigned them as their perpetual inheritance.

The political government of the various tribes, after their conquest and settlement of Canaan, appears to have been republican, with military leaders called Judges; but these acted by the direction of the priesthood, who were immediately counselled by the Deity within the sanctuary. This period of separate government in tribes, called the Period of the Judges, lasted 300 years (1427–1112 B.C.), and was one of daring actions and great deliverances—the heroic age of the Jews.

The epoch of kings succeeded that of judges. The reign of Saul, their first monarch, though the people were stronger by being united, was gloomy and troubled. David, who succeeded,

was a soldier and a conqueror. He left an empire peaceful, respected, and strong; and, what was of as much importance, he selected from among his sons a successor who was able to improve all these advantages. Under Solomon, the Hebrew government being able to protect its subjects in other countries, the people and their king began to employ themselves in commerce. Their trade was at first ingrafted on that of the Phœnicians of Tyre. A greater contrast cannot be imagined than between the troubles of the time of the Judges (only 100 years before), and the peace, security, and enjoyment of this reign.

After the death of Solomon, the country fell into the same divisions which had weakened it in the time of the Judges. Each of the districts of North and South Israel was under a separate king, and the people were exposed both to the attacks of their enemies and to quarrels with each other. Their history is a succession of agitating conflicts for independence, and of unexpected and remarkable deliverances, of a similar nature to those of the earlier period, and continuing for about the same length of time (380 years); but they are marked by fewer of those traits of heroic devotion which distinguished the epoch of the Judges. The backslidings, errors, and misgovernment of their kings are the chief and painful subject which is presented to us; and though these are relieved at times by the appearance of such monarchs as Josiah, Jehoshaphat, and Hezekiah, yet the whole history of this period is overcast with the gloominess of progressive decline. By far the most delightful parts of it are those which relate to the lives of the prophets, who were raised up at intervals to warn the nation and its rulers of the fate which they incurred by forsaking the religion of their fathers. These inspired men sometimes sprang up from among the humblest classes of the community: one (Isaiah) is, however, said to have been of royal lineage; but the works of all are marked with the same sacredness, and force of authoritative rebuke.

Of the two kingdoms into which Palestine had divided itself after the death of Solomon (975 B.C.), the northern, called the Kingdom of Israel, was conquered by the Assyrians of Nineveh (722 B.C.), who carried off many thousands of the people into captivity. What became of the ten tribes which were carried away captive by the Assyrians, is a question regarding which there has been much discussion. According to Scripture, they were first planted by Shalmaneser as colonists in certain cities of Media, which territory was then subject to Assyria; and recent investigations have proved the precise district to have been the neighbourhood of the Kezil-Ozan, a river in the north of modern Persia, near the Caspian Sea. Of the fact of the distribution of the ten tribes throughout Media, there is no doubt; but as Media not long after revolted from the Assyrians, the subsequent fate of these Jewish captives cannot be traced. The southern kingdom, called the Kingdom of Judah, retained its independence till 588 B.C. when it was invaded and subdued by Nebuchadnezzar, king of Babylon, who destroyed Jerusalem, and carried away a great number of the principal Jews into captivity at Babylon. On the subversion of the Babylonian dominion by Cyrus, seventy years afterwards, the captives, to the number of 42,360, were permitted to return to their own land, and rebuild Jerusalem. At this period, the whole of Palestine merged in the growing Persian empire.

Assyrians and Babylonians.

Assyria occupied the northern portion of the Mesopotamian plain, lying between and on the Euphrates, Tigris, and Kabour. It was bounded on the north by the Mons Niphates in Armenia, on the south by Susiana and Babylonia, on the east by the Zagros Mountains, and on the west by the watershed of the Euphrates. At a time far beyond the reach of history, there lived there a Semitic people under a well-defined organised government. The origin of Assyria, according to Genesis x. 10, 11, is simply that out of the land of Shinar, the kingdom of Nimrod, the son of Cush, who was the son of Ham, 'went forth Asshur, and builded Nineveh.' Be this as it may, it is almost certain that the Assyrians did originally come from the south, and had probably inhabited the flat alluvial plains at the mouths of the Tigris. Their architecture is founded on a style such as would originate in a region devoid of stones for building. Indeed, even after emigrating to their new quarters, where stone quarries were numerous enough, they persisted in retaining brick as their favourite building material. This migration northward of the people who founded the Assyrian empire, probably occurred anterior to the close of the old Chaldæan empire—that is, before the sixteenth century B.C. A broken tablet with inscriptions, giving a synchronous history of Babylonia and Assyria, preserves the names of the three earliest known Assyrian kings, and fixes the date of their reigns at 1650–1550 B.C. by connecting them with the time of Purna-puriyas, the early Chaldæan king. It must be noted, however, that the name of the first of these Assyrian kings—Asshur-bel-nisus—stands half-way down the column of this broken tablet. There may have been ten or twelve kings before him, which would put back the date of the Assyrian empire to, say, 1770 B.C. The northern migration of the founders of this empire was probably due to the spirit of enterprise that at that time seemed to have leavened the Semitic peoples of Southern Mesopotamia, who wandered much further even to push their fortunes. Says Mr Rawlinson in his *Five Ancient Monarchies*: 'Terah conducted one body from Ur to Harran; another removed itself from the shores of the Persian Gulf to those of the Mediterranean; while probably a third, larger than either of these two, ascended the course of the Tigris, occupied Adiabêne with the adjacent regions, and giving its own tribal name of Asshur to its chief city and territory, became known to its neighbours, first as a district, then as an independent power and people.'

From bricks of Babylonian type found at Killeh-sherghat, older than pure Assyrian remains, bearing the names and titles of Babylonian rulers, it seems probable that Assyria was at first governed by satraps from the parent country. When, however, we come to the time of the three earliest kings mentioned in the mutilated synchronistic tablet already referred to, it is clear the protectorate had been discarded. The first two kings whose names are mentioned—Asshur-bel-nisus

and Buzzur-Asshur—made treaties of peace with Babylonian contemporary monarchs; and the third, Asshur-vatila, had not only married one of his daughters to the Chaldæan king Purna-puriyas, but, on the death of that monarch, had even interfered with the domestic affairs of the parent country so far as to put down a usurper who tried to seize the throne, and restore to power the rightful heir. From his time, then, we may safely regard Assyria as an independent and pretty powerful state. Then a long dark break in the historical record occurs, regarding which nothing is known. A genealogical tablet gives us just a glimpse of the name of the next king—Bel-sumili-kapi—who reigned about 1450 B.C. and probably was founder of a new dynasty. Contemporary Assyrian record now aids us, and we come to a group of six kings, forming a line of direct descent from father to son between 1350 and 1230 B.C. The first is Bel-lush (1350–1330 B.C.); Pud-il (1330–1310 B.C.), and Iva-lush I. (1310–1290 B.C.), who come next, must have extended the city of Asshur greatly, for quantities of bricks bearing their names and titles have been recently found. The dates we give, it must be remembered, are only approximately true, and are based on calculations from well-ascertained fixed points; the average duration of an Assyrian king's reign being taken at twenty years. Iva-lush I. was succeeded by his son, Shalmaneser I. (1290–1270 B.C.). He founded Calah (Nimrud), long capital of the Assyrian empire, and pushed his frontier northwards, so as to secure possession of the region between the Tigris and the mountains, which afterwards became the metropolitan centre of Assyria. He seems to have been the first of the Assyrian conquering kings. Tiglathi-nin, his son (1270–1250 B.C.), may be reckoned as the first of the monarchs of what Herodotus understood as the great Assyrian empire. Inheriting the spirit of his father, he inaugurated the aggressively hostile policy towards Babylonia to which all his successors rigidly adhered. An inscription on his signet claims for him the titles of 'King of Assyria, and conqueror of *Kar-Dunis*,' or Babylonia—which may have remained thoroughly subject to Assyria for about a century after he attacked it. He was succeeded by his son, Iva-lush II. (1250–1230 B.C.), who still further extended by conquest his dominion.

A break of twenty or thirty years here occurs in the record, and then there appears another dynasty, consisting of six kings in consecutive series from father to son—their names being found inscribed on the cylinder of Tilgath-pileser I. (1130–1110 B.C.). The first of this dynasty was Nin-pala-zira (1210–1190 B.C.). His son, Asshur-dah-il (1190–1170 B.C.), was the second. He was succeeded by his son, Mutaggil-Nebo (1170–1150 B.C.), who was succeeded by Asshur-ris-ilim (1150–1130 B.C.), a warlike and aggressive monarch, who waged war not only with Babylon under the first Nebuchadnezzar, but is conjectured to have been the king of Mesopotamia mentioned in Judges iii. 8, by the name of Chusan-ris-athaim, who kept the Israelites in subjection for eight years. His son, Tilgath-pileser I. (1130–1110 B.C.), succeeded him, and of his reign there is a pretty full account, chiefly recorded on two duplicate cylinders now in the British Museum. He was a restless warrior, who subdued nearly all the tribes around him. He was as deeply imbued with a fanatical zeal for spreading the worship of Asshur, as for increasing the territory of Assyria, and his wars were to a great extent missionary wars. He greatly advanced the material prosperity of his people, and enriched Assyria by irrigation works, and by encouraging the importation of foreign products, both vegetable and animal. His son, Asshur-bil-Kala (1110–1090 B.C.), succeeded, and carried on the traditional war with Babylon. In his reign the Jewish monarchy under Saul must have sprung up.

Another long blank in the record comes, during which time Assyria rather declined in power. A new and more vigorous series of kings appears, beginning with the reign of Asshur-iddin-akhi (950–930 B.C.). He was succeeded by his son, Asshur-danin-il (930–910 B.C.); who was also succeeded by his son, Iva-lush III. (910–890 B.C.). His son, Tiglathi-nin II. succeeded, and reigned from 890 to 884 B.C.; and was followed by his son, Assur-idanni-pal (884–859 B.C.), the first Sardanapalus—one of the greatest of the Assyrian monarchs. Not unjustly, he styles himself 'the conqueror from the upper passage of the Tigris to Lebanon and the great sea, who reduced under his authority all countries from the rising of the sun to the going down of the same.' The glories of Assyria under his reign; her triumphs in the pursuits of war and peace; her conquests and wealth; her sumptuous luxury, the splendour of her palaces and temples; her exquisite skill in the fine arts and in inventions, are even now the cause of mingled admiration and wonder to European scholars, who can hardly believe that, nine centuries before the Christian era, a civilisation of such a lofty and dignified type could have so suddenly leaped into existence. The son of this great monarch, Shalmaneser II. (859–824 B.C.), succeeded him. He, too, was a warlike prince, and by his energy and valour, made Assyria the dominant power over the vast region extending from the Persian Gulf to Mons Niphates, and between the Zagros range and the Mediterranean. Phœnicia, Samaria, Damascus, all paid tribute to him, as did also the king of Israel, Jehu, 'son of Omri,' as the usurping son of Jehosaphat styled himself. In his later years, his eldest son rebelled, but was defeated and put to death; so his second son, Shamas-iva, succeeded him, and reigned from 824–810 B.C. residing, like his father, chiefly at Calah. He prosecuted the usual Assyrian war against Babylonia with such vigour, that in the reign of his son, Iva-lush IV. that state became thoroughly tributary to Assyria. Iva-lush IV. (810–781 B.C.) conquered Damascus, rendered part of Media tributary to him, and pushed the Assyrian frontier even to the very confines of Egypt. His queen was Sammuramit (Semiramis), regarding whom most written history is legendary. She was probably a Babylonian princess in no way very remarkable, whom he married in order to confirm his suzerainty of that country. From the fact that she thus occupied a more independent relation to her consort (holding joint sway over this very important fief) than was usual in eastern nations, and so comes into the historic record (which eastern women rarely do), the mythical and fabulous details, which made the figure of Semiramis stand out with such imperial grandeur on the canvas of the chroniclers of classical antiquity,

were gradually evolved and accumulated. After the death of Iva-lush IV. another blank occurs, regarding which we need only say that between 781 and 744 B.C. there reigned Shalmaneser III. Asshur-danin-il II. and Asshur-lush. This seems to have been a period of decadence. Assyria was getting corrupt and lazy with a surfeit of luxury, whilst surrounding nations were waxing in strength. It was most likely during this period that Jonah was sent forth to thrill them with the startling prophecy, 'Yet forty days, and Nineveh shall be overthrown.' In 744 B.C. the history of what Herodotus seems to mean by his later kingdom begins with the reign of Tilgath-pileser II. who was probably floated into power by the tide of a successful revolution. He was an able, energetic, and warlike prince, and he restored the pristine power and glory of Assyria. He rendered tributary again Damascus, Tyre, Judah, Moab, Ascalon, &c. In 726, he was succeeded by Shalmaneser IV. (thought to be his son), who warred with his rebellious vassal, Hoshea, king of Israel, and with the maritime states of Tyre and Sidon. Sargon, a clever and successful warlike usurper, reigned from 721–704 B.C. His career was one of incessant warfare. Under him, for the first time, Asia and Africa met in battle, for he attacked Gaza, an Egyptian province, and defeated the Egyptian army at Rapikh (Raphia of the Greeks, and *Refah* of moderns). He also brought some of the Arabian tribes under Assyrian rule, ravaged Babylon, and finally established the supremacy of Assyria over the whole of Chaldæa. From his magnificent palace at Khorsabad came the fine series of monuments now in the Louvre. To him succeeded Sennacherib, who reigned 704 to 680 B.C. He made Nineveh the capital, and repaired a palace there by forced labour of 300,000 men. He afterwards built a far grander one, which was excavated by our countryman, Mr Layard, and estimated to cover eight acres of ground. His annals extend only to the eighth year of his reign. He made a successful raid on Babylonia, and invaded Judæa, conquering King Hezekiah, and leading into captivity 200,000 Jews. In his second campaign, he met with a terrible disaster, when about to attack the Egyptians at Pelusium. As recorded in 2 Kings xix. 35, the morning of the battle, 185,000 of his men were found lying dead in their tents, having been smitten during the night, says the sacred narrative, by the angel of the Lord, in answer to the prayers of Hezekiah, on whom he was about to swoop down 'like a wolf on the fold.' Undaunted by this calamity, Sennacherib carried on several wars after this against Tyre and Sidon, Babylon and Susiana. He was the first to make Assyria formidable as a naval power. He was murdered by two of his sons, 'hungry for his empty chair,' neither of whom succeeded him. His successor was his third son, Esar-haddon, who seems to have ruled his empire sometimes from Nineveh and sometimes from Babylon—hence it was to the latter city Manasseh was brought to him when conquered by his troops. He warred with Phœnicia, Armenia, Edom, and even with the inhabitants of what is known as the modern Arabian kingdom of Hira, and subdued Egypt as far as Thebes. He was succeeded by Asshur-bani-pal—or, as the Greek writers call him, Sardanapalus—in 667 B.C. who completed and consolidated, with matchless ability, the splendid conquests his father had begun. He was the only one of the Assyrian kings who cared for literature, and encouraged scholarship. Under him Assyrian power and civilisation reached its culminating point, and it was not till after his death it declined. The stories of effeminate luxury and vicious imbecility told of a Sardanapalus are misapplied to him. They really refer, if to any one, to his son, Asshur-kinat, who succeeded him, probably in 647 B.C. and who may have ended his reign in 625. He is the Saracus of the Greek chroniclers. In his weak hands, the great Assyrian empire grew demoralised. The wave of Scythian invasion which at this time swept over all Syria, weakened it so much, that even after these northern hordes had retired, they left it so feeble that it fell a prey to the Medes, who had unsuccessfully attempted to conquer it in the beginning of Saracus's reign; but who, aided by the treachery of Nabopolassar, the Assyrian viceroy of Babylon, and under the leadership of Cyaxares, gave the final blow to Assyrian dominion. Saracus, when despairing of success, set fire to his palace at Nineveh, and perished in the conflagration that destroyed that imperial city. The northern portion of the empire was seized by the Medes. The southern portion, including Susiana, Syria, and Palestine, was given to Nabopolassar, as the reward of his treachery. Of this, Babylon became the chief city; and from this point Babylon, which had always hitherto, since the reign of Tiglathi-nin I. been a vassal of Assyria, sprung up into a new and entirely independent empire.

The sculptures and other objects brought to light by explorers, from among the ruins of the ancient

Assyrian cities, and now deposited in the museums of Paris and London, give us a high idea of the state of social advancement at which the nation had arrived. The grandeur of their architecture, the elegant forms of their furniture, the produce of their looms, their works in metal, stone, glass, and ivory, still excite admiration; while agriculture, by means of irrigation, seems to have been carried to the highest degree of perfection.

The Babylonian Empire.

Up to the period of the dismemberment of Assyria, the history of Babylonia is, as might be inferred from what we have said above, that of the relations of a mutinous disaffected vassal towards a stern, cruel, oppressive suzerain. As often as its viceroys asserted their independence of Assyria, they were crushed by the overwhelming force of that great empire. It was only when Assyria fell that Babylon rose upon her ruins into permanent independent existence.

Nabopolassar, the first monarch of independent Babylon, reigned from 625 to 604 B.C. The year before his death, he sent his son Nebuchadnezzar to recover Gaza, which Neco the Egyptian monarch had wrested from him, in which undertaking he was successful. Nebuchadnezzar, on succeeding to the throne in 605 B.C. found himself lord of all the dominions that had ever pertained to the monarchs of Assyria, with the exception of the nations which acknowledged the sway of Media. The long reign of this prince (605–561 B.C.) was the epoch of Babylonian splendour. Besides his important acts as a conqueror—the chief of which was his conquest of Judæa, Phœnicia, and Egypt, all of which countries he invaded several times—Nebuchadnezzar was celebrated for the magnificence of his designs as a ruler. 'Is not this great Babylon that I have built for the house of the kingdom?' is the expression attributed to him in the Book of Daniel, in which so many interesting particulars concerning his reign are recorded; and the expression was justified by the fact. Babylon had already been a great city, but under Nebuchadnezzar it became the metropolis of the Asiatic world. Herodotus, who saw the city in its decline, describes it as surrounded with walls in thickness 75 feet, in height 300 feet, and in compass 480 stadia, or about 60 of our miles. These walls formed an exact square, each side of which was 120 stadia, or 15 miles in length; and were built of large bricks cemented together with bitumen, a glutinous slime which issues out of the earth in that country, and in a short time becomes harder than the very brick or stone which it cements. The city was encompassed without the walls by a vast ditch filled with water, and lined with bricks on both sides. In the whole compass of the walls there were a hundred gates —that is, twenty-five on each side, all made of solid brass. At intervals round the walls were 250 towers. From each of the twenty-five gates there was a straight street extending to the corresponding gate in the opposite wall; the whole number of streets was therefore fifty, crossing each other at right angles, and each fifteen miles long. The breadth of the streets was about 150 feet. By their intersection the city was divided into 676 squares, each about two miles and a quarter in compass, round which were the houses, three or four stories in height; the vacant spaces within being laid out in gardens, &c. Within the city, the two greatest edifices were the royal palace with its hanging gardens, and the temple of Belus, composed of eight towers built one above another, to the enormous height, it is said, of a furlong.

Nor was the execution of colossal works confined to the city. The whole of Southern Mesopotamia was intersected by canals, many of which ran quite across from the Euphrates to the Tigris, and served both for irrigation and transport; and marshes were converted into vast tanks or reservoirs, one of which was fifty miles in circumference, and faced all round with solid masonry. The commerce of Babylon, when at the height of its glory, not only for home consumption, but as the great emporium between the east and west, was immense.

Nebuchadnezzar was succeeded (561 B.C.) by his son, Evil-Merodach, who was dethroned (559 B.C.) by his brother-in-law, Neriglissar (559–556 B.C.), whose son and successor, Laborosoarchod, was dethroned, after a brief reign, by Nabonadius, the Belshazzar of Scripture (555 B.C.); in the eighteenth year of whose reign (538 B.C.) Babylon was taken by Cyrus, and passed into the hands of the Persians.

The Medes and Persians.

Extending, as we have said, from the Mediterranean to the Indus, the Assyrian empire had included not only the chief Semitic nations of Western Asia, but also that portion of the Indo-Germanic family which was contained between Mount Zagros and the river Indus. Essentially a prolongation of the great race which inhabited Hindustan, the nature of their country—a vast table-land, here and there rising into hills, or presenting spots of great fertility—had made them quite different in character and habits from the settled and stereotyped Hindus. All parts of this plateau of Iran, as it was called, including the present countries of Persia, Cabool, and Beloochistan, were not alike: in some portions, where the soil was fertile, there existed a dense agricultural population; in others, the inhabitants were nomadic horse-breeders, cattle-rearers, and shepherds. All the tribes, however, were bound together by affinities of language and by a common religion. This religion, a modification, probably, of some more ancient form, from which Hinduism may also have sprung, was taught by Zerdusht, or Zoroaster, a great native reformer and spiritual teacher, who lived at Bactra, now Balkh, six or seven centuries before Christ. The principal doctrine of his religion was that of the existence of two great emanations from the Supreme and perfect Deity—the one a good spirit (Ormuzd), who created man and fitted him for happiness; the other an evil spirit, named Ahriman, who has marred the beauty of creation by introducing evil into it. Between these two spirits and their adherents, there is an incessant struggle for the mastery; but ultimately Ormuzd will conquer, and Ahriman and evil will be banished from the bosom of creation into eternal darkness. The worship annexed to this doctrine was very simple, dispensing with temples or images, and consisting merely of certain solemn rites performed on mountain-tops, &c. Fire, and light, and the sun, were worshipped either as symbols or as inferior deities. A caste of priests called the Magi, answering in some respects to the Brahmins of India, or the Chaldæans of Babylon, superintended these ceremonies, and commented on the religion of Zoroaster.

Various of the tribes of Iran associating themselves together, constituted small nations. Thus, adjacent to Assyria, and separated from it by Mount Zagros, was an agglomeration of seven

tribes or villages, under the special name of the Medes, the country which they inhabited being thence called Media. South from Media, and nearer the sea, was another district of Iran, called Persis or Persia, inhabited also by an association of tribes calling themselves the Persians. Other nations of Iran were the Parthians, the Bactrians, &c.—all originally subject to the Assyrian empire.

Median history begins with Cyaxares (for the list of her kings, beginning with Deioces, given by classical historians, is a fabulous one), who consolidated into an empire a heterogeneous mass of tribes, and extended the Median dominion as far westward into Asia Minor as the river Halys. He was engaged in an attempt against Nineveh, when he was called away to defend his kingdom against a great roving population, called Scythians, by whom he was defeated, and who continued to hold him tributary and plunder Media for twenty-eight years. At length, having assassinated their chiefs by a stratagem, Cyaxares drove the invaders back into the north. He then renewed his attempt against Nineveh; took it, and shared the Assyrian dominions with the monarch of Babylon. The Median empire, thus formed, he bequeathed (593 B.C.) to his son Astyages, having reigned, according to Herodotus, 40 years.

The circumstances which led to the revolt of the Persians under Cyrus* against the Medes, and the dethronement by him of Astyages (560 B.C.), had been woven into a romance resembling the story of Romulus, even so early as the age of Herodotus (408 B.C.), so that that historian could not ascertain the actual facts of the case. 'The native Persians,' says Mr Grote, 'whom Cyrus conducted, were an aggregate of seven agricultural and four nomadic tribes, all of them rude, hardy, and brave, dwelling in a mountainous region, clothed in skins, ignorant of wine or fruit, or of any of the commonest luxuries of life, and despising the very idea of purchase or sale. Their tribes were very unequal in point of dignity; first in estimation among them stood the Pasargadæ; and the first clan among the Pasargadæ were the Achæmenidæ, to whom Cyrus belonged. Whether his relationship to the Median king whom he dethroned was a fact or a politic fiction, we cannot well determine; but Xenophon gives us to understand that the conquest of Media by the Persians was reported to him as having been an obstinate and protracted struggle.'

Master of Media, the Persian chief, in his turn, became a great oriental conqueror; indeed, all the oriental conquests bear the same character. A nomadic race, led by a chief of great abilities, invades the more organised states, and conquers them; the chief assumes the government, and founds a dynasty, which, after a rule of several generations, becomes enervated, and gives way before some new nomadic incursion. The first power against which Cyrus turned his arms, after having subdued the Medes, was the famous Lydian kingdom, which then subsisted in Asia Minor under the great Crœsus. And here, therefore, we must give some account of the ancient condition of Asia Minor and its principalities.

* The Persian form of the word is *Khosru*, meaning 'the Sun,' which was corrupted by the Greek writers into *Kuros* (lord), the Latin form of which is *Cyrus*.

States of Asia Minor—The Lydians.

The river Halys divided Asia Minor into two parts. East of the Halys, or near its source, were various nations of the Semitic stock, Cappadocians, Cilicians, Pamphylians, &c.—each organised apart, but all included under the Assyrian, and latterly, as we have seen, under the Median empire. West of the Halys, the inhabitants were apparently of the Indo-Germanic race, although separated by many removes from the Indo-Germans of Persia. They are considered as belonging to what has been called the Pelasgic stock of the Indo-Germanic or European family, of which the inhabitants of Italy and Greece are also members. Overspreading this part of Asia Minor, as well as Thrace and other parts of South-eastern Europe, this great race had been broken up into fragments distinguished by characteristic differences. To enumerate these various nations, assigning to each its exact geographical limits, is impossible; the chief, however, were the Bithynians, a sort of Asiatic Thracians on the southern coast of the Euxine; the Lydians and Carians in the south-west; and, intermediate between the two, geographically as well as in respect of race and language, the Mysians and Phrygians. These were the native states; but along the whole Ægæan shore was diffused a large Greek population, emigrants, it is believed, from European Greece, chiefly gathered into cities. These Greeks of Asia Minor were of three races—the Æolic Greeks in the north, and the Ionian and Dorian Greeks in the south; and perhaps the earliest manifestations of Greek genius, political or literary, were among these Greeks of Asia. The intercourse of these Greeks with the native Lydians, Phrygians, &c. gave rise to mixture of population as well as to interchange of habits; the native music especially of the Lydians and Phrygians became incorporated with that of the Greeks.

When Lydia, with its capital Sardis, first began to be a powerful state, is not known; it is remarkable, however, that the Lydians are not mentioned in Homer. According to Herodotus, the Lydians traced their history back through three dynasties. *1st*, The Atyadæ, from the earliest times to 1221 B.C.; *2d*, the Heracleidæ, from 1221 B.C. to 716 B.C.; and *3d*, the Mermnadæ. Only the last dynasty is historic.

The first king of the Mermnad dynasty was Gyges (716-678 B.C.); the second, Ardys (678-629 B.C.), in whose reign the Cimmerians, from Scythia, invaded Asia Minor; the third, Sadyattes (629-617 B.C.); the fourth, Alyattes (617-560 B.C.). Each of these Lydian kings was engaged in wars both with the Asiatic Greeks of the coast and the native states of the interior. The growth of the Lydian power was impeded by the Cimmerian invasion; but those savage nomads were at length expelled by Alyattes; and Crœsus, the son of Alyattes by an Ionian wife, having succeeded his father 560 B.C. soon raised himself to the position of a great potentate, ruling over nearly the whole country westward of the Halys, comprehending Æolian, Ionian, and Dorian Greeks; Phrygians; Mysians, Paphlagonians, Bithynians, Carians, Pamphylians, &c. At Sardis, the capital of this extensive dominion, was accumulated an immense treasure, composed of the tribute which

the Lydian monarch derived from the subject states; hence the proverb, 'as rich as Crœsus.'

Separated from the Median kingdom only by the river Halys, the Lydian dominion naturally became an object of desire to Cyrus, after he had acquired the sovereignty of Media. Accordingly (546 B.C.), provoked by an invasion of Crœsus, who had received from the Delphic oracle the equivocal assurance, that 'if he attacked the Persians he would subvert a mighty monarchy,' Cyrus crossed the Halys, advanced into Lydia, took Sardis, and made Crœsus prisoner. It was intended by the conqueror that the Lydian king should be burned alive—it is even said that the fire was kindled for the purpose; Cyrus, however, spared his life, and Crœsus became his friend and confidential adviser. On the subversion of the Lydian monarchy, its subjects, the Greeks of Asia Minor, were obliged to submit to the conqueror, after having in vain solicited the aid of their brethren the European Greeks. The Lacedæmonians, indeed, sent an embassy into Asia Minor; and one of their ambassadors had a conference with Cyrus at Sardis, where he warned him 'not to lay hands on any of the Greek towns, for the Lacedæmonians would not permit it.' 'Who are the Lacedæmonians?' said the astonished warrior. Having been informed that the Lacedæmonians were a Greek people, who had a capital called Sparta, where there was a regular market—'I have never yet,' said he, 'been afraid of this kind of men, who have a set place in the middle of their city where they meet to cheat one another and tell lies. If I live, they shall have troubles of their own to talk about.' To save themselves from the Persians, the Ionian portion of the Asiatic Greeks proposed a universal emigration to the island of Sardinia—a striking design, which, however, was not carried into execution. All Asia Minor ultimately yielded to Cyrus.

The Persian Empire.

Having subdued Asia Minor, Cyrus next turned his arms against the Assyrians of Babylon. His siege and capture of Babylon (538 B.C.), when he effected his entrance by diverting the course of the Euphrates, form one of the most romantic incidents in history; an incident connected with Scriptural narrative through its result—the emancipation of the Jews from their captivity. Along with Babylon, its dependencies, Phœnicia and Palestine, came under the Persians.

Cyrus, one of the most remarkable men of the ancient world, having perished in an invasion of Scythia (529 B.C.), was succeeded by his son Cambyses, who annexed Egypt to the Persian empire (525 B.C.), having defeated Psammenitus, the son of the Pharaoh Amasis. Foiled in his intention of penetrating Libya and Ethiopia, Cambyses was dethroned by a Magian impostor, who called himself Smerdis, pretending that he was the younger brother of Cambyses, although this brother had been put to death by the order of Cambyses during a fit of madness. A conspiracy of seven great nobles having been formed against the false Smerdis, he was put to death. He was succeeded by one of the conspiring chiefs, called Darius Hystaspes, who reigned over the immense Persian empire, extending from the Nile to the Indus, and beyond it, from 521 B.C. to 485 B.C. 'The reign of Darius,' says Mr Grote, 'was one of organisation, different from that of his predecessor—a difference which the Persians well understood and noted, calling Cyrus, "the father;" Cambyses, "the master;" and Darius, "the retail trader or huckster." In the mouth of the Persians, this last epithet must be construed as no insignificant compliment, since it intimates that he was the first to introduce some methodical order into the imperial administration and finances. Under the two former kings, there was no definite amount of tribute levied upon the subject provinces. But Darius probably felt it expedient to relieve the provinces from the burden of undefined exactions. He distributed the whole empire into twenty departments—called satrapies—imposing upon each a fixed annual tax. This, however, did not prevent each satrap—the Persian governor appointed by the king—in his own province from indefinite requisitions. The satrap was a little king, who acted nearly as he pleased in the internal administration of his province, subject only to the necessity of sending up the imperial tribute to the king at Susa, the capital of the Persian empire; of keeping off foreign enemies; and of furnishing an adequate military contingent for the foreign enterprises of the Great King. To every satrap was attached a royal secretary or comptroller of the revenue, who probably managed the imperial finances in the province, and to whom the court of Susa might perhaps look as a watch upon the satrap himself. The satrap or the secretary apportioned the sum payable by the satrapy in the aggregate among the various component districts, towns, or provinces, leaving to the local authorities in each of these latter the task of assessing it upon individual inhabitants. From necessity, therefore, as well as from indolence of temper and political incompetence, the Persians were compelled to respect the authorities which they found standing both in town and country, and to leave in their hands a large measure of genuine influence. Often even the petty kings who had governed separate districts during their state of independence, prior to the Persian conquest, retained their title and dignity as tributaries to the court of Susa. The empire of the Great King was thus an aggregate of heterogeneous elements, connected together by no tie except that of common fear and subjection—noway coherent nor self-supporting, nor pervaded by any common system or spirit of nationality.'

Continuation through Greek and Roman History.

The conquering spirit of Darius soon brought him into conflict with the Greeks of Europe (490 B.C.), and from that time the main interest of the world's history is bound up with the career of that remarkable people, and subsequently with that of the kindred nation of the Romans. The further progress of the race, then, will be continued in the two succeeding numbers, under the Histories of Greece and of Rome.

The Acropolis at Athens.

HISTORY OF GREECE.

THE name Græcia, or Greece, was unknown to the inhabitants themselves, who called their country Hellas, and themselves Hellenes.

Hellas, or ancient Greece, extended farther northward than the modern kingdom of that name, the limit being about the fortieth degree of north latitude; and is throughout mountainous. About the latitude above named, the Pindus sends a lateral branch, Mount Lingon, westward to the Adriatic, ending in the Acroceraunian Promontory; and another at right angles eastward, the Cambunian Mountains, which culminates in Mount Olympus (9700 feet high), near the coast of the Ægæan. About a degree farther to the south, the central range of Pindus sends another lateral branch eastward to the strait at the north end of the island of Eubœa. Between this range, called Othrys, the Cambunians on the north, and Pindus on the west, lies Thessaly, one of the few extensive plains of Greece. Its eastern coast is also skirted by the mountain-chain of Pelion, whose northern summit, Ossa, is separated from Olympus only by the narrow defile of Tempe, through which the river Peneus, that drains the whole plain, finds exit. The northern boundary of the modern kingdom of Greece runs from the Gulf of Volo along the ridge of Othrys to Pindus, and thence west to the Gulf of Ambracia on the Ionian Sea. It thus includes the whole of ancient Hellas, with the exception of Thessaly; for the inhabitants of Epeirus—now the southern part of Albania—were not considered as Hellenes.

A little south of Othrys, the range of Œta forms a third eastern offset from the central chain, and was considered as forming the northern barrier of Central Greece. Near the point of junction with Œta, Pindus divides into two branches: one runs south-east, under the names of Parnassus (8000 feet high), Helicon, Cithæron, and Hymettus, to Cape Sunium in the south of Attica; the other south-west, towards the narrowest part of the Corinthian Gulf. The mountains in Peloponnesus (island of Pelops), now Morea, may be considered as continuations of the two ranges last described. A ring of mountains incloses the central district, called Arcadia, and sends off branches in all directions; one of these, Mount Taÿgetus (7800 feet high), ends in Cape Tænarus, now Matapan.

These main ranges and their numerous offsets leave room for few plains of any considerable size. One remarkable feature of Greece is the number of shut valleys or basins, from which the water can issue only by finding a subterranean passage through the limestone rocks that bound them. The Lake Copais, in the plain of Bœotia, has no outlet but a number of such natural tunnels, and is caused by their insufficiency to let off all the water of the Cephissus. The remains of an artificial tunnel, four miles in length, are still discernible, which is believed to have been made by the ancient

inhabitants of Orchomenos to aid the natural outlets, and the bed of the lake had then been a rich plain. But this tunnel was choked up before history begins.

The only large river in Greece is the Achelous, now Aspropotamo, which, rising on the western declivities of Pindus, flows south-west into the Ionian Sea at the mouth of the Corinthian Gulf. Alpheius, the chief river of Peloponnesus, after disappearing more than once in subterranean passages among the limestone valleys of Arcadia, flows west into the Ionian Sea.

The cultivable portion of Greece is small, being considerably less than half the surface,* and confined to the valleys and strips of level land on the coasts. Yet the diluvial and alluvial soil collected in many of the valleys and troughs of the hills is of singular fertility. The richest tracts in modern, as in ancient times, are in the basins of the Peneus in Thessaly, of the Cephissus in Bœotia, of the Achelous in Ætolia, and the Alpheius in Elis. The greatest hinderance to the fertility of Greece is the deficiency of water. Abundance of rain falls in the autumn and winter months, but little or none during summer. The naked limestone rocks that chiefly compose the mountains retain little of the rain, and there are very few springs. This evil is greatly increased in modern times by the destruction of the forests that once clothed the mountains.

The climate of Greece is one of the most delightful in the world, having a bright sun and cloudless sky, without any very oppressive heat. The principal vegetable productions in ancient times were wheat, barley, flax, with the vine and olive; but the country was, and is, more pastoral than agricultural. It is not rich in metallic minerals, though the mines of Attica were wrought for silver, lead, and copper.

The chief political divisions of Greece during the historic period were the following: In Peloponnesus—Arcadia in the centre, surrounded by its mountain boundary; on the north, Achaia; east, Argolis; south, Laconia and Messenia; and west, Elis. The territories of Corinth and Megara occupied the isthmus; south-east lay Attica; north-west of Attica, Bœotia; next Phocis, chiefly occupied by the heights of Parnassus; Doris; Locris, on the channel of Eubœa; and Ozolian Locris, on the Gulf of Corinth. West of the central range lay Ætolia and Acarnania, separated by the river Achelous. The chief Hellenic state north of Mount Œta and Thermopylæ was Thessaly; Macedonia was not, till a late period, considered as belonging to Hellas. Intimately connected with Greece, and forming part of it, are a multitude of islands. The long, lofty, and naked backbone of Eubœa appears as a prolongation of the Ossa and Othrys mountains. Further south is the group which was called the Cyclades, and to the east of these the Sporades, near the coast of Asia. To the south of these groups lie two large islands—Crete and Rhodes; and off the southern coast of Laconia, the island of Cythera. Between Attica and Argolis was the Saronic Gulf, containing the celebrated island of Salamis, which was reckoned part of Attica: here, too, was Ægina, its hated rival. In the Ionian Sea were—Corcyra, opposite Epeirus; Ithaca and Cephallenia, opposite Acarnania; and Zacynthus, near the coast of Elis.

Such is a brief description of Hellas Proper. But the Greek race had planted numerous colonies on the coasts of Asia Minor, of Africa, Italy, Sicily, and other parts of the Mediterranean; and wherever the Hellenic tongue was spoken and Hellenic ideas and usages prevailed, that was considered as forming part of Hellas, no less than Athens or Sparta. The history of Greece, then, must embrace these colonies.

THE HELLENES, OR PEOPLE OF ANCIENT GREECE.

The configuration of Hellas, as described above, was peculiarly calculated to foster a large number of independent communities, separated from each other by mountain-chains, but open to foreign intercourse by the sea, which was accessible to almost every state of Greece. Accordingly, we find that each of the principal cities was founded in one of the small plains or valleys we have described, and grew up in solitary independence of all the world besides.

To a modern reader, accustomed to large political aggregations, it requires a certain mental effort to suppose a time when even the smallest town clung so tenaciously to its right of self-legislation; nevertheless, this multiplicity of self-governing cities was a phenomenon common to ancient Europe, and placed it in singular contrast with the extensive monarchies of Asia; but it appears more marked among the Greeks than anywhere else; and doubtless they owed it to the multitude of insulating boundaries which the configuration of their country presented.

Though politically disunited, the inhabitants of Greece had some intimate bonds of union. They were, according to their own belief, all of one blood, boasting their descent from one common ancestor, HELLEN, after whom they called themselves Hellenes, while they stigmatised every other people as barbarians. They all spoke the same language, though broken into numerous dialects; and, whatever might be the diversity of their manners or character, there were some important points in which they resembled each other, while they differed from the most celebrated of the surrounding nations. Polygamy, the selling of children into slavery, the deliberate mutilation of the person, and the immolation of human victims to the gods, generally prevailed among the contemporaneous Egyptians, Carthaginians, Persians, and Thracians; but such practices were utterly abhorrent to the Hellenic mind. On the other hand, the cultivation of gymnastic exercises by public contests was common to all the Hellenes, but unknown, so far as appears, to any of their neighbours.

This people were united, likewise, by a community of religion and literature. They worshipped the same gods, and held sacred the same localities. They had a common stock of legends, maxims, and metaphors, embodied in the works of Homer and other early poets, which were familiar to all, and acknowledged by all as the standards of literary language. So also the councils called Amphictyonies, and the games known to us as the Olympic, the Pythian, the Nemean, and the Isthmian, presented opportunities of mutual intercourse to brethren habitually isolated from each other.

* The surface of modern Greece is stated at 12 million English acres.

By what circumstances, or out of what elements, this Hellenic family was formed, we know not. There were indeed traditions of Pelasgi, Leleges, Curetes, and other peoples, as previous inhabitants of Greece, but the whole is without evidence, and belongs to legend rather than history.

As little do we know of the foreign influences which were brought to bear on them. The legends tell of colonies led from Egypt and Asia into Greece. One colony is said to have been founded at Thebes, in Bœotia, by Cadmus, a Phœnician, from whom the Greeks learned the art of writing. Doubtless, the use of letters was derived from the Phœnicians; but with this exception there is little trace of the impress of any of these nations in the earliest Greeks.

The religious and historic legends, or *myths*, as they are called, to which we have referred as the common property of all the Hellenes, and the festivals which drew so many of them together at certain seasons, exercised so great an influence on the character and history of this remarkable people, that they demand more special notice.

THE GODS OF GREECE.

The legendary history of Greece begins with a history of the gods, whom it represents as both pre-existent and superior to men; and it gradually descends first to heroes, then to the ordinary race of human beings.

The numerous gods of ancient Greece were conceived after the model of human nature, but not on the same scale. They had the same appetites, passions, and affections that disturb the soul of man, but were at the same time invested with immensely greater powers, and gifted with immortality. Beings thus imagined were peculiarly suitable subjects for adventure and narrative; and the inventive fancy of the Greeks had full play in the fabrication of legends illustrative of their respective characters and attributes.

Pluto and Proserpina, with the dog Cerberus.

Chronos.

Jupiter.

The earliest mythical events are the proceedings of certain gigantic agents—the collision of certain terrific forces, which were ultimately reduced under the more orderly government of Zeus or Jupiter, with whom begins a new dynasty, and a different order of beings.

Neptune.

Apollo.

Zeus divided the sovereignty of the universe with his two brothers—Poseidon (Neptune) and Hades (Pluto). He retained for himself the æther and the atmosphere, together with the general presiding function. Poseidon obtained the sea, while Hades ruled the world of shades. These deities, with their sisters and divine progeny, comprehended the gods worshipped by the early Greeks. Twelve were especially called the great Olympic gods, being supposed to dwell on the heights of Mount Olympus, and to form the divine agora, or council of the gods, which was held there.

(1.) Zeus or Jupiter, the chief of the gods, is said to have been the son of Chronos, one of the Titans, who sprang from Uranus and Ge (the

Heaven and the Earth). Chronos, foreboding destruction to himself from his own children, swallowed them as soon as they were born. However, his wife Rhea contrived to conceal the birth of Jupiter, who grew to manhood, when he by stratagem induced his father to disgorge the five previous children—Vesta, Ceres, Juno, Neptune, and Pluto. Jupiter now determined to wrest the power from Chronos, and his brothers, the Titans; and a long and desperate struggle took place, in which the thunderbolts of Jupiter at length prevailed; and Chronos, with the other Titans, were irrevocably imprisoned in Tartarus. Chronos, usually identified with the Italian god Saturn, was considered as the god of Time, and was represented under the figure of an old man, holding a scythe in one hand, and a serpent, with its tail in its mouth, in the other. Jupiter is always represented as seated on a throne, with thunderbolts in his right hand, and an eagle by his side.

(2.) Poseidon or Neptune, the Earth-shaker and Ruler of the Sea, was second only to Jupiter in power. He is represented as a half-nude man, drawn in a chariot over the sea by water-horses, having a crown on his head and a trident in his hand.

(3.) Apollo, son of Jupiter, the god of Prophecy, Music, and Song, is represented as a handsome young man, with a lyre and a bow, and is very generally identified with the Sun. In the idea of Apollo, his worship, and his oracles, the brightest characteristics of the Greek mind are reflected.

(4.) Hephæstus or Vulcan was the god of Fire, and a great artificer in metals. Volcanoes were his workshops.

(5.) Ares or Mars, the god of War, delighted in the din of battle, the slaughter of men, and the destruction of towns.

(6.) Hermes or Mercury, the god of Eloquence, the messenger of the gods, the inventor of the lyre, which he transferred to Apollo, and the patron of knavery, is characterised by sandals with wings, which carried him rapidly over sea

Mercury presenting a Soul to Pluto.

Juno.

and land; a wand called caduceus, which he bore as herald; and a travelling-cap, which in later times was furnished with two wings.

(7.) Hera or Juno, the wife of Jupiter, a beautiful but unamiable goddess, quarrelled much with her husband, and persecuted his children. Her characteristics are a diadem, veil, sceptre, and peacock.

Minerva.

Diana.

(8.) Athena, Pallas, or Minerva, the goddess of Wisdom and War, is the type of composed, majestic, and unrelenting force. She is said to have issued in full armour from the head of Jupiter, and to have been inaccessible to feminine sympathies. She was worshipped in all parts of Greece, but was especially the tutelar divinity of the city of Athens, and the soil of Attica.

(9.) Artemis or Diana, the twin-sister of Apollo, and goddess of Hunting, is, like him, armed with a bow and arrows. Unlike him, she was ever unmoved by love. As Apollo had charge of the sun, so had Diana of the moon.

(10.) Aphrodite or Venus, the goddess of Love and Beauty, is generally represented with her son Eros or Cupid. The principal seats of her worship were the islands of Cyprus and Cythera.

(11.) Hestia or Vesta, the goddess of the Hearth, or rather of the fire burning there, was a chaste and home-keeping maiden divinity, believed to dwell in the inner part of every house. It was on the hearth that refugees, entering a house, implored protection of the inhabitants; and every town had a sacred hearth, where the goddess had her especial sanctuary, and where she protected suppliants. When a colony was sent out, the emigrants took fire from their native town, to kindle that on the hearth of their new home.

(12.) Demeter or Ceres, the goddess of Agriculture, acquired much importance in Greece, and was worshipped with great splendour by the Athenians.

Besides these, called the twelve great gods of Olympus, there was an indefinite number of others, some of whom were little inferior in power and dignity. Such were Helios or Sol, Bacchus, the Muses, the Nereides, the Nymphs, &c. There were also monsters, the progeny of the gods—as the Harpies, the Gorgons, Cerberus, the Centaurs, the Dragon of the Hesperides, Xanthos and Balios, the immortal horses, &c.

Centaur.

Some deities performed special services for the greater gods—as Iris, a messenger of the gods; Hebe, who waited upon them, and filled their cups with nectar; and the Horæ, who guarded the doors of Olympus.

It was thus that all nature was imagined to be moving and working through a number of personal agents; all things in earth and heaven, as well as the earth itself and the solid heaven, were considered as endowed with appetite, feeling, sex, and other attributes of humanity.

The gods were propitiated by animal sacrifices, of which the bones only and the fat were presented to them; likewise by offerings of fruits, oils, and fragrant odours; and by the dedication of lands and treasures to their service. Every king was the priest of his subjects, and every father sacrificed for his family.

At the favourite shrines of each particular deity, periodical festivals were celebrated; and at these festivals, hymns were sung in honour of the god, giving an account of his birth, and of the exploits by which he had manifested his divinity. These legends were for the most part sufficiently silly and grotesque, and sometimes shocking; but they were in harmony with the religious feeling of the believing Greek in the early ages, and were received with unsuspecting reverence.

As a specimen of these religious legends, we give that connected with the goddess Demeter or Ceres and the Eleusinian mysteries. These mysteries were one of a series of innovations on the primitive Hellenic religion. The native religious worship and ceremonies of the Greeks were simple, open-hearted, calculated for publicity, and of a joyous character, the very opposite of ascetic. But about the sixth century B.C. various religious novelties were introduced into Greece from Egypt, Asia Minor, and Thrace, attaching themselves chiefly to the worship of Bacchus and Ceres. Such were the special mysteries and *orgies* in honour of some particular god, distinct both from the public and the family solemnities of primitive Greece, celebrated apart from the citizens generally, and approachable only through a certain course of initiation.

These rites, particularly those in honour of Bacchus, were in many cases furious and ecstatic, especially among the women, who had everywhere occasional meetings of their own, apart from the men. At a stated time every three years, crowds of females, dressed in fawn-skins, and bearing the consecrated thyrsus, flocked to the solitudes of Parnassus, Cithæron, or Taÿgetus, and passed the night in dancing by torchlight, clamorously invoking the god, and abandoning themselves to the most frantic excitement; while the men celebrated noisy revels in the streets, playing the cymbals and tambourine, and carrying the image of the god in procession. It was understood that those who resisted the inspiration became obnoxious to the displeasure of the god.

The legend connected with the Eleusinian mysteries was in substance the following: Proserpina, the daughter of Ceres, had been seized by Pluto while she was gathering flowers in a meadow, and was carried off to become his wife in the world of shades. The disconsolate mother wandered for nine days and nights by torchlight in search of the maiden; and at length Helios (Sol) revealed the truth to her, and, moreover, that Jove had permitted the abduction. Ceres, in anger and despair, renounced the society of Olympus, abstained from nectar and ambrosia, and wandered fasting upon earth. Thus she came to Eleusis, where she was found by the daughters of the prince sitting in the form of an old woman by a well. She said she wanted employment as a nurse, and the damsels effectually used their good offices to have her intrusted with the care of their only brother, a new-born infant. She gave the child no food, but anointed him with ambrosia, and he grew like a god; every night she plunged him in the fire, and took him out unhurt. She would have rendered him immortal, but for the interference of the mother, who one night stealthily witnessed the process. The goddess now revealed herself, and directed that a temple and altar should be erected to her on the neighbouring hill, where she was to be served with orgies of her own prescribing. Her injunctions were obeyed, and she took up her abode in the temple, still pining with grief. She withheld from mortals her beneficent aid; the barley which was sown that year never sprung up, and the human race was in danger of starvation. Jupiter sent various deputations of goddesses to implore her to relent; but she would be satisfied with nothing except the restoration of her daughter, which Jupiter was obliged at length to effect. Ceres was now reconciled both to the gods and to men; the buried seed came up in abundance, and she returned to Olympus. She was obliged, however, to allow Proserpina to spend three months of every year with Pluto, departing always at seed-time.

ORACLES.

A distinguishing characteristic that continually meets us in the history of the Greeks, is their anxiety to penetrate the future, and their unwillingness to commence any enterprise without ascertaining that the gods were propitious to it. The divine will was supposed to be announced by visions, dreams, and various omens—as thunder, lightning, eclipses, the flight or the notes of birds, the entrails of sacrificial victims, but especially by oracles. The most ancient of these oracles was that of Dodona, in Epeirus, where Jupiter announced his will by the whistling of the wind through lofty trees. This oracle was afterwards superseded to a great extent by the one at

Delphi, which was built round one of the openings of a deep cavern in the side of Mount Parnassus. An intoxicating vapour arose from this chasm, over which the priestess, called Pythia, sat on a tripod when the oracle was consulted. The words she uttered, after inhaling the vapour, were believed to be the revelations of Apollo, and were communicated in hexameter verse by the attending priests to the inquirers.

THE OLYMPIC AND OTHER GAMES.

Intimately connected with the worship of the gods were the celebrated games called the Olympic, the Pythian, the Nemean, and the Isthmian, which, in their origin, were religious festivals; for the gods gave their sanction to recreation, and there was the closest connection between common worship and common amusement. The habit of neighbouring tribes or villages joining in sacrifice at each other's festivals, was one of the earliest usages of Greece; and to partake of the recreations which followed the religious observances, was a matter of course. As Greece emerged from the turbulence of the heroic age, the village festivals became city festivals; and thus the once humble gatherings at Elis and Delphi swelled into the pomp and confluence of the Olympic and Pythian games.

The most ancient as well as famous of these festivals was that celebrated in the plain of Olympia, near an ancient temple of the Olympian Jove. It was celebrated every four years, which interval was called an Olympiad; and the first register of a victor's name, which occurs in 776 B.C. supplies the earliest historic record of Greece —that from which the dates of later historians were calculated. At first, the amusements lasted but a single day, and consisted only of foot-races in the stadium; but various trials of strength and skill—as wrestling, boxing, throwing, and chariot-racing—were afterwards introduced, and the time was prolonged. The only prize given to the victor was a garland of wild olive; but it was reward enough that his name was proclaimed before assembled Hellas—that his statue was erected in the sacred grove of Jupiter at Olympia. He returned to his home in triumphal procession, and was rewarded by his fellow-citizens always with distinguished honours—sometimes with substantial benefits.

The Pythian games, second only to the Olympic, were celebrated in the third year of each Olympiad, on the plain of Cirrha. The Nemean were held every two years, in honour of the Nemean Jove, and in the valley of the same name between Phlius and Cleonæ; the Isthmian, by the Corinthians, on their own isthmus, in honour of Neptune. In the Pythian, Nemean, and Isthmian games, contests in music and poetry were added to gymnastics and races.

AMPHICTYONIC COUNCIL.

An Amphictyony was a confederation of neighbouring tribes for the protection of a common sanctuary, at which they assembled to celebrate religious rites and games, and to transact business. There were many such associations in Greece; but the one, consisting of twelve tribes, that had the protection of the great oracle at Delphi, became of national importance, and was called the Amphictyonic league, by way of eminence. The delegates or council of this league took a leading part in the politics of Hellas generally.

HEROIC LEGENDS.

Having briefly noticed the principal gods of Greece, and some of the usages connected with their worship, we come to the genealogies that connect them with historical men.

In the retrospective faith of a Greek, the idea of worship was closely connected with that of ancestry; every association of men traced its union to some common progenitor, and that progenitor was either the god they worshipped in common, or some semi-divine being closely allied to him. Every Greek loved to boast a genealogy filled not only with the names, but the splendid adventures of those who were little removed from the divine. These genealogies constitute the supposed primitive history of Hellas.

The wickedness of the earth provoked Jupiter to send an unremitting and terrible rain, which laid the whole of Greece under water, except the highest mountain-tops, on which a few stragglers found refuge. Deucalion, the son of Prometheus, was saved, with his wife Pyrrha, in an ark which his father had forewarned him to construct; and after floating on the water for nine days, he settled on the summit of Mount Parnassus. He now prayed that companions might be sent to them; and, accordingly, Jupiter directed them to throw stones over their heads, when those cast by Pyrrha became women, and those by Deucalion men, over whom he reigned as king in Thessaly. One of the sons of this pair was Hellen, the great progenitor of the Hellenes. Hellen had three sons by a nymph—Dorus, Xuthus, and Æolus. Æolus inherited the dominion in Thessaly, but his descendants occupied a great part of Central Greece, and became widely diffused, especially on the coasts. Dorus and his descendants occupied the country on the northern side of the Corinthian Gulf. Xuthus received Peloponnesus, and had two sons, Achæus and Ion, the progenitors of the Achæans and Ionians. Thus the four great branches of the Hellenic race became masters of Greece, the previous Pelasgic inhabitants either disappearing before them, or being incorporated with them. The Dorians and Ionians became, in historical times, the two leading races, represented by the Spartans and Athenians respectively; but in the heroic ages, the Achæans were the most distinguished, as being the most warlike of the races.

The first few generations of the family thus established in Greece are called the Heroic race, and the period in which they lived, the Heroic age. Two of the heroes, Hercules and Theseus, we must notice, on account of their connection with subsequent history.

Hercules, the greatest of all the Grecian heroes, was the son of Jupiter by Alcmene, the wife of Amphitryon, king of Thebes, in Bœotia, who adopted him as his own son. By a stratagem of Juno, Hercules was deprived of the empire which Jove had designed for him as the descendant of Perseus, and it became the inheritance of Eurystheus, another grandson of Perseus. She likewise

sent two serpents to destroy him in his cradle, but the infant hero strangled them with his hands. As he grew up, he was sent to tend Amphitryon's cattle; a huge lion made great havoc among them, and Hercules, slaying him, wore the skin ever afterwards as his ordinary garment, and the mouth and head as his helmet. The gods made him presents of arms, and he usually carried an immense club. After various adventures, he was instructed by the oracle of Delphi to live at Tiryns, and serve Eurystheus for twelve years, after which he should become immortal. Hence the twelve labours, performed at the bidding of Eurystheus.

In these are realised the great objects of all ancient heroism—the destruction of monstrous evils, and the acquisition of wealth and power. Such was the overthrow of the Nemean lion and the Lernean hydra; the seizure of the girdle of Mars from Hippolyte, queen of the Amazons; and the bearing away of the golden apples of the Hesperides, guarded by a hundred-headed dragon. But in the case of Hercules, we perceive human faults which demanded expiation. Having slain his friend Iphitus, he was smitten with sickness, from which he obtained deliverance only on condition of another servitude; in which he became the slave of Omphale, queen of Lydia, and spun wool with a distaff. The time of this servitude having expired, he undertook various warlike adventures, and married Deianira, whose jealousy became the cause of his death. Fearing that she might be superseded in his affection by Iole, a maiden whom he had captured, Deianira steeped a tunic in a liquid which she believed would secure his regards to herself. This was, however, a deadly poison; and no sooner had the hero put it on, than he was seized with excruciating pains. In vain he strove to wrench it off; it stuck to his flesh, which tore away with it. Willing to hasten his end, Hercules ascended Mount Œta, raised a pile of wood, placed himself on it, and directed it to be set on fire. While it was burning, a cloud came from heaven, and carried him to Olympus, where he was made immortal, was reconciled to Juno, and received her daughter Hebe in marriage. He was consequently worshipped throughout Greece both as a god and a hero.

After the death and apotheosis of Hercules, his children were persecuted by Eurystheus; the Athenians offered them shelter, and Eurystheus invaded Attica, but perished in the enterprise. His sons fell with him, so that the Heracleids were now the only representatives of Perseus. They made an effort to recover their rightful possessions, but were met at the isthmus by the combined forces of the Ionians, Achæans, and Arcadians, then inhabiting Peloponnesus. Hyllus, the eldest of the sons of Hercules, proposed to determine the contest by single combat, the condition being, that if he were victorious, the Heracleids should be restored; but if vanquished, they should forego their claim for a hundred years. Echemus, the hero of Tegea, accepted the challenge, and Hyllus was slain, in consequence of which the Heracleids retired, and resided with the Dorians, under the protection of Ægimius, the son of Dorus, till the stipulated period of time had expired.

The great Attic hero was Theseus, a contemporary and relative of Hercules, whose exploits he imitated. The Amazons—a race of female warriors—had scarcely recovered from the aggressions of Hercules, when Theseus attacked and defeated them, carrying off their queen, Antiope, which injury they avenged by invading Attica. They crossed the Cimmerian Bosporus on the winter ice, and penetrated even into Athens, where, after a desperate struggle, they were finally overcome by Theseus. The sepulchral edifice called the Amazonian, the tomb or pillar of Antiope, and the sacrifices which were offered to the Amazons at the periodical festival of the Theseia, were all so many religious mementoes of the victory.

Another famous adventure of Theseus was connected with the Minotaur. Minos, the ruler of Cnossus, in Crete, and his brother Rhadamanthus, were sons of Jupiter by Europa, daughter of the Phœnix. Androgeos, the son of Minos, having vanquished all competitors at an Athenian festival, was induced to contend with the bull of Marathon, and perished. Minos made war upon Athens, to avenge his death, and Jupiter sent pestilence and famine into the city. The Athenians were at length obliged to accept peace on any terms; and Minos required that seven youths and seven maidens should be sent to Crete every ninth year, to be devoured by a monster, half-bull, half-man, in a labyrinth, out of which no one could find a passage. The third period for despatching victims had arrived, and Theseus, craving the aid of Neptune, and receiving assurance that Venus would extricate him, offered himself as one of the fourteen. On his arrival at Cnossus, he at once captivated the affections of Ariadne, the daughter of Minos, who furnished him with a sword, with which he killed the Minotaur, and a clue of thread, by which he retraced his way out of the labyrinth. This done, he set sail from Crete with his companions, carrying off Ariadne also. On his way home, he stopped at Delos, to offer a grateful sacrifice to Apollo for his escape. It had been agreed between him and his father, that if he returned in safety, he should hoist white sails, instead of the black ones usually carried on this mournful embassy; but Theseus forgot to make the change; and his father watching the returning ship, and concluding that his son had perished, threw himself into the sea. The ship was carefully preserved by the Athenians, being constantly repaired with new timbers down to the time of Phalereus Demetrius; and every year she was sent to Delos with special envoys and a solemn sacrifice. During her absence, the city was held to abstain from all acts of public impurity, so that no one might be put to death even under judicial sentence till its return.

Besides the legends of individual heroism, there were a number of collective exploits and expeditions, of which we can afford to notice only two—the Argonautic Expedition, and most famous of all, the siege and capture of Troy.

THE ARGONAUTIC EXPEDITION.

During the age of Hercules, Jason, a prince of Thessaly, undertook an enterprise, afterwards celebrated as the Argonautic Expedition. Æson, his uncle, had usurped his throne, and consented to restore it only on condition that Jason should bring from Æa (Colchis), a region on the east of the Black Sea, a golden fleece, which was there hanging on a tree in the grove of Mars, guarded

by a sleepless dragon. The most renowned heroes of the time, including Hercules and Theseus, united with Jason in the enterprise; and the adventurers were called Argonauts, after the vessel which was built for it. When they arrived, the king, Æetes, promised to give Jason the fleece if he would yoke two fire-breathing oxen, with brazen feet, plough with them a piece of land, sow in the furrows the teeth of the dragon slain by Cadmus, and vanquish the warriors that would spring from this seed. Medea, the daughter of Æetes, who was skilled in magical arts, when her father still delayed to surrender the fleece, put the dragon to sleep, seized the treasure, and set sail with the adventurers. Æetes pursued them in vain; and after much circuitous voyaging, they safely reached their home.

THE SIEGE OF TROY.

The sacred city of Ilium, or Troy, was built on a plain in Asia Minor, near the shores of the Hellespont. On one occasion, as Paris, the son of Priam the king, was tending the sheep on Mount Ida, the three goddesses, Juno, Minerva, and Venus, were brought thither, that he might decide a dispute that had occurred as to which was the most beautiful. He awarded the palm to Venus, who thereupon promised him the possession of Helen, wife of the Spartan Menelaus, the fairest of living women. Paris then visited Sparta, and during a temporary absence of Menelaus, Venus brought about an intrigue between Helen and the guest, and they eloped, taking with them a large sum of money. The king, hearing of this perfidious abuse of his hospitality, hastened home; the outrage was made known throughout Greece, and its princes were solicited to aid in avenging it. Ten years were spent in preparing an expedition, and ten more in besieging Troy. The goddesses Juno and Minerva took an active part on the side of the Greeks. Among their heroes were Ajax and Diomedes, and the sagacious Nestor; while Agamemnon, brother of Menelaus, and the commander-in-chief, had a high reputation for valour and prudence. But the most conspicuous of all were Achilles and Ulysses (Odysseus). Achilles was a beautiful youth, born of a goddess, swift of foot, fierce in temper, and irresistible in strength; Ulysses, no less efficient from his wisdom and eloquence, and the combination of daring courage with deep scheming. Among the Trojans, the most striking hero was Hector, a son of Priam, forming a well-marked contrast with his effeminate brother Paris.

Troy was to remain invincible so long as a certain statue of Minerva, called Palladium, remained in the citadel. The daring Ulysses found means to enter the city, and steal this away. Another stratagem secured the victory. The Greeks, by his direction, constructed a great hollow wooden horse, in which they placed a hundred of their best warriors, the rest sailing away, under pretence of abandoning the siege. The Trojans were sorely puzzled with the great horse, which they brought into the city, making a breach in the walls to admit it. During a night of riotous festivity, the signal was given for the return of the Greeks by one whom they had left for that purpose; the warriors rushing out of the horse, were joined by the rest, and the city was overpowered. Troy was utterly destroyed, and Helen resumed her union with Menelaus.

The return of the Grecian chiefs from Troy furnished poetical materials hardly less copious than the siege itself. Many suffered shipwreck in attempting to reach their homes; and those who succeeded, found their places occupied by usurpers, their lands overrun by enemies, or wasted by neglect, their families ruined by jealousy and discord, and their cities distracted by faction and sedition.

How these legends of gods and heroes were originated; whether they are to be understood as pure fictions, or as intended to convey certain truths, are questions that have occasioned endless discussion. As early at least as the age of the Homeric poems, they had come to be understood in their literal sense. It was only at a comparatively late period that the legends, in their literal sense, began to shock the moral feelings, and to appear incredible as narratives. Attempts were then made to soften down the offensive parts by allegorical interpretations, and to remove the inconsistencies of the narratives by a multitude of assumptions, as destitute of evidence as the legends themselves. The legends were thus *rationalised* and digested by later Greek writers into a species of history of the foretime of the Hellenic race, reaching back a thousand years before the date of any authentic record; and writers on Greek affairs, in modern times, long assumed the legends to be based at least on matter of fact. But the essentially fictitious or mythical character of these early products of the Greek mind has of late become generally recognised; and in the great work of Mr Grote on the History of Greece, all attempt to extract history from the legends is given up as hopeless. They are regarded by him as imagined histories of the past—spontaneous creations of the Greek mind, by which it sought to account to itself for the existing state of things.

Other scholars are not content with this account of their origin, and hold that they were intended by their original utterers to express a real meaning. Those respecting the gods were attempts to describe the great appearances of nature—chiefly of the sun. They took their rise at a time when every word was a metaphor, and were themselves metaphors, no other mode of expression being then possible; but when the original and etymological significance of the names came to be lost sight of, the original application was forgotten, and the whole seemed to be spoken of persons. Professor Max Müller gives as an illustration of the process, the myth of Hellen and Pyrrha, given above. Pyrrha was the most ancient name of Thessaly; to say, then, that Pyrrha was the mother of Hellen, was in that age the only natural way of saying that the Hellenes came originally from Thessaly; just as we still say that Italy is the mother of art. When the Greeks ceased to know Thessaly under the name of Pyrrha, the historical fact degenerated into a myth.

ANCIENT EPIC POETRY OF GREECE.

Long before the period of literature, the praises of the gods and the exploits of heroes were embodied in verse, and sung from generation to generation. The myths passed into the verses of the

poets, where they were multiplied and transformed in various ways; and in process of time, numbers of these, at first short and unconnected lays, were combined and arranged so as to form continuous narrative or epic poems. There was a large number of such poems extant in ancient Greece, but they are all lost except the *Iliad* and *Odyssey*, ascribed to Homer, celebrating the siege of Troy, and the subsequent adventures of Ulysses. The controversies of the learned concerning the person and the works of Homer are endless. At least seven cities of Asiatic Greece laid claim to his birth. No less disputed is the date to be assigned to these celebrated poems: about the middle of the ninth century before the Christian era, is probably near the mark.

The legends thus embodied in song were recited either in short fragments before private companies, or as continuous narratives at public festivals, and they constituted the whole intellectual stock of the people for several ages.

Besides the poetic charm attaching to these works, they are interesting to us as revealing the state of society among the Greeks at that early age; for Homer's pictures of life and manners were those of his own day. The *Iliad* and *Odyssey* represent a state of society in which there is no such thing as law. The king or chief defends and governs his people according to immemorial usage; and is responsible to none but Jove for the exercise of his authority. The condition and character of the heroic Greeks bear no inconsiderable resemblance to those of chivalrous Europe in the middle ages, or even the clans of the Scottish Highlands a century ago; making allowance for differences resulting from climate and religion.

Hesiod, supposed to have flourished a considerable time after Homer, probably about 700 B.C. is the great authority as to the genealogy and history of the gods. His work is an ancient and genuine attempt to furnish a consecutive history of the divine foretime, and therefore his theogony obtained an extensive circulation among the Hellenes, and was in a manner their Bible.

HISTORIC AGES.

The authentic history of Greece commences with the epoch known as the First Olympiad, corresponding to the year 776 B.C. about which time the Greeks began to employ writing as the means of perpetuating the memory of events.

It falls naturally into six periods:

I. From 776 to 500 B.C. or the period during which the various states and colonies of Greece pursued their separate career, without either alliance or collision with each other.

II. From 500 to 478 B.C. or the period of the struggles with Persia.

III. From 478 to 404 B.C. or the period of the Peloponnesian wars, in which the peninsular states were struggling against the supremacy of Athens.

IV. From 404 to 371 B.C. when the battle of Leuctra crowned the efforts of Thebes to attain to the headship of Greece.

V. From 371 to 338 B.C. when the battle of Chæronea rendered Philip the Macedonian master of Greece.

VI. From 338 to 300 B.C. or the period of the Macedonian supremacy.

FIRST PERIOD: 776-500 B.C.

We cannot afford even to enumerate the multiplicity of independent states, or rather, self-governing towns, which during this period made up the Hellenic world. A few remarks on their condition generally, with a brief indication of the course of events in one or two of the more important states, must suffice.

Government and Social Condition.—Before the era of authentic history, the primitive kingships of the heroic ages had in most cases been abolished, and the government vested in some kind of oligarchy—a council deciding by the majority of votes, and electing some individuals of their own body as a temporary and accountable executive. This government of the Few was the first form of republicanism in Greece. The age of democracy, or the government of the Many, was still distant, and the condition of the general mass of freemen appears to have been little affected by the change. The first check which the oligarchies received arose from usurpers called *tyrants*, or *despots*, who availed themselves of prevailing discontents to compass the ends of their own ambition. Sometimes it was a magistrate, who, at the expiration of his term of office, found himself able to retain it in spite of the electors. More frequently, it was a demagogue, who stood forward as the champion of the many in their grievances, and engaged their strength to put down the few, and exalt him in their stead. Sometimes a presumptuous rich man hired a body of retainers to seize the Acropolis, and place the government in his hands. The period between 650 and 500 B.C. witnessed the rise and fall of many such despots and despotic dynasties, of which the most celebrated were those of Corinth, Sicyon, and Megara. But there was in the Greek mind a deeply rooted antipathy to anything like permanent or hereditary power vested in an individual, and even those who exercised a sovereignty with moderation, could never retain their popularity; for a position which dispensed with the restraints and obligations involved in citizenship, was understood to forfeit all title to the common sympathy and protection. The man who assassinated a despot was considered worthy of public honour and reward. Hence few of the despots lived to old age, and still fewer transmitted their power to their sons.

Sparta was the only state that retained a kingly government during the brilliant period of Grecian history. The two co-ordinate lines of Spartan kings continued to represent in unbroken descent the divine right of the Heracleids to the soil of Sparta. The Spartans were always ready to lend their powerful assistance towards the overthrow of usurpers in other states, but they seldom succeeded in restoring the oligarchy. The sway of the despots had done much to lessen the distance between the Few and the Many; and when they were removed, it was found impossible in most cases to reinstate the nobles in their ancient privileges. The internal history of the Grecian states became henceforth a struggle between the democracy and the aristocracy.

In reference to the social condition of the people,

it may be observed that slavery prevailed universally, the bond being much more numerous than the free. Where a conquering race had subjugated the previous inhabitants, the country population were in a state of serfdom, cultivating the soil for the benefit of the citizens. Such were the helots of Laconia, whose servitude was rendered more galling by the feeling that they were fellow-Greeks with their masters.

Early Greek Colonies in Asia and the Islands of the Ægæan.

The legendary history places the settlement of these colonies about three centuries before the First Olympiad. With the opening of authentic history, the whole coast of Asia Minor, from the Propontis southward to Lycia, together with the islands in the Ægæan, was occupied by a succession of Greek cities greatly in advance of the mother-country, both in wealth and civilisation. The cities on the northern portion of the coast and the island of Lesbos were inhabited by Æolic Greeks; Dorians occupied the southern portion; and in the middle were the Ionic colonies, comprehending the islands of Chios, Samos, and the Cyclades. The Ionic colonies were called by the collective name of Ionia, and it was among them that Greek poetry, painting, philosophy, and history were first cultivated.

Between the years 700 and 530 B.C. the maritime activity of the colonial Greeks made immense progress; and the ships of Miletus, Phocæa, and Samos gradually spread over all those waters of the Levant that had once been exclusively occupied by the Phœnicians.

About the year 650 B.C. a band of Ionians and Carians were taken into the service of Psammetichus, and materially aided him in obtaining the throne. The consequence was that Egypt was thrown open to the Greeks for permanent and friendly intercourse. The Greek mind thus became enlarged by the wide field of observation presented; papyrus, the only writing material then known, came into general use, to aid the progress of literature; and the fine arts made immense advances, probably from the Greeks obtaining from their new friends the knowledge of various technical processes, for want of which their genius had been cramped.

At the time the Greek colonies first settled in Asia Minor, the native populations seem to have been too disunited and feeble to oppose or interfere with them; but when the neighbouring monarchy of Lydia had acquired strength, the want of confederation among the Greek cities made them an easy prey, and accordingly Crœsus, the last king of Lydia (560–546 B.C.), subdued them one by one, and rendered them tributary, without, however, interfering with their self-government. Their further history connects itself with the Persian invasion.

Sicilian Colonies.

The Greek colonies to the west of the mother-country were, with one exception, formed within the historic period. The exception was Cumæ, on the Italian coast, northward from Naples, said to have been planted more than 1000 B.C. by colonists from Æolia in Asia Minor, and from Chalcis in Eubœa. From 700 to 500 B.C. it was the first city of Italy, but was subdued by the Samnites in 420 B.C. The first Sicilian colony was formed at Naxos 735 B.C. and the afterwards mighty Syracuse in the following year. Of the other Greek cities, Gela and Agrigentum were the most important. Phalaris was *tyrant* of Agrigentum about 570 B.C. and has left a name infamous for cruelty. One of his punishments was to shut up his victims in a red-hot brazen bull, the inventor of the instrument being the first to suffer by it. Gelon, despot of Gela, having seized Syracuse (485 B.C.), raised it to an unwonted pitch of wealth and prosperity, and wielded a power such as no Greek had ever possessed. When Greece was menaced with invasion by Xerxes, the Athenians and Lacedæmonians sent to beg his assistance, which was refused. In the same year (480 B.C.) that Xerxes invaded Greece, the Carthaginians under Hamilcar invaded Sicily with an immense army, composed of various nations, and were defeated at Himera by Gelon; 150,000 of the invaders are said to have fallen. Gelon was succeeded (478 B.C.) by his brother Hieron, a munificent patron of poets and philosophers, but more despotic in his government than his brother had been. His aid being invoked by Cumæ against the Etruscans, he gained a great victory (474 B.C.) over the fleet of the latter, and effectually broke their naval power.

Contemporarily with the colonisation of Sicily, the coasts of Southern Italy from Pæstum to Tarentum became studded with flourishing Greek cities, so that this part of the peninsula was known as Magna Græcia. The native tribes, called Œnotrians, as well as their kindred, the Sikels of Sicily, seem to have all belonged to the great family of nations known as Pelasgian, of which the Greeks themselves were a branch, so that they readily amalgamated with the colonists, and became partially Hellenised.

The earliest as well as the most prosperous of these cities were Sybaris and Croton, both Achæan settlements (720 and 710 B.C.), and situated on the Gulf of Tarentum. The walls of Sybaris were fifty stadia, or nearly six miles in circumference; those of Croton were little less than twelve; and both enjoyed an extensive dominion from sea to sea across the peninsula, dividing between them the whole length of the Tarentine coast.

It was during the sixth century B.C. that these cities reached the maximum of their power. They even surpassed the prosperous cities of Sicily; while their luxury, organisation, industry, and political power formed a striking contrast with Hellas Proper, which had poverty for a foster-sister. A Sybarite has become a proverb for luxury and effeminacy. The habits of the Crotonians were more active, and they furnished numerous victors at the Olympic games. The celebrated philosopher Pythagoras made Croton his residence (540 B.C.), where he introduced a system of mystic and ascetic observances, and induced multitudes to abandon their luxurious mode of living, and practise purity and self-denial. A contest having arisen between Croton and Sybaris, it ended in the total defeat of the Sybarites, and the demolition of their city, 510 B.C. From this time, the Greek cities began to decline.

These have been noted as among the first and most important of the early colonies of Greece; but similar establishments studded all the shores of the Mediterranean, which thus became a kind

of Grecian lake; and Trapezus, on the furthest shores of the Black Sea, Cyrene, in Africa, and Massilia (founded 597 B.C. now Marseilles), in Gaul, were as essentially Greek states as Sparta or Athens.

Argos—Sparta.

In Greece Proper, the states that made the most important figure in the earliest ages were the Dorian states of Peloponnesus; and the first glimpses of history shew us Argos as the leading power. Pheidon, king of Argos (747 B.C.), aiming at the universal sovereignty of Peloponnesus, was opposed and defeated by the Spartans, who henceforth became the dominant power.

The ascendency of Sparta was mainly owing to her peculiar institutions, which tradition ascribed to the legislator Lycurgus, who probably existed somewhere about 900 or 800 B.C. and more clearly defined and fixed already existing usages and regulations; for the peculiar constitution of the Spartans arose necessarily out of the circumstances in which they lived. They were originally a handful of conquerors among a subject race. In other parts of the Peloponnesus the Dorian conquerors coalesced in time with the natives; but in Laconia the separation was maintained. Such of the Achæans as readily submitted were allowed to retain their personal freedom, but they had no political rights, were governed by Spartan magistrates, and paid a rent to the state for their land. The greater part, however, of the conquered population were reduced to a state of slavery, and belonged as property, along with the patches of land to which they were attached, to individual citizens. By these Helots, as they were called, all labour was performed, the free Spartan disdaining every kind of industrial occupation.

The citizens of Sparta were thus a small class of lords among a tenfold number of slaves and subjects; and consequently their whole organisation and training was military. Military discipline and military objects regulated every detail even of domestic life. Marriage itself was not a matter of affection, but of producing a vigorous and warlike offspring. Hence weakly children were exposed to perish. The whole time of the Spartans was spent in public. They took their frugal meals at public tables in messes or companies, to which each contributed so much from the produce of his land. The rest of the time was spent in gymnastic exercises and military drill; for the education of a Spartan, beginning with his seventh year, was not relaxed till his sixtieth. He was inured to hunger and thirst, to the extremes of heat and cold; was obliged to tread every kind of ground barefooted, and to wear the same garment summer and winter. The virtues of an accomplished Spartan included likewise the exhibition of a silent and motionless deportment in public when action was not called for; the suppression at all times of external manifestations of feeling, and even the power of enduring bodily torture without complaint. To habituate them to endure suffering, they were at certain seasons scourged at the altar of Diana, and sometimes expired under the suffering without having betrayed it by word or gesture. To teach them strategy and secrecy, there were licensed expeditions for thieving, and severe punishment for those who allowed themselves to be detected in it.

The Spartan females were placed under a scarcely less hardy system of discipline. The beauty and vigour of the Spartan women were famous throughout all Greece, and the influence of their patriotism in sustaining that of the men is matter of historic celebrity. 'Return either with your shield, or on it!' was the exhortation of a mother to her son on his departure for the field of battle.

Spartan education produced warriors, but nothing else. From the wanton oppression with which they systematically treated the Helots, they lived in constant dread of the revolt of that wretched class; and in their devices to keep them down, they hesitated at nothing, however flagrant or cowardly. There was a regular system of espionage or police, called *crypteia*, consisting of select bands of Spartan youths, who ranged the country, and secretly assassinated such as were considered formidable. On one occasion, on which the Helots had stood their masters good stead in battle, they were invited to choose out all the bravest of their numbers for the purpose of receiving their freedom; but the 2000 selected for this high reward were never again seen or heard of.

It was the constant sense of this internal source of danger that enabled the Spartans to submit to a rigour of discipline such as no people before or since has endured. Sparta was the only government in Greece which could trace an unbroken and peaceable descent from a high antiquity, and from its reputed founder; and this was one of the main causes of that astonishing ascendency which the Spartans acquired over the Hellenic mind, and which they appear not to have deserved through any superior ability in the management of political affairs.

The constitution of Sparta was mixed. There were two joint-kings, belonging to parallel lines, who were very much restricted in power by the senate and by the popular assembly. The delegates of this popular body, called *Ephors*, gradually came to usurp the greater part of the executive power. Strictly speaking, there was no popular element in the constitution; for with regard to the great body of the inhabitants, the qualified citizens were a small and exclusive aristocracy.

Originally, the territory of Sparta was confined to the basin of the Eurotas, in the south-east of the peninsula; but after a protracted struggle, extending, with an interval of forty years, from 743 to 668 B.C. and known as the First and Second Messenian Wars, the Spartans succeeded in reducing their brother Dorians of Messenia to subjection and slavery, and thus extended their dominion to the Ionian Sea.

Athens.

It was the Ionic race that manifested most signally the distinguishing characters of Greek civilisation; and of this portion of Hellas, Athens stands out most prominently. According to the legend, Codrus, the last of its line of heroic kings, had devoted himself to certain death to save his country; and the Athenians permitting no one after him to assume the name of king, his successors ruled for a time as archons for life. The dignity of archon was then restricted to the duration of ten years;

and finally it was made annual, and also distributed among nine persons, one being called the *Archon Eponymus*, because the year was distinguished by his name. It is with the first annual archon, Creon, 683 B.C. that the authentic history of Athens begins. These archons, together with the council of nobles afterwards called the court of Areopagus, exercised the whole power of the state, and administered justice, such as it was. The Athenian government was thus an oligarchy; but the changes introduced by the archon Solon, 594 B.C. laid the foundation of that democratic constitution which was afterwards perfected by Cleisthenes. The condition of the population at the time of Solon was one of extreme suffering and discord, arising chiefly from the oppressive execution of the law of debtor and creditor. This law was of old extremely harsh in Greece; it assigned the debtor that could not fulfil his contract as the slave of his creditor. The great part of the soil of Attica was in the hands of the rich, and the mass of the population, who tilled the lands as tenants, were either in hopeless arrears, or already, with their families, actual slaves. Driven to desperation, the populace were ready to rise in mutiny; and thus it was agreed to confer dictatorial power on Solon, well known for his wisdom, integrity, and sympathy with the people, and allow him to solve the problem. The disease being desperate, Solon applied the desperate remedy of abolishing existing contracts, liberating those that had been reduced to slavery, and forbidding for the future any one from pledging his own person or that of a member of his family. He next divided the freemen into four classes, according to the amount of their property. It was only the richer classes that paid taxes and were eligible to the offices of state; but all had votes in the assembly that elected the archons, and all sat in judgment on their past conduct on the expiry of their year of office. The government, though still oligarchical, was thus modified by popular control. Its free operation was for some time (560–510 B.C.) interrupted by the usurpation of Peisistratus and his sons, whose *tyranny*, however, was mild and enlightened.

On the banishment of the Peisistratidæ (510 B.C.), a further political reform was introduced by Cleisthenes, who extended the basis of the constitution, and rendered it essentially democratic. To Cleisthenes is ascribed the origin of the practice called *ostracism*, by which any person might be banished for ten years, without being accused of any crime, if the Athenians apprehended that he had acquired too much influence, or harboured designs against the public liberty. Ostracism was so called, because the citizens, in voting for its infliction, wrote the name of the obnoxious individual upon a shell (*ostreon*).

Literature.—This age was distinguished for the cultivation of lyric poetry. The most distinguished poets of this class were Archilochus of Paros (700 B.C.), Alcæus and Sappho of Lesbos, Anacreon, and Pindar.

At the commencement of the sixth century before Christ, there sprang up in different parts of Greece a number of men who obtained the appellation of the Seven Sages, on account of their practical sagacity. These were: Solon, Thales, Pittacus, Periander, Cleobulus, Chilon, and Bias. Out of the wisdom of the Seven Sages, as from a germ, sprang the philosophy for which Greece was afterwards so celebrated. The first beginnings of geometry and astronomy have been traced to Thales of Milesia (650 B.C.), the founder of the school called the Ionic.

SECOND PERIOD: 500–478 B.C.

War with Persia.

On the overthrow of the Lydian monarchy (546 B.C.; see ANCIENT HISTORY), the Greek cities of Asia Minor fell under the dominion of Persia. The Athenians had aided their Asiatic kindred, though but feebly, and now the Persian monarch resolved to chastise Athens, and to subjugate the whole of Greece. He accordingly sent heralds through the Greek cities to demand 'earth and water,' as tokens of submission. Many of them sent in their submission; but Athens and Sparta treated the demand as an insult, and put the heralds to death. In the meantime, an immense Persian fleet and army, accompanied by the exiled despot of Athens, Hippias, as guide, crossed the Ægæan, laying waste the islands as they passed; and at last the army landed in the Bay of Marathon, on the east coast of Attica. Tidings of the imminent danger of Athens were immediately despatched to Sparta; but superstitious custom forbade the Spartans to march till after the full moon, five days later. The Athenians resolved to hazard battle alone, and marched against the enemy to the plain of Marathon. Their army numbered about 10,000, and they were joined on the battlefield by 1000 men from the little state of Platæa. This small force, skilfully disposed by the Athenian general Miltiades, attacked with such impetuosity the tenfold more numerous Persians, that the latter were completely routed, and driven on board their ships, with which they sailed back to Asia Minor (490 B.C.). The Spartan army arrived in time to learn that all was over. The battle of Marathon is justly reckoned one of those that influence the fate of the world; had the issue been the reverse, the whole course of subsequent history might have been different.

The after-career of Miltiades is melancholy. Intoxicated by the admiration his conduct had excited, he abused the unlimited confidence of his countrymen, and employed a force that they had placed at his discretion in avenging a private quarrel. For this he was impeached as worthy of death; and his friends, finding it impossible to excuse or even palliate his recent conduct, appealed to his previous services. The jurors were moved to commute the punishment to a heavy fine, which, however, he did not live to pay, having died shortly after of an injury received before his trial.

The danger from Persia was not yet over. Darius had for several years been levying forces for renewing the contest, when he was succeeded (485 B.C.) by his son Xerxes, who continued the preparations on a yet vaster scale. From every part of his wide dominions he collected an armament such as had never been seen before. For its transport into Europe, he caused a bridge of boats to be built across the Hellespont, where it is a mile wide. The first bridge having been destroyed by a storm as soon as completed, the wrath of the monarch was beyond all bounds. The heads of the engineers were struck off; the audacity of the sea was chastised by 300 lashes,

and by heavy fetters thrown into it; and the work was recommenced. At the same time, to avoid the perilous promontory of Mount Athos, a ship-canal, a mile and a half long, was cut across the isthmus, of which traces are visible to this day. The armament of Xerxes marched from Sardis early in 480 B.C. and took seven days and nights to cross the bridge in two columns. Herodotus makes the fighting-men and ships' crews exceed 2,500,000, the camp-attendants being at least equal in number.

Xerxes met with little opposition till he came to the famous Pass of Thermopylæ, where the range of Mount Œta approaches close to the Eubœan Gulf. Here it had been decided to make a stand, and here the Spartan king, Leonidas, with a small army of 300 chosen Spartans, with their attendant Helots, and about 5000 soldiers from other states, was stationed to guard the 'Gates' (*pylæ*).

For two days the Persians kept up renewed assaults on the pass, but making no impression. At last a treacherous Greek conducted a Persian detachment by a circuitous path over the mountains, which could thus attack Leonidas in the rear, and now Thermopylæ was no longer defensible. Retreat for a Spartan was out of the question; but, with the exception of 700 Thespians, the other Greeks retired. Leonidas and his devoted band now advanced, driving the Persians before them, until Leonidas having fallen, and their spears being broken, they were overwhelmed with missiles, and slain to a man; 20,000 Persians are said to have fallen. During the struggle at Thermopylæ, the united Greek fleet had been keeping up a desultory warfare with the Persian fleet in the Eubœan channel; but on the pass being carried, retired to the island of Salamis, opposite to Athens.

Nothing now stood between that devoted city and the destructive storm of Persian vengeance. The leading man of Athens at that time was Themistocles, whose aim had been to foster the maritime spirit of the Athenians, and who had induced them greatly to increase their war-vessels. An oracle had declared the safety of Athens to be in her 'wooden wall,' and Themistocles now interpreted that to mean her fleet. The Athenians therefore hurriedly removed their families to Salamis, Ægina, and the Peloponnesus, and betook themselves to their ships. The hosts of Xerxes soon poured down over Attica, laid waste the deserted country, and plundered and burned the temples and whole city of Athens. At the same time, the Persian fleet arrived, and Xerxes resolved to attack the Greek ships which were posted in the Strait of Salamis; but from a lofty throne erected on a rocky height overlooking the scene, he beheld his fleet driven into confusion and flight.

The presumptuous confidence of the monarch now gave place to alarm for his personal safety, and leaving Mardonius with 300,000 select troops to complete the subjugation of Greece, he hurried home by the way he came, multitudes perishing of famine and disease on the march. The following spring, Mardonius sought to detach the Athenians by offering them tempting terms of alliance against the Peloponnesians; but the Athenians shewed a courage and devotion to the common cause of Hellas, which, under the same depressing circumstances, perhaps no other Greek state was capable of, and which the Peloponnesians repaid by selfish and ungenerous neglect. He then once more laid waste Attica, and retired into Bœotia. Here, near the town of Platæa, he was encountered by the united Greeks, 110,000 strong, under Pausanias, and defeated with prodigious slaughter, so that only a fraction of the army left by Xerxes reached Asia. On the same day the remains of the Persian fleet were captured and destroyed by the Greek fleet on the coast of Asia Minor. Thus was Greece finally saved from coming under the dominion of Persia (479 B.C.).

It is sad to think that Themistocles and Pausanias ended their career as traitors to Hellas. Pausanias, with insane ambition, entered into secret negotiations with Xerxes to bring Greece under the Persian dominion, as a satrapy for himself: being discovered, he was put to death by his countrymen. Themistocles, the ablest man in Greece, was involved in the same intrigues, but escaped to the Persian monarch, who received him with great favour, and gave him a government in Asia Minor, where he died.

THIRD PERIOD: 478–404 B.C.

Athens the Leading State of Maritime Greece.

To preserve the freedom of the now liberated Greek cities on the islands and coasts of the Ægæan, a confederation was formed, of which Athens, from her powerful fleet, naturally became the head. Each state was bound to furnish a fixed quota to the united fleet, and Athens, as head, enforced the regulation. A rivalry thus sprung up between Sparta and Athens; the land states still clung to Sparta as their head, while the maritime states drew towards Athens. This leadership on the part of Athens, became in the end a sort of dominion. Individual members of the confederacy, becoming weary of personal service, prevailed on the Athenians to provide ships and men for an equivalent in money; which the Athenians, having a decided genius for naval warfare, were willing enough to do. Thus, the allies, instead of equals, became gradually tribute-paying subjects of Athens; and when any member grew tired of paying the contribution, and had to be compelled, Athens came to be looked upon as a despot, and to be feared and hated accordingly. Jealousy of the rising power of Athens led Sparta to combine with the oligarchical party in Corinth and Bœotia for her humiliation; but after a struggle, the Athenians succeeded in establishing their influence on land also, from the borders of the Corinthian territory to the Pass of Thermopylæ, forcing their opponents into exile, and putting the governments on a democratic footing. Athens was now (about 456 B.C.) at the summit of its power.

Pericles.

For above forty years, beginning about 470 B.C. the destinies of Athens were guided by Pericles, the most remarkable man that Greece ever produced. His character combined the integrity of Aristides the Just with the comprehensive views of Themistocles; to which were superadded a command of temper never disturbed, sound discretion, literary and philosophical education, and an eloquence such as no one had heard or

imagined before. When he spoke, he 'thundered and lightened,' as it was expressed. He cordially embraced the democratic party, yet no one more scorned the arts of the demagogue; and it is generally agreed that he was guided in all his measures by sincere patriotism, singularly unsullied by personal motives. Under his sway, the power of the *demos* or people was made more direct and effective, and most offices became open alike to rich and poor. The judicial power was transferred from individual magistrates to *dicasteries*, or panels of jurors. Six thousand citizens were annually chosen by lot to act as *dicasts* or jurors; and were distributed into ten panels of 500 each, with a reserve of a thousand to supply vacancies; and before some one of these dicasteries, every case was brought by the magistrate for decision. The court of Areopagus, the stronghold of the oligarchical party, was left little jurisdiction, except in cases of murder.

The city of Athens, under the administration of Pericles, rose to extraordinary splendour. In the year 480 B.C. it had been utterly ruined by Xerxes; but ere the lapse of forty-eight years, her walls, docks, arsenals, temples, statues, paintings, had stamped her as the imperial city of Greece, her outward magnificence conferring on her a moral ascendency beyond her direct power. The harbour of Piræus, containing the arsenal and docks, was connected with the city by two parallel lines of wall, four and a half miles long, so that city and harbour formed one continuous fortification. Among the many decorative works, the greatest was the temple of Athena (Minerva), called the Parthenon, adorned with a colossal statue of the goddess, forty-seven feet high, of ivory and gold, and other master-pieces of sculpture. Phidias was the director of the ornamental part of these works, having under him a school of pupils, and subordinates. The religious processions and festivals, and the theatrical exhibitions connected with them, were now conducted at Athens in a style of magnificence unattained elsewhere; and the poorer citizens were furnished from the public treasury with the means of attending these public shows and amusements. Pericles has been blamed for introducing this custom, as well as for that of paying the dicasts for their attendance at trials. The Athenians became accustomed, it is said, to spend their time in idleness and amusement, and that at the expense of their allies, from whose contributions chiefly the cost of all these embellishments of Athens was defrayed.

The Peloponnesian War.

In 445 B.C. a truce, to last for thirty years, had been concluded between Sparta and her adherents on the one side and Athens on the other; but before fourteen years had elapsed, the mutual animosities had risen to such a height that hostilities could no longer be postponed. The immediate occasion of the outbreak was a quarrel between Corinth and her colony of Corcyra (Corfu). The Corcyræans appealed to the Athenians, who entered into alliance with them, and interfering in a naval engagement between the two, caused the Corinthians to retreat. The Peloponnesians considered this as an infringement of the thirty years' truce, and both parties prepared for the war.

This contest, known as the Peloponnesian War began 431 B.C. was protracted over twenty-seven years, and ended in the complete destruction of Athenian ascendency. The Athenians were all-powerful at sea, but were unable to meet the large armies of the Peloponnesian confederates by land. When, therefore, the Spartan king, Archidamus, invaded Attica, they followed the advice of Pericles, and gathered the country residents with their movable property within the walls, conveying their sheep and cattle to the adjacent islands. This devastation of Attica was annually renewed for a succession of years, the Athenians meanwhile sailing round and ravaging the coasts of Peloponnesus.

The Plague.—In the second year of this destructive and fruitless war, Athens was visited by a terrible pestilence. It is described as having been a species of infectious fever, accompanied with many painful symptoms, and followed, in those who survived the first stages of the disease, by ulcerations of the bowels and limbs. The mortality was dreadful, and was of course greatly increased by the overcrowded state of the city. The prayers of the devout and the skill of the physicians were found equally unavailing to stop the progress of the disease; and the Athenians, reduced to despair, believed themselves to be forgotten or hated by their gods. The sick were left unattended, and the bodies of the dead allowed to lie unburied, while those whom the plague had not yet reached, openly set at defiance all laws, human and divine, and rushed into every excess of criminal indulgence.

In the impatience produced by this complication of suffering, the political enemies of Pericles began to turn the irritation of the public mind against him as the cause of the war. They even brought against him a charge of pecuniary malversation, and the veteran statesman was fined and deposed from his office as general. A reaction, however, soon took place, and Pericles was speedily restored to office and public confidence. But he was now almost heart-broken by domestic calamity, the epidemic having carried off both his legitimate sons and other members of his family, as well as his best political friends; and in 429 B.C. he died of a wasting fever. It is related that, when he was lying at the point of death, and while those who surrounded him were recounting his great actions, he suddenly interrupted them by expressing his surprise that they should bestow so much praise on achievements in which he had been rivalled by many others, while they omitted to mention what he considered his highest and peculiar honour—namely, *that no act of his had ever caused any Athenian to put on mourning.*

Athens had to struggle not only with her powerful enemies, but with repeated revolts of her subjects. In the seventh year of the war, she gained a signal advantage, by the capture of a large body of Spartan citizens of high family, on the island of Sphacteria, in what is now the Bay of Navarino. The desire to obtain the release of these prisoners, induced the Lacedæmonians, four years later, when their victorious general, Brasidas, had inflicted severe humiliations on the Athenians, to come to terms of peace, each party agreeing to surrender what it had acquired in the war. This treaty was known as the Peace of Nicias, from the name of the leader of the peace-party at Athens.

The peace was but of short duration. The

Spartans having got back their citizens, shewed a wish to evade the conditions on their part, and the distrust thus inspired was fanned into a fresh rupture by the machinations of Alcibiades, who about this time began to take a lead in Athens. The result was that the Athenians entered into a new alliance (420 B.C.) with some of the Peloponnesian states, who were dissatisfied with the selfish conduct of Sparta.

Alcibiades, now at the head of the war-party in Athens, was a young man of high birth and great riches, gifted with eminent ability and versatility, and remarkable for the beauty of his person. He was at the same time filled with inordinate vanity, confidence in his own powers, and love of distinction; while he was utterly regardless of the means he took to attain his end. His brilliant qualities and liberality led the Athenian people to overlook his licentious manners and want of moral principle, and allow him a sway in their councils, which he wielded to their ruin.

While the struggle was going on in Greece with little success on either side, an appeal for aid was made (416 B.C.) to Athens from some cities in Sicily against the dominant Doric city of Syracuse; and the ambition of the Athenians, and especially of Alcibiades, firing at the idea of the conquest of Sicily, led them to resolve on the Sicilian expedition. It was in vain that Nicias opposed the measure; against his judgment and will, he was appointed, along with Alcibiades and Lamachus, to the command of the most splendid armament that had ever left a port of Greece. Shortly after the fleet arrived on the coast of Sicily, Alcibiades was recalled to stand his trial, having been accused of being concerned in mutilating the statues of Hermes in Athens—a mysterious piece of sacrilege which had occurred during the preparation of the expedition, and had left the city in a state of consternation. Instead of returning home, Alcibiades went to Sparta, and became for a time the most active enemy of his country. The expedition thus left to the control of the timid Nicias, effected nothing. Syracuse was long besieged in vain; and although repeated reinforcements were sent from Athens, the Syracusans got the upper hand, shut up their besiegers in the great harbour, and (413 B.C.) destroyed or took captive the whole armament.

Athens never recovered this terrible disaster, and her power was clearly broken. At last the struggle was brought to a close (405 B.C.) at Ægos-Potamos in the Hellespont, where the Spartan admiral, Lysander, surprised and captured the whole Athenian fleet. After stripping Athens of all her dependencies, putting them under oligarchies in the interest of Sparta, Lysander blockaded and soon reduced the city itself, on which he imposed the most humiliating conditions, causing its fortifications to be demolished, and establishing an oligarchy, known as the Thirty Tyrants.

Literature and Philosophy.—The literary history of the fifth century B.C. is characterised chiefly by the development of the drama; the greatest tragedians were Æschylus, Sophocles, and Euripides, while Aristophanes excelled in comedy. The instruction of Greek youth was conducted by a set of men who called themselves Sophists, or Wise Men, and who taught them rhetoric and other accomplishments then deemed to constitute a liberal education. In the midst of these Sophists arose Socrates, who turned his attention chiefly to the study of men and morals. His method of teaching consisted in familiar conversation and a species of catechising, by which he confounded the pretended wisdom of the Sophists. Out of the intellectual school formed by Socrates arose all the leaders of speculative thinking in Greece for the next half-century; they took the name of Philosophers, or Lovers of Wisdom, as more modest than that of Sophists. Socrates, by his plainness of speech, made many enemies, who, in his old age, accused him of introducing religious novelties, and corrupting the youth of the city. He took no pains to defend himself, and was sentenced to drink the cup of hemlock, which was the usual mode of executing distinguished criminals. This happened in 400 B.C. after the overthrow of the Thirty Tyrants, and the restoration of the democracy.

FOURTH PERIOD: 404–371 B.C.

Sparta was now dominant in Hellas, and her empire was exercised by Lysander with such selfish harshness, as soon to excite a deeper feeling of jealousy and hatred than ever had been felt towards Athens. The Thirty Tyrants in the latter city made their rule so intolerable, that a revolution in less than a year restored the old constitution, with the consent of the Spartans. The leading event of this period is the rise of Thebes into the ascendency. The refusal of the Thebans to obey the dictation of Sparta brought a Lacedæmonian army into Bœotia to compel submission. But the Theban training had by this time been brought to such perfection, that it was more than a match for that of Sparta; and with less than half the numbers, the Theban general, Epaminondas, inflicted a signal defeat on the Spartan army, on the memorable field of Leuctra (371 B.C.).

FIFTH PERIOD: 371–338 B.C.

This battle was fatal to the empire of Sparta. The victorious Thebans proceeded to re-establish Messenia as an independent state, recalling, after a lapse of three centuries, the scattered families of the original Messenians, residing in various parts of Hellas, and raising the Spartan serfs that tilled the lands into free citizens. Arcadia also was organised into a Pan-Arcadian state, with a new city, Megalopolis, for its capital. The chief efforts of the Thebans were then directed to the confirmation of this new state of things in Peloponnesus, and the maintenance of their influence against Alexander, 'tyrant' of Thessaly, now become a formidable power. In a battle fought with the Lacedæmonians, near Mantinea in Arcadia, the Theban general, Epaminondas, fell in the moment of victory (362 B.C.). He left a name second to none in Greece as a soldier, a statesman, and a disinterested patriot. With the sixteen years of his political life, the ascendency of Thebes both began and ended; for no one rose to take his place. During the period of Sparta's highest ascendency, as well as during her fall, her destinies were guided by her king Agesilaus (398–361 B.C.), who, as it has been expressed, 'was himself Sparta's most perfect citizen and most consummate general; in many ways, perhaps her greatest man.'

Philip of Macedon.

Greece was ill prepared for the storm of danger to her liberties that was gathering in the north. Philip, who became king of Macedon about 360, having established his power at home, next extended his influence over Thessaly. Greece was at this time distracted by the Sacred War, occasioned by the Phocians having seized on the temple of Delphi, and then laid hands on its sacred treasures. The miserable rivalries of the other Greek states prevented united action, and Philip interfered as the vindicator of the Delphian god. It was in vain that Demosthenes sought to arouse the Athenians to the necessity of vigorous measures: by means of their still powerful fleet they might have barred the Pass of Thermopylæ to the Macedonians; but the cunning diplomacy of Philip, and the bribes by which he corrupted their envoys, paralysed all action, and the way was left open (346 B.C.). From that moment, Philip was master of the situation. Some years later (338 B.C.), Demosthenes roused the Athenians, in conjunction with the Thebans, to make one more struggle for liberty; but Philip had rendered the Macedonian phalanx stronger than even the Theban, and on the fatal field of Chæronea, the freedom of Hellas was lost for ever.

SIXTH PERIOD: 338–300 B.C.

Alexander the Great.

Philip now announced his intention of leading the united Greeks against Persia, avenging the invasion of Xerxes, and liberating the Greeks of Asia. But in the midst of his preparations, he fell by the hand of an assassin (336 B.C.), and was succeeded by his son Alexander, now twenty years of age, and who had already held a high command in the battle of Chæronea. After suppressing with terrible severity some attempts at insurrection in Macedonia and Greece, Alexander began the long-meditated invasion of Asia by leading (334 B.C.) an army of 30,000 foot and 5000 horse across the Hellespont. Having overthrown the Persian satraps of Asia Minor in the battle of the Granicus, and liberated the Greek cities on the coast, he marched eastward, and encountering Darius at Issus, at the head of an army of 600,000, gained a complete victory (333 B.C.). Proceeding along the coast of Syria, he was received as a deliverer, except by the cities of Tyre and Gaza, the former of which resisted him for seven months, and was terribly punished. He was next welcomed as a liberator by Egypt, which he visited (331 B.C.), and where he laid the foundation of the city of Alexandria.

Darius had now collected a still more numerous army, and Alexander, marching across Syria and Mesopotamia, again defeated him near Arbela, a little east from the Tigris, and southward from the site of Nineveh (331 B.C.). Taking first possession of Babylon, he proceeded to Susa and Persepolis in Persia Proper, enriching his army with the enormous treasures accumulated in those cities. Continuing his progress eastward in pursuit of Darius, he overtook him, deserted and expiring, his attendants having stabbed him (330 B.C.). Three years were next spent in subduing the provinces of Ariana, Bactria, and Sogdiana (lying north-west from the Indus). Constant success had by this time deteriorated the character of Alexander; he had come to relish the most fulsome eastern adulation, and, like an eastern despot, he transfixed, in a moment of passion, the friend that had saved his life. He had not yet reached the bounds of his ambition; with an army raised to 120,000 foot and 15,000 horse, he now advanced to the conquest of India (327 B.C.). In the Punjab, he was met by a powerful Indian prince, Porus, whom he defeated and took prisoner; but his army refusing to cross the Hyphasis (Sutlej), he proceeded down the Indus, and then returned across the desert to Persepolis and Susa (325 B.C.).

Revolving vast schemes, not only of conquest in Italy, Carthage, and the west, but of improvements commercial and agricultural, he entered Babylon, intending to make it the centre of his empire; but in a short time he was seized with fever, and died at the age of thirty-two, after a reign of less than thirteen years.

On the death of Alexander, his vast empire fell asunder; the generals, assuming the different provinces as governments, carried on a bloody struggle for ascendency and independent power. This uninteresting and confusing contest ended in confirming Ptolemy in the possession of Egypt; Seleucus in Syria, and eastward to the Indus; Lysimachus in Asia Minor; and Cassander in Macedon and Greece; who then assumed the title of kings (301 B.C.).

Several attempts were made in Greece, before and after the death of Alexander, to shake off the Macedonian yoke, which ended in only riveting it more closely. The last ray of lustre was shed by the confederation known as the Achæan League, which, under the guidance of Aratus (245–213 B.C.), rose to considerable strength; but the jealous selfishness of Sparta once more led to discord and strife, and the Macedonian king, being called in as umpire, was once more master.

But the Macedonian power was itself about to be swallowed up by a yet greater power. The Romans, having broken the strength of Carthage, now turned their ambition eastward, and after a protracted war (200–168 B.C.), Perseus, the last king of Macedonia, adorned as a captive the triumph of a Roman general. After this event, the Greek republics were for a short time left independent; but quarrelling once more among themselves, they were finally reduced to a Roman province, under the name of Achaia (146 B.C.). The outlying cities of Hellas, in Sicily and elsewhere, whose separate career our space forbids us to trace, sooner or later all shared the same fate.

Though from this time politically one of the least important of all the provinces of the Roman Empire, Greece retained its pre-eminence in learning and literature. No Roman youth of rank and wealth was held to have perfected his education without a visit to Athens, and a course of study under its professors. The language of Greece served, in later ages and other climes, to communicate to mankind the civilising influences of poetry, philosophy, and the Christian religion.

Among the writers, thinkers, and artists produced by Greece during the later periods now sketched, may be mentioned the historians, Thucydides and Xenophon; the philosophers, Plato, Aristotle, Zeno, and Epicurus; the orators, Demosthenes and Æschines; the painters, Zeuxis and Apelles; and the sculptors, Praxiteles and Lysippus.

Colosseum.

HISTORY OF ROME.

THE history of ancient Rome is for the most part the history of ancient Italy. Whatever we know of the various races that peopled the peninsula is—if we except the Greeks—first revealed to us in connection with the conquering progress of that marvellous city, that began its career as a border fortress, and ended by becoming the mistress of the world. Before touching on the rise and development of the Roman power, we may briefly glance at the *geography* and *ethnology* of the country. The south of Europe, like the south of Asia, is marked by three great peninsulas, which stretch into the Mediterranean Sea. Of these, Italy forms the central one. It is divided physically into two regions—the peninsula proper, the outline of which bears a strong resemblance to a man's leg; and north of that a broad plain, drained by the river Po and its tributaries. Alpine ranges form a natural boundary on the north and north-west, while right through the long peninsular section, to the very tip of the toe, run the Apennines, filling up the centre of the country with rugged mountain land, and leaving on either side a stretch of flat coast, sometimes broad, and sometimes narrow. The Romans called that part of the Mediterranean which washed the western shores of Italy, *Mare Inferum* (the Lower Sea), and that which washed the eastern, *Mare Superum* (the Upper Sea). The extreme length of Italy, from the Alps to Sicily, is about 700 miles; the breadth of the northern plain about 350; and of the peninsula about 100 miles.

Ethnology.—In the earliest times we find in Italy *five* distinct races, three of which (IAPYGIANS, ETRUSCANS, and ITALIANS) may, in a restricted sense, be termed 'native,' inasmuch as we do not meet with them elsewhere; and two, GREEKS and GAULS, 'foreign;' inasmuch as their chief settlements were not in Italy, but in Greece and Gallia. But, ethnologically, this distinction is arbitrary. There is no reason for believing that the first three races were indigenous, and the last two immigrant; the analysis of their languages, or of such fragments of their languages as survive, leads strongly to the conclusion that all were alike immigrant, and that in this respect the only difference between them is one of *time.*—1. *The Iapygians:* This race, monuments of which in a peculiar language (as yet undeciphered), have been found in the south-east corner of Italy—the Messapian or Calabrian peninsula—is in all probability the oldest.—2. *Etruscans:* The origin of this mysterious people is certainly one of the most interesting, if also one of the most insoluble problems in history, but Niebuhr's opinion is pretty generally accepted, that they were a mixture of an eastern and a semi-Hellenic race, who for a time settled in the Tyrol, and thence descended, first on the plains of the Po, and afterwards spread southward over

the Apennines as far as the mouth of the Tiber.—3. *Italians:* At what period the earliest immigrations into Italy of the so-called 'Italian' races—the Latins and Umbro-Sabellians, took place, it is wholly impossible to tell; but it was undoubtedly long before the Etruscans had settled in Etruria. They were by far the most important of the various races that inhabited the peninsula; in fact, the entire historical significance of Italy depends upon them; and therefore it is fortunate that their ethnological origin and affinities are capable of the most certain demonstration. An investigation of their language, subdivided, indeed, into numerous dialects, often widely differing, but fundamentally the same, has resulted in the discovery, that they belong to the great Aryan or Indo-Germanic family, and are in particular closely allied to the Hellenes. There is ground for believing that the Latins were the first members of the Italian family to enter Italy, and that, having crossed the Apennines, they spread themselves to the south along the western coast, driving the Iapygians before them, and finally cooping them up in the Calabrian peninsula—the heel of the boot. But this conquest belongs to prehistoric ages, and the original Latins of Campania, Lucania, Bruttium, perhaps even Sicily (*i.e.* the races spoken of in classic legend, as the Itali, from whom the peninsula received its name, the Margetes, Ausones, Siculi, &c.), were themselves in the course of time so thoroughly Hellenised by the influence of the rich and powerful Greek colonies planted on their coasts, or so overwhelmed by the successive invasions of Samnite hordes, that nearly every trace of a primitive Latin nationality has disappeared. It was only in Latium Proper, where no Greek colonies were founded, and where the fortune of war was in its favour, that the Latin branch of the Italian race firmly rooted itself. The other branch of the 'Italian' stock—the Umbro-Sabellian—must have entered Italy at a later period than the Latin. Its advance along the central mountain-ridge—the Apennines—from north to south can still be traced; and its last phases—*i. e.* the conquest of Campania and the other southern districts of the peninsula by the Samnite highlanders—belong to purely historical times. The oldest members of this branch are probably the Sabines, who seem to have fixed themselves in the mountainous region to the north-east of Rome, and are regarded as the progenitors of that multitude of tribes which we find occupying the central portion of Italy—the Picentes, Peligni, Marsi, Æqui, Vestini, Marrucini, Frentani, Samnites—perhaps also the Volsci and Hernici.—4. *Gauls:* To a period considerably later and comparatively historical, belong the settlement of the Gauls in the north, and of the Greeks in the south of Italy. The former, a branch of the Celtic race, itself now ascertained to be also a member of the great Aryan family, and therefore allied, however distantly, to the other Italian races, had for ages before history begins fixed themselves in the region now known as France. The first Gallic tribe that made its appearance on the soil of the peninsula is said to have been the Insubres, whose capital was Mediolanum (Milan); then followed the Cenomani, whose headquarters were Brixia (Brescia) and Verona, and afterwards numerous kindred hordes, among the latest and most powerful of whom were the Boii and Senones, who forced their way across the Po, and effected a lodgment in the modern Romagna, occupying (besides an inland district) the coast of the Adriatic as far south as Ancona. Hence, in ancient times, the whole of Northern Italy was for a long period known as Gallia Cisalpina (Gaul on *this*, *i.e.* the Italian side of the Alps), to distinguish it from Gaul Proper, which was called Gallia Transalpina. Gallia Cisalpina was again subdivided into two parts by the river Padus (Po); the northern being named Gallia Transpadana, and the southern (the country of the Boii and the Senones), Gallia Cispadana.—5. *Greeks:* The other people which we have distinguished as 'foreign' was the Greek. There is, however, this distinction to be observed, that the Greeks were not (like the Gauls) barbarians; they did not swoop down upon the southern shores of Italy (like the Norse pirates on the coasts of England and France) to plunder and devastate; nor did they force their way into the interior and dispossess the native inhabitants; they merely colonised the coasts, built cities, and carried on commerce. Through them it is probable the Romans acquired their earliest notions of the Greek literature, philosophy, and cultus.

Primitive Social Condition of the Latins.—With this brief introductory sketch of the various races that inhabited Italy in historical or prehistorical times, we may now revert to the Latins, with whom we have at present more particularly to do. What was the extent of their civilisation, or how far their social organisation had proceeded when they finally settled in the 'broad plain' (*Lātium*, connected probably with *lātus*, broad; *lātus*, a side; Gr. *platus;* Eng. *flat*) that stretches westward from the Alban Hills to the sea, may be conjectured, but cannot be positively ascertained. We know, indeed, that long before they had set foot in Italy, before even they had branched off from their Hellenic brethren, they had ceased to be *mere* nomads, or wandering shepherds. The evidence of this fact lies in their language. Not only do the names of the oldest Latin nations, as the *siculi* ('the sickle-bearers' or 'reapers'), and the *osci*, or *opsci* ('field-labourers'), clearly prove the antiquity of Italian husbandry; but the oldest agricultural terms are actually common to both Latins and Greeks. Moreover, the form of the plough was the same among both peoples, as also their mode of cutting and preparing the grain; many of the usages of social life; the oldest methods of measuring the land; and the style of their national dress—the Latin *tunica* corresponding exactly with the Greek *chiton*, while the Latin *toga* is only a fuller *himation*. Their method of building was also the same. In fact, the evidence of language shews that, before the Latino-Italians entered Italy, they had been accustomed to till the ground, to make wine, to keep gardens, to build houses, and to decently clothe themselves. As to their social organisation, less can be said. It appears, however—judging from the general bearing of the most ancient traditions, as also from the features exhibited in historical times—that at a very early period, and from causes of which we are now absolutely ignorant, they had begun to develop the germs of what may be called 'state-life.' As among their Hellenic brethren, the original foundation of their social constitution was 'households' (Gr. *oikiai*, Lat. *vici* or *pagi*, from *pangere*,

to 'fix' or 'drive in;' hence 'to build'): these, either by ties of blood, or by nearness of locality, were aggregated into clans, and their dwellings formed clan-villages (thus *pagus*, which probably meant at first only a single 'household,' came, by a natural transition, to denote a collection of households—a hamlet, or a village). Such clan-villages were, however, not regarded as independent societies, but as parts of a political canton or community—the *civitas* or *populus*. Each canton or *civitas* possessed a local centre or place of assembly, where justice was administered at regular intervals, where markets and sports were held, and religious rites celebrated, and which was besides fortified, to serve as an asylum or place of refuge for the inhabitants of the open hamlets and their cattle in time of war. Such a centre was termed the *capitolium*, *i.e.* 'the height,' from being originally fixed on a height or hill-top, and corresponded to the *akra* of the Greeks. Round this stronghold of the canton, which formed the nucleus or beginning of the earliest Latin towns, houses gradually sprung up, which in their turn were surrounded by the *oppidum* ('work,' from *opus*), or the *urbs* ('ring-wall,' connected with *urvus*, *curvus*, *orbis*); hence, in later times, *oppidum* and *urbs* became, naturally enough, the recognised designations of town and city.

The sites of the oldest of these cantonal-centres or primitive towns in Latium are to be sought for on the slopes of the Alban Hills, where the springs are freshest, the air most wholesome, and the position most secure. Tradition (which makes Alba Longa the oldest seat of a Latin community) is here in accordance with natural probability. On the same slopes lay Lanuvium, Aricia, and Tusculum, to the great antiquity of which ancient tradition bears testimony in many ways; on the offshoots of the Sabine range, in the east of Latium, stood Tibur and Praeneste; in the plain between the Sabine and Alban ranges, Gabii, Labici, and Nomentum; on or near the coast, Laurentum and Lavinium; and on the isolated hills overlooking the Tiber (the boundary between Latium and Etruria), the frontier town of Rome. How many cantons were originally in Latium, it is neither possible nor important to know. Tradition mentions thirty sovereign or politically independent communities (with Alba Longa at their head), which formed the famous Latin league. The historical order of their constitution is a point regarding which we are equally ignorant, but there is reason to believe that the Roman canton, or at least its capital, the town of Rome, was among the latest political organisations of the Latins. The history and fortunes of this canton we now proceed briefly to trace.

HISTORY OF ROME DURING THE EARLIEST OR REGAL PERIOD.

According to the myth of Romulus, Rome was an offshoot from Alba Longa; but the most rational view of the city's origin is that which is suggested by a consideration of its site. It probably sprang into existence as a frontier-defence against the Etruscans, and as an emporium for the river-traffic of the country; but whether it was founded by a common resolve of the Latin confederacy, or by the enterprise of an individual chief, is beyond the reach even of conjecture. The date fixed upon in the Romuleian myth for the commencement of the city, by the formation of the *Pomœrium* (viz. 21st April 753 B.C.), is, of course, perfectly valueless in its precision. We know and can know nothing whatever on the point. The three 'tribes,' Ramnians, Tities, and Luceres, who appear in the same myth as the constituent parts of the primitive commonwealth, suggest the idea that Rome (like Athens) arose out of a *synoikismos* or amalgamation of three separate cantons; but Mommsen rejects as 'irrational' the common opinion that these cantons represent different races, and that the Romans were a 'mongrel people,' made up of Latins, Sabines, and Etruscans, with perhaps a dash of Hellenic and imaginary 'Pelasgic' blood in their veins! The existence of a Sabine element, represented by the Tities, is indeed admitted; but its introduction is thrown back to a period long anterior to the foundation of the city, when the Roman clans were still living in their open villages, and nothing of Rome existed but its 'stronghold' on the Palatine.

The motives which probably led to the building of Rome, also led to its rapid development, so that the great peculiarity of the Roman, as compared with the other Latin cantons, is the prominence which its urban life assumed in the earliest period. No doubt the Roman continued to manage his farm in the cantonal territory, but the insalubrity of the Campagna, as well as the advantages of river-traffic, and the necessity for watchfulness imposed upon all frontier towns in rude ages, must ever have acted as an inducement to him to take up his residence as much as possible in the city. So markedly is this the case, that the beginnings of Roman history—if the ancient legend may be so designated—are mainly records of its urban expansion and political growth. That the Palatine Hill was the oldest portion of the city, is attested by a variety of circumstances. Not only does it hold that rank in the Romuleian myth, but on it were situated the oldest civil and religious institutions. The story of the establishment of an asylum on the Capitoline for homicides and runaway slaves, with all its famous consequences—the *Rape of the Sabine Women*, the wars with the Latins of Cænina, Antemnæ, and Crustumerium, but especially with the Sabines of Cures under their king Titus Tatius, the tragic fate of Tarpeia, and the fine feminine valour of the ravished maidens, who had learned to love their captors—is historically worthless; except, perhaps, so far as it shews us how from the beginning the Roman burghers were engaged in constant feuds with their neighbours for the aggrandisement of their power. The entire history of the 'regal period,' in fact, has come down to us in so mythical and legendary a form, that we cannot feel absolutely certain of the reality of a single incident. That such personages as Numa Pompilius, Tullus Hostilius, Ancus Martius, Lucius Tarquinius Priscus, Servius Tullius, and Lucius Tarquinius Superbus, ever existed, or, if they did, that the circumstances of their lives, their institutions, their conquests, their reforms, were as the ancient narrative describes them, are things which no critical scholar can believe. The destruction of the city records by the Gauls, when they captured

and burned Rome in the fourth century B.C. deprived the subsequent chroniclers of authentic information in regard to the past, and forced them to rely upon treacherous reminiscences, on oral tradition, on ballads, and on all the multifarious fabrications of a patriotic fancy, that would naturally seek compensation for political disaster in the splendour with which it would invest its primeval history. The utmost reach, therefore, to which our knowledge can attain, is to form some general idea—mainly by inference from the institutions that we find existing in later times—of the course that social and political progress followed in the Roman commonwealth.

From the very beginning of the city—and probably long before—the inhabitants were divided into two orders (exclusive of 'slaves')—viz. householders and their dependents, better known perhaps as 'patricians' (from *pater*, a father) and 'clients' (*i.e.* 'listeners,' from *cluere*, 'to listen'). The former alone possessed political, *i.e.* burgess rights. It was they who exclusively constituted the *populus* ('the people'); while the clients had no political existence whatever. That the clients formed a body essentially different from the *plebs* is not true, and seems based merely on the mythical account of what followed the destruction of Alba Longa by Tullus Hostilius. The name plebs (*i.e.* 'the multitude,' from the same root as *pleo*, I fill, *plenus*, full; with which is perhaps connected the other Latin word *vulgus*, English *folk*) is doubtless, as its signification indicates, of later origin than *clientes;* but both are applicable to the same persons, who were called 'listeners,' in reference to their being dependents on the different burgess-households, and the 'multitude,' in reference to their want of political rights. The constitution of the state was simple. All the burgesses were politically on a footing of equality. From their own ranks was chosen the king or 'leader' (*rex*), who was therefore nothing more than an ordinary burgess—a husbandman, a trader, a warrior, set over his fellows. But it must at the same time be observed, that his authority was great, for the Roman state was based on the Roman household, and something of the absoluteness of the *patria potestas* appears in the uncircumscribed nature of the regal powers. The *rex* held his office for life; he consulted the national gods; he appointed the priests and priestesses; he called out the *populus* for war, and led the army in person; his command (*imperium*) was not to be gainsayed, on which account on all official occasions he was preceded by messengers, or summoners (*lictores*, from *ligo*, 'to bind'), bearing the 'fasces' (axes and rods 'bound' up together), the symbols of power and punishment; he had the keys of the public chest, and he was supreme judge in all civil and criminal suits. The Roman religion or *cultus* was from the first thoroughly subordinate to the authority of the state; and all that we can infer from the myth of Numa is, that Rome perhaps owed its colleges of augurs and pontiff to the wisdom of some enlightened sovereign who felt himself at times embarrassed in his decisions on matters of religious and public law, and recognised how valuable might be the aid afforded him by a body of sacred experts. We may rest certain that originally the sole power was the regal, and that the subordinate magistracies found at a later time arose from a delegation of regal authority, rendered necessary by the ceaseless increase of state-business. On the other hand, we may believe that the *senatus*, or Council of the Elders, from its very nature, was as old an institution as the monarchy itself. Among the very first things the 'citizen-king' would do, would be to choose out of the ranks of his fellow-burgesses a number of experienced men to assist him with their counsel; but it is to be observed that this body possessed no coercive or constraining powers. They gave their advice when the *rex* chose to ask it; that was all. Yet, as the tenure of their office was for life, they necessarily possessed great *moral* authority; and it was only when the king, the senate, and the community were at one in regard to any important matter—a war, for example—that it was held to be righteous, and likely to be favoured by the gods. The burgesses, or householders, were divided into *curiæ*—*i.e.* 'wardships,' connected probably with *cura* and *curare*, 'to care for,' rather than with *quiris*, and the Sabine *cures*, as Varro thinks. Ten households formed a *gens* (a 'clan' or 'family'); 10 clans, or 100 households, formed a *curia*, or wardship; and 10 wardships, or 100 clans, or 1000 households, formed the *populus*, *civitas*, or community. But as Rome was a *synoikismos* of three cantons, the actual number of wards was 30, of clans 300, and of households 3000. Every household had to furnish one foot-soldier, and every clan a horseman and a senator. Each ward was under the 'care' of a special warden (the *curio*), had a priest of its own (the *flamen curialis*), and celebrated its own festivals. None but burgesses could bear arms in defence of the state (hence their designation, *populus*, 'the warrior body,' connected with *populari*, 'to lay waste,' and *popa*, 'the priest, or priest's assistant, who felled the victim at the altar—the sacred butcher'). The original Roman army, or *legio* (*i.e.* 'the gathering'), was composed of three 'hundreds' (*centuriæ*) of horsemen (*celeres*—*i.e.* 'the swift,' or *flexuntes*, 'the wheelers'), under their divisional leaders (*tribuni celerum*); and three 'thousands' of footmen (*milites*), also under divisional leaders (*tribuni militum*); to whom were added a number of light-armed skirmishers (*velites*), especially 'archers' (*arquites*). The *rex*, as we have said, was usually the general, but as the cavalry force had a colonel of its own (*magister equitum*), it is probable that he placed himself at the head of the infantry.

The 'foreign policy' of Rome seems to have been aggressive from the first, and this character it retained as long as the aggrandisement of the state was possible. We have, it is true, no certain knowledge of the primitive struggles in which the enterprising and ambitious Roman burghers were engaged, but it appears from the legend that at a very early period the neighbouring Latin communities of Antemnæ, Crustumerium, Ficulnea, Medullia, Cænina, Corniculum, Cameria, Collatia, were subjugated. The crisis of the Latin War, however, was undoubtedly the contest with Alba Longa, in which that 'sacred metropolis' of Latium was destroyed, and its leadership passed to the conqueror. How deadly the struggle between the two was, may be inferred from the tragic details in which the legend abounds. As a rule, on the subjugation of a canton, the conquered inhabitants were allowed to remain in

their open hamlets, but their *capitolium* was razed, their weekly market, their justice-court, their gods —everything, in short, strictly national — were removed to Rome, while they themselves were enrolled among the clients or plebs. But sometimes the inhabitants themselves, in whole or part, were transferred to Rome, and individuals or clans were even received into the ranks of the Roman burgesses, as in the case of Alba Longa. Some of the famous Roman *gentes* claimed to be of Alban descent—the Julii, Servilii, Quinctilii, Cloelii, Curiatii, and Metilii. The wars with the Etruscans of Fidenæ and Veii—assigned, like the destruction of Alba Longa, to the reign of Tullus Hostilius—were apparently indecisive; those with the Rutuli and Volsci, however, were probably more fortunate; but uncertainty hangs like a thick mist over the ancient narrative. Even the story of the Tarquins, though it belongs to the later period of the monarchy, is in many of its details far from credible. Both Niebuhr and Mommsen consider 'Tarquin the Proud' a historical personage, and without accepting literally all the circumstances of the tradition, believe the general outline—his character, his exactions, his expulsion, and his desperate efforts for the recovery of the throne—to be trustworthy. The memory of such a monarch was likely to be preserved by the very strength of the hatred he excited, and an act so daring as his expulsion (which was at the same time the death-knell of a system of government that had prevailed for ages) could hardly be a mere invention, though it might be overlapped with fold upon fold of picturesque fiction. The aristocracy or *populus* had become so much more powerful than the individual *rex*, that they wished to possess *de jure* as well as *de facto* the supreme authority. The pride and tyranny of a Tarquin may very well have aided in furthering their designs.

Meanwhile a great internal change had taken place in Rome. This is usually designated the Servian 'Reform of the Constitution,' although the expression is calculated to mislead. There was nothing directly political in the 'reform.' It was only a reform in the burgess-levy—*i.e.* in the mode of raising the army. The new arrangement is known in Roman history as the formation of the *Comitia Centuriata*. When or with whom the change originated it is impossible to say. The legend assigns it to Servius Tullius, predecessor of Tarquin the Proud; and it was in all probability the work of some kingly ruler who saw the necessity of reorganising the national forces. Its details were briefly as follows: Every Roman freeholder from the age of 17 to 60, whether patrician or plebeian, was made liable to serve in the army; but he took his place according to the amount of his property. The freeholders were distributed into five *classes* (*i.e.* 'summonings,' from *calare*, to 'summon' or 'call out'), and these *classes*, all of whom were infantry, were again subdivided into *centuriæ* ('hundreds'). The *first* class, which required to possess property valued at 100,000 ases, or an entire hide of land, furnished 82 'hundreds;' the second, property valued at 75,000 ases, or ¾ths of a hide of land, furnished 20 'hundreds;' the third, property valued at 50,000 ases, or ½ hide of land, furnished 20 'hundreds;' the fourth, property valued at 25,000 ases, or ¼th hide of land, furnished 20 'hundreds;' and the fifth, property valued at 12,500 ases, or ⅛th hide of land, furnished 32 'hundreds.' A single 'hundred' was, moreover, added from the ranks of the non-freeholders, or *proletarii* (mere 'children-begetters'), although it is possible that from the same order came the two 'hundreds' of 'horn-blowers' (*cornicines*) and 'trumpeters' (*tibicines*), attached to the fifth class. Thus the infantry 'hundreds' amounted to 175, that is, 17,500 men, besides whom were 18 'hundreds' of *equites* ('horsemen'), chosen from the wealthiest burgesses and non-burgesses; so that the Roman army now numbered in all nearly 20,000 men. We have stated that the original design of this new arrangement was merely military, but it is easy to see that it would soon produce political results. Duties and rights are correlative. The former suggest the latter, and create a desire for their attainment. Hence the Servian military reform paved the way for the grand political struggle between the patricians and the plebeians, which commenced with the first year of the Republic, and only terminated with its dissolution.

THE ROMAN REPUBLIC FROM ITS INSTITUTION TO THE ABOLITION OF THE DECEMVIRATE.

1. *Internal History.*—According to the legend, the expulsion of the Tarquins was mainly the work of their cousins Junius Brutus and Tarquinius Collatinus, in revenge for the outrage on the honour of Lucretia, and was followed by the abolition of the monarchy. The date usually assigned to this event is 509 B.C. The story is intensely tragical, and if we must consider it poetry rather than fact, yet it may safely be taken as evidence that it was an unbridled lust of power and self-gratification that brought ruin on the Romano-Tuscan dynasty. Of course, we can make nothing definite out of the early years of the republic. Dates and names, and even events, must go for very little. Valerius Publicola or Poplicola, Sp. Lucretius, M. Horatius, Lars Porsenna of Clusium, Aulus Postumius, with the glorious stories of Horatius Cocles and the battle of Lake Regillus, will not bear to be scrutinised. We must content ourselves with the knowledge of historical tendencies and general results. The change from 'kings' to 'consuls' (*consules*, 'those who leap together'—more generally those who *act* together) was not intended to diminish the administrative power of the supreme rulers, but only to deprive them of the opportunity of doing harm—of becoming Tarquins; and this it effectually succeeded in doing, by limiting their tenure of office to a year, and by numerous other restrictions. It is believed to have been about this time, and in consequence of the new political changes, that the old assessors of the king, such as the *quæstores parricidii*, formally became standing magistrates instead of mere honorary counsellors, and also that the priesthood became a more self-governing and exclusive body. During the regal period, the priests were appointed by the king, but now the colleges of augurs and pontiffs began to fill up the vacancies in their ranks themselves, while the vestals and separate 'flamens' were nominated by the pontifical college, which chose a president (*pontifex maximus*) for the purpose. In the details given us of the 'Servian Reform,' we can easily discern a spirit of compromise, the concessions

made to the plebeians in the constitution and powers of the *Comitia Centuriata* being partially counterbalanced by the new powers conferred on the old burgess body, the *Comitia Curiata*—viz. the right of confirming or rejecting the measures passed in the Lower Assembly. Towards the new assembly, therefore, it stood somewhat in the relation in which the House of Lords stands to the House of Commons, but the analogy must not be pushed too far; it is only general. The character of the senate altered under the action of the same influences. Although it never had been formally a patrician body—although admission to it under the kings was obtainable simply by the exercise of the royal prerogative, yet, practically, 299 out of the 300 senators had always been patricians; but after the institution of the republic, we are told that the blanks in the senate were filled up *en masse* from the ranks of the plebeians, so that of the 300 members less than half were *patres* ('full burgesses'), while 164 were *conscripti* ('added to the roll'), hence the official designation of the senators, *patres et conscripti* ('full burgesses and enrolled').

As yet, however, it is to be observed the plebeians were rigorously excluded from the magistracies. They could vote—*i.e.* they could exercise legislative powers—but they had no share in the administration. None but patricians were eligible for the consulship, for the office of quæstor, or for any other executive function, while the priestly colleges rigidly closed their doors against the new burgesses. The struggle, therefore, between the two orders went on with ever-increasing violence. The abuse of the *Ager Publicus*—that is, such portion of the land of a conquered people as had been taken from them, annexed to the Roman state, and let out originally to the patricians at a fixed rent, together with the frightful severity of the law of debtor and creditor, the effect of which was all but to ruin the small plebeian 'farmers,' who constituted, perhaps, the most numerous section of the burgesses—finally led to a great revolt of the plebs, known as the 'Secession to the Sacred Hill,' the date assigned to which is 494 B.C. On that occasion the plebeian farmer-soldiers, who had just returned from a campaign against the Volscians, marched in military order out of Rome, under their plebeian officers, to a mount near the confluence of the Anio with the Tiber, and threatened to found there a new city, if the patricians did not grant them magistrates from their own order; the result was, the institution of the famous plebeian *tribunate*—a sort of rival power to the patrician *consulate*, by means of which the plebeians, at least, hoped to be shielded from the high-handed oppressions of the wealthy. To the same period belongs the institution of the *ædiles*. A little later, the *Comitia Tributa* emerged into political prominence. This was really the same body of burgesses as formed the *Comitia Centuriata*, but with the important difference, that the number of votes was not in proportion to a property classification. The poor plebeian was on a footing of equality with the rich patrician; each gave his vote, and nothing more. Hence the *Comitia Tributa* virtually became a plebeian assembly, and when the *plebiscita* ('resolutions of the plebs' carried at these *comitia*) acquired (as they did by the Valerian Laws passed after the abolition of the Decemvirate) a legally binding character, the victory of the 'multitude' in the sphere of legislation was complete. The semi-historical traditions of this period—for we are now (fifth century B.C.) beginning to emerge out of the mythical era—unmistakably shew that the institution of the tribunate led to something very like a civil war between the two orders. Such is the real significance of the legends of Caius Marcus, surnamed *Coriolanus*, the surprise of the Capitol by the Sabine marauder, Appius Herdonius, at the head of a motley force of political outlaws, refugees, and slaves; the migrations of numerous Roman burgesses with their families to more peaceful communities; the street-fights; the assassinations of plebeian magistrates; the annihilation by the Etruscans of the Fabian *gens*, who had left Rome to escape the vengeance of their order for having passed over to the side of the plebeians; and the atrocious judicial murder of Spurius Cassius, an eminent patrician, who had also incurred the deadly hatred of his order, by proposing an agrarian law that would have checked the pernicious prosperity of the capitalists and overgrown landholders. Finally, 462 B.C. a measure was brought forward by the tribune C. Terentillius Ursa, to appoint a commission of ten men to draw up a code of laws for the purpose of protecting the plebeians against the arbitrary decisions of the patrician magistrates. The result was the famous code known as the *Twelve Tables*—at first *Ten*, to which two were afterwards added—the appointment of the *Decemviri*, and the abolition of all the ordinary magistrates, both patrician and plebeian. The government by decemvirs, however, lasted only two years; according to tradition, the occasion of its overthrow was the attempt of the principal decemvir, Appius Claudius, to possess himself by violence of the beautiful daughter of Virginius, a Roman centurion; but the real cause was doubtless political, though the cruel lust of a Claudius may have afforded the occasion; the result of which was the restoration of the pre-decemviral state of things—the patrician consulate and the plebeian tribunate.

2. *External History.*—The external history of Rome, from the establishment of the republic to the abolition of the decemvirate, is, it need hardly be said, purely military. The Romans fought incessantly with their neighbours. Long before the close of the regal period they had acquired, as we have seen, the leadership of Latium, and in all the early wars of the republic they were assisted by their allies and kinsmen; sometimes also by other nations—as, for example, the Hernicans, between whom and the Romans and Latins a league was formed by Spurius Cassius in the beginning of the fifth century B.C. The most important of these wars were those with the southern Etruscans, especially the Veientines, in which, however, the Romans made no way, and even suffered terrible disasters, of which the legend concerning the destruction of the Fabian *gens* on the Cremera (477 B.C.) may be taken as a distorted representation; the contemporaneous wars with the Volscians, in which Coriolanus is the most distinguished figure; and those with the Æqui (458 B.C.), to which belongs the fine legend of Cincinnatus.

FROM THE ABOLITION OF THE DECEMVIRATE TO THE DEFEAT OF THE SAMNITES, AND THE SUBJUGATION OF ALL THE 'ITALIANS' (449–265 B.C.).

1. *Internal History.*—The leading political features of this period are the equalisation of the two orders, and the growth of the new aristocracy of capitalists. After the abolition of the decemvirate, it would seem—judging from the course of events—that the whole of the plebeian aristocracy, senators and capitalists (from motives of selfish aggrandisement), combined with the 'masses' of their order to make a series of grand attacks on the privileges of the old Roman *noblesse*. The struggle lasted for 100 years; and ended, as it could only end, by the removal of all the social and political disabilities under which the plebeians had laboured—though the stratagems and artifices to which the old aristocracy had recourse, proved the reluctance with which they succumbed to fate. First in 445 B.C. only four years after the fall of the decemvirs was carried, the *Lex Canuleia*, by which it was enacted that marriage between a patrician and plebeian should be legally valid. At the same time, a compromise was effected with respect to the consulship. Instead of two patrician consuls, it was agreed that the supreme power should be intrusted to new officers termed 'Military Tribunes with Consular Power,' who might be chosen equally from the patricians or plebeians. Ten years later (435 B.C.), the patricians tried to render the new office of less consequence by the transference of several of the functions hitherto exercised by consuls to two special patrician officers named *Censors*. In 421 B.C. the quæstorship was thrown open to the plebeians; in 368 B.C. the mastership of the horse; in 356 B.C. the dictatorship; in 351 B.C. the censorship; in 337 B.C. the prætorship; and in 300 B.C. the pontifical and augurial colleges. These victories were not all won without the shedding of blood. How great was the exasperation of the patricians may be estimated from the story of Spurius Maelius, the rich plebeian, who was murdered simply because in a season of famine he sold corn at a very low price to the poor.

The only effect, it is to be observed, of these political changes was to increase the power of the rich plebeians; and consequently, the social distress continued to shew itself as before. Efforts were repeatedly made by individuals to remedy the evil, but without success. Such were the attempts of the tribunes Spurius Maecilius and Spurius Metilius (417 B.C.) to revive the agrarian law of Spurius Cassius; and of the noble and patriotic patrician, Marcus Manlius, who, though he had saved the Capitol during the terrible Gallic siege, was hurled from the Tarpeian Rock (384 B.C.), on the customary charge, as groundless in his case as it was base, of aspiring to the monarchy; but at length (367 B.C.), after a furious struggle of eleven years, the famous Licinian Rogations were carried, by means of which it was hoped that an end had been put to the disastrous dissensions of the orders.

That these laws operated beneficially on the class in whose interest they were passed, namely, the plebeian-farmers or middle-class of the Roman state, is unquestionable. The 'general coffers' were also filled by the revenue drawn directly or indirectly from the subjugated lands, so that a *tributum* (a forced loan) seldom required to be enforced at home, and the numerous colonies which Rome now began to send forth to secure her new acquisitions, consisted entirely of the poorer plebeians, who always received a portion of the land in the district where they were settled. The long struggle between the two orders was thus virtually at an end; but the date usually assigned to the termination of the strife is 286 B.C. when the *Lex Hortensia* was passed which confirmed the Publilian Laws of 339 B.C. and definitely gave to the *Plebiscita* passed at the Comitia of the Tribes, the full power of laws binding on the whole nation. Gradually, however, by steps which we have not room to trace, the importance of the popular assemblies declined, and that of the senate rose. The senate, it will be remembered, originally possessed no administrative power at all, but now it commenced a series of vast usurpations, of which the best defence is that they excited no opposition among the community. Every matter of general importance—war, peace, alliances, the founding of colonies, the assignation of lands, building, the whole system of finance—came under its supervision and authority. Nor, on the whole, did it prove itself the unworthy arbiter of a nation's destinies. It was not a self-elected oligarchy, but was rather composed of the ablest representatives of both orders.

2. *External History.*—We have said that the military successes of Rome during this period of internal strife were great; but we can only briefly allude to them. The irruption of the Gauls into sub-Apennine Italy (391 B.C.), though accompanied by frightful devastations, was barren of results, and did not materially affect the progress of Roman conquest. No doubt the battle on the Allia, and the capture and burning of Rome (390 B.C.), were great disasters, but the injury was temporary. The vigilance of Manlius saved the Capitol, and the heroism of Camillus revived the courage and spirit of the citizens. Again and again in the course of the 4th c. B.C. the Gallic hordes repeated their incursions into Central Italy, but never again returned victorious. In 367 B.C. Camillus defeated them at Alba; in 360 B.C. they were routed at the Colline Gate; in 358 B.C. by the dictator, G. Sulpicius Peticus; and in 350 B.C. by Lucius Furius Camillus. Meanwhile, aided by their allies, the Latins and the Hernicans, the Romans carried on the long and desperate struggle with the Æquians, Volscians, and Etruscans. Finally, but not till after they had sustained repeated defeats, the Romans triumphed. The causes that led to the decline of the Etruscan power, which, at the close of the regal period in Rome, and during the infancy of the republic, had been enormous, both by sea and land, cannot be considered at length here. Suffice it to say, that the terrible irruption of the Gallic barbarians into Etruria, and the victories of the Samnites in Campania, where also the Etruscans had established themselves, as well as the miserable jealousies of the different cities, combined to paralyse the power of this people, and paved the way for the final triumph of Rome.

But even before the Gauls had crossed the Apennines, the fate of Etruria was virtually sealed. The fall of Veii, 396 B.C. was really the death-knell of Etruscan independence. Although the story has undoubtedly descended to us in a mythical dress, the siege of Veii is by no means to be placed in the same category with the siege of Troy. Falerii, Capena, and Volsinii—all sovereign cities of Etruria—hastened soon after to make peace, and by the middle of the 4th c. B.C. the whole of Southern Etruria had submitted to the supremacy of Rome, was kept in check by Roman garrisons, and denationalised by the influx of Roman colonists. In the land of the Volsci, likewise, a series of Roman fortresses were erected to overawe the native inhabitants; Velitrae, on the borders of Latium, as far back as 492 B.C. Suessa Pometia (442 B.C.), Circeii (393 B.C.), Satricum (385 B.C), and Setia (382 B.C.): besides the whole Volscian district, known as the Pontine Marshes, was distributed into farm-allotments among the plebeian soldiery. Becoming alarmed, however, at the increasing power of Rome, the Latins and Hernicans withdrew from the league, and a severe and protracted struggle took place between them and their former ally. Nearly thirty years elapsed before the Romans succeeded in crushing the malcontents, and restoring the league of Spurius Cassius. In the course of this war, the old Latin confederacy of the 'Thirty Cities' was broken up (384 B.C.), probably as being dangerous to the hegemony (now rapidly becoming a supremacy) of Rome. The terms of the treaty made by the Romans (348 B.C.) with the Carthaginians shew how very dependent was the position of the Latin cities. Meanwhile, the Romans had pushed their garrisons as far south as the Liris, the northern boundary of Campania. Here they came into contact with the Samnites, a people as heroic as themselves, their equals in everything but unity of political organisation; perhaps their superiors in magnanimity.

The Samnites had long been extending their conquests in the south of Italy, just as Rome had in the centre and in Etruria. Descending from their native mountains between the plains of Apulia and Campania, they had overrun the lower part of the peninsula, and under the name of Lucanians, Bruttians, &c. had firmly established themselves, threatening everywhere the prosperity of the Greek and Etruscan possessions in those regions. But it was the dwellers in the original mountain territory who properly bore the name of Samnites, and between them and the Romans now commenced a tremendous struggle; the former fighting heroically for the preservation of their national freedom—the latter warring with superb valour for dominion. The Samnite Wars, of which three are reckoned, extended over 53 years (343–290 B.C.). The second, generally known as the 'Great Samnite War,' lasted 22 years (326–304 B.C.). At first, the success was mainly on the side of the Samnites; and after the disaster at the *Caudine Forks*, it seemed as if Samnium and not Rome was destined to become the ruler of Italy, but the military genius of the Roman consul, Quintus Fabius Rullianus, triumphed over every danger, and rendered all the heroism of Caius Pontius, the Samnite leader, unavailing. In 304 B.C. Bovianum, the capital of Samnium, was stormed, and the hardy highlanders were compelled to acknowledge the supremacy of the republic. The third war (298–290 B.C.) was conducted with all the sanguinary energy of despair; but though the Etruscans and Umbrians now joined the Samnites against the Romans, their help came too late. The victory of Rullianus and of P. Decius Mus, at Sentinum (295 B.C.), virtually ended the struggle, and placed the whole of the Italian peninsula at the mercy of the victor. It only remains to be mentioned here that at the close of the first Samnite War, which was quite indecisive, an insurrection burst out among the Latins and Volscians, and spread over the whole territory of these two nations; but the defeat inflicted on the insurgents at Trifanum (340 B.C.) by the Roman consul, Titus Manlius Imperiosus Torquatus, almost instantly crushed it, and in two years the last spark of rebellion was extinguished. The famous Latin league was now dissolved; many of the towns lost their independence, and became Roman *municipia;* new colonies were planted both on the coast and in the interior of the Latino-Volscian region; and finally, so numerous were the farm-allotments to Roman burgesses, that two additional tribes had to be constituted.

FROM THE CLOSE OF THE SAMNITE TO THE COMMENCEMENT OF THE PUNIC WARS.

The war with Pyrrhus, king of Epeirus, which led to the complete subjugation of Peninsular Italy, is a sort of pendant to the great Samnite struggle. It was brought about in this way.

The Lucanians and Bruttians, who had aided the Romans in the Samnite Wars, considering themselves cheated of their portion of the spoil, entered into negotiations with the enemies of their former associate throughout the peninsula. A mighty coalition was immediately formed against Rome, consisting of Etruscans, Umbrians, and Gauls in the north, and of Lucanians, Bruttians, and Samnites in the south, with a sort of tacit understanding on the part of the Tarentines that they would render assistance by and by. The rapidity with which it took shape shews alike the fear and the hatred inspired by the Roman name. In the course of a single year, the whole north was in arms, and once more the power, and even the existence of Rome, were in deadly peril. An entire Roman army of 13,000 men was annihilated at Arretium (284 B.C.) by the Senonian Gauls; but that dauntless spirit which the republic never failed to display in the crisis of its fortunes, and which gives a sublime dignity to its worst ambition, now shone out in the fulness of its splendour. Publius Cornelius Dolabella marched into the country of the Senones at the head of a large force, and literally extirpated the whole nation, which henceforth disappears from history. Shortly afterwards, the bloody overthrow of the Etrusco-Boian horde at Lake Vadimo (283 B.C.) shattered to pieces the northern confederacy, and left the Romans free to deal with their adversaries in the south. The Lucanians were quickly overpowered (282 B.C.); Samnium, broken by its long and luckless struggle, and overawed by the proximity of a Roman army, could do nothing. A rash and unprovoked attack on a small Roman fleet now brought down on the Tarentines the vengeance of

Rome at the very moment Rome was free to exert all her terrible power. Awaking to a sense of their danger, the Tarentines invited Pyrrhus over from Epeirus, and appointed him commander of their mercenaries. It is not necessary to narrate here the varying fortunes of the struggle between Pyrrhus and the Romans, which lasted only six years, and ended in his being obliged to return to Epeirus without accomplishing anything.

After Pyrrhus, baffled in his attempts to check the progress of Rome, had withdrawn to Greece, the Lucanians and Samnites, whom his reputation and original successes had induced to rise once more against the dreaded foe, continued the unequal struggle, but 'even the bravery of despair,' as it has been said, 'comes to an end; the sword and the gibbet at length (269 B.C.) carried peace even into the mountains of Samnium.' Tarentum had surrendered three years earlier; and now from the Macra and the Rubicon to the Strait of Messana, there was not a nation in Italy that did not acknowledge the supremacy of Rome. Distant kingdoms began to feel that a new power had risen in the world, and when Ptolemy Philadelphus, sovereign of Egypt, heard of the overthrow of the famous Epeirote warrior, he sent an embassy to Rome (273 B.C.), and concluded a treaty with the republic. To secure their new acquisitions, the Romans established in the south military colonies at Pæstum and Cosa, in Lucania (273 B.C.); at Beneventum (268 B.C.), and at Æsernia (263 B.C.), to overawe the Samnites; and in the north, as outposts against the Gauls, Ariminum (268 B.C.), Firmum in Picenum (264 B.C.), and the burgess colony of Castrum Novum. Preparations were also made to carry the great Appian highway as far as Brundisium, on the Adriatic, and for the colonisation of the latter city as a rival emporium to Tarentum.

The political changes were almost as important as the military. The whole population of Peninsular Italy was divided into three classes—1. *Cives Romani*, or such as enjoyed the full burgess privileges of Roman citizens; 2. *Nomen Latinum*—that is, such as possessed the same privileges as had been enjoyed by the members of the quondam Latin league—viz. an equality with the Roman burgesses in matters of trade and inheritance, the privilege of self-government, but no participation in the Roman franchise, and consequently no power to modify the foreign policy of the state; 3. *Socii*, or 'Allies,' to some of whom were conceded most liberal privileges, while others were governed in an almost despotic fashion. The *Cives Romani* no longer embraced merely the inhabitants of the old Roman community, the well-known 'tribes' (of whom there were now thirty-three), but all the old burgess-colonies planted in Etruria and Campania, besides such Sabine, Volscian, and other communities as had been received into the burgess body on account of their proved fidelity in times of trial, together with individual Roman emigrants or families of such, scattered among the *municipia*, or living in villages by themselves. The cities possessing the *Latinum Nomen* included most of the 'colonies' sent out by Rome in later times, not only in Italy, but even beyond it; the members of which, if they had previously possessed the Roman franchise, voluntarily surrendered it in lieu of an allotment of land. But any 'Latin' burgess who had held a magistracy in his native town, might return to Rome, be enrolled in one of the tribes, and vote like any other citizen. The *Socii* comprised all the rest of Italy, as the Hernicans, the Lucanians, Bruttians, the Greek cities, &c.

THE PUNIC WARS.

The first foreign people with whom the Romans came into collision were the Carthaginians—a people of Phœnician lineage, who, settling in that part of Africa now called Tunis, and building a city there, about a century before the date assigned to the foundation of Rome, had in the interval become a great commercial nation, with ships sailing to all parts of the Mediterranean, and with colonies along the coasts of Algiers, in Sardinia and Corsica, and even in Spain. They had recently gained a footing in Sicily, and now shared it with the Greeks of Syracuse; and it was on this rich island as a battle-field that the Romans first came into conflict with the merchant-people of Africa. Between the Carthaginians and the Romans there had long existed a nominal alliance—the oldest treaty dating as far back as the sixth century B.C. But this alliance had never possessed any real significance, and latterly the two nations had come to regard each other with considerable distrust. The incident that occasioned the outbreak was quite trivial, and need not be recorded. Suffice it to say that in 264 B.C. war was formally declared between the two nations, and incomparably the most terrible contest in which Rome was ever engaged, began.

We do not propose to follow minutely the course of the famous Punic Wars, but we may briefly indicate their character and result. The wars with Carthage, like those with Samnium, were three in number. The *first* lasted 23 years (264–241 B.C.), and was waged mainly for the possession of Sicily. Its leading feature was the creation of a Roman navy, which, after repeated and tremendous misfortune, finally wrested from Carthage the sovereignty of the seas. So energetically did the senate set to work, that (we are told) in sixty days from the time the trees were felled, 120 ships were launched, and soon after the consul Caius Duilius gained a brilliant success (260 B.C.) over the Carthaginians off Mylæ, on the north-east coast of Sicily. The *Columna Rostrata* ('Beaked Column') in the Forum preserved for ages the memory of the 'glorious victory.' Subsequent events, however, were less favourable. An invasion of Africa by Regulus ended in disaster, and the war, which was henceforth confined to Sicily, miserably languished. Thrice was the Roman navy annihilated by storms at sea (255 B.C. 253 B.C. and 249 B.C.); and in spite of a series of unimportant successes by land, the Romans long found it impossible to make any impression on the great Carthaginian strongholds of Lilybæum and Drepanum, mainly on account of the brilliant strategy with which they were held in check by Hamilcar Barca, the father of Hannibal. At last, however, a great sea-fight took place off the Ægates isles (242 B.C.), in which a Roman fleet, commanded by the consul Lutatius Catulus, obtained a magnificent victory. The Carthaginian government, whose treasury was empty, and who had in vain tried to raise a

state-loan in Egypt, could—for the present—continue the struggle no longer; and the whole of Sicily, except the territory of Hiero of Syracuse, who had been a firm ally of the Romans, passed into the hands of the victors, who constituted it a Roman province, and placed it under the government of a prætor.—A lapse of 23 years occurred before the second Punic War began, but during that interval neither Romans nor Carthaginians had been idle. The former, with worse than 'Punic faith,' had bullied their weak and exhausted rival into surrendering Sardinia and Corsica, which, like Sicily, were transformed into a Roman province. In addition, they had carried on a series of Gallic wars in Northern Italy (231–222 B.C.), the result of which was the complete humiliation of the barbarian Boii, Insubres, &c. and the extension of Italy to its natural boundary—the Alps. Meanwhile, the descent of Hamilcar on the Spanish coast was followed by the establishment of a new Carthaginian empire, or at least a protectorate, in the west; and thus, almost before the Romans were aware of it, their hated rival had made good her losses again, and was even able to renew the struggle in a more daring fashion than before. How confident the bearing of the Carthaginians had now become, may be seen from the fearless spirit in which they accepted the Roman challenge, and entered on the *second* Punic—or (as the Romans called it) the *Hannibalic*—War, the grand events of which were the crossing of the Alps by Hannibal, the terrible disasters of the Romans at Lake Trasimene and Cannæ, and the final overthrow of Hannibal at Zama, 202 B.C. by Scipio, which once more compelled the Carthaginians to sue for peace. It was with Carthage as with Samnium. The *second* war virtually sealed her fate, and the *third* displayed only the frantic heroism of despair. Her Spanish possessions, like her Sicilian, passed to the Romans (who formed out of them the provinces of *Hispania Citerior* and *Hispania Ulterior*); so did her protectorate over the Numidian sheiks. She was forced to surrender her whole navy (excepting ten triremes), and all her elephants, and to solemnly swear never to make war either in Africa or abroad, except with the consent of her vanquisher. Her relations, indeed, to the conquered Italian nationalities became much harsher than they had formerly been, for, after the first victories of Hannibal, these had risen against her. The Picentes, Bruttii, Apulians, and Samnites were deprived either of the whole or the greater part of their lands—some communities were actually turned into serfs—the Greek cities in Lower Italy, most of which had also sided with Hannibal, became the seats of burgess-colonies. But the loss of life and of vital prosperity was frightful. 'Numbers of flourishing townships,' says Mommsen, '400 it was reckoned, were destroyed and ruined.' During 201–196 B.C. the Celts in the valley of the Po, who, with the fiery unwisdom of their race, had recommenced hostilities at the very moment Rome was freed from her embarrassments, were thoroughly subjugated; their territory was Latinised, but they themselves were declared incapable of ever acquiring Roman citizenship; and so rapidly did their nationality dissolve, that when Polybius, only 30 years later, visited the country, nearly all traces of Celtic characteristics had disappeared. The Boii were finally extirpated about 193 B.C.; the Ligurians were subdued 180–177 B.C.; and the interior of Corsica and Sardinia about the same time. The wars in Spain were troublesome and of longer duration, but they were not at all serious. The natives were indeed perpetually in arms, and the Romans suffered frequent defeats from their sudden and impetuous insurrections; but in the end the superior discipline of the legions always prevailed, and the fiery and chivalrous tribes had of course to make ignominious submission. So little reliance, however, could be placed on these forced submissions, that the Romans felt it necessary to hold Spain by military occupation, and hence arose the first Roman standing armies. Forty thousand troops were maintained in the Spanish peninsula year after year. The most distinguished successes were those achieved by the younger Scipio, by Quintus Minucius (197–196 B.C.), by Marcus Cato (195 B.C.), by Lucius Æmilius Paullus (189 B.C.), by Caius Calpurnius (185 B.C.), by Quintus Fulvius Flaccus (181 B.C.), and by Tiberius Gracchus (179–178 B.C.).

MACEDONIAN AND GREEK WARS.

The causes that led to the interference of Rome in the politics of the East are too complicated to be given here, but the *Macedonian Wars* were owing immediately to the alliance formed by Philip V. of Macedon with Hannibal after the battle of Cannæ. Like the Samnite and Punic, the Macedonian Wars were three in number. The *first* (214–205 B.C.) was barren of results, mainly because the whole energies of Rome were directed to Spain and Lower Italy; but the *second* (200–197 B.C.), though it lasted only a third of the time occupied by the first, taught Philip that another and not he must rule in Greece. The battle of *Cynoscephalæ* ('Dogs' Heads' Hills, a range in Thessaly) was followed by a treaty which compelled him to withdraw his garrisons from the Greek cities, to surrender his fleet, and to pay 1000 talents towards the expenses of the war. Philip was thoroughly quelled, and during the remaining 18 years of his life, he adhered (like old Hiero of Syracuse, though less sincerely) to his Roman alliance. But the Ætolians, who had formed an alliance with Rome against Philip, quarrelled with their powerful 'friends,' and persuaded Antiochus of Syria to come over seas to Thessaly and fight them. A similar fate befell him to what had befallen Philip. After a war of three years, he found himself obliged to surrender all his possessions in Europe and Asia Minor, all his elephants and ships, and to pay 15,000 Euboic talents (£3,660,000) within twelve years. Next year the Ætolians were crushed; and a little later, the quarrels between the Achaians and Spartans led to a general Roman protectorate over the whole of Greece.

Philip of Macedon dying (179 B.C.), was succeeded on the throne by his eldest son Perseus, who resolved once more to try the fortune of war with the Romans; and in 172 B.C. the *third* and *last* Macedonian War began, the result of which, after four years of fighting, was the utter destruction of the Macedonian army at Pydna (168 B.C.) by the Roman consul Lucius Æmilius Paullus, the capture of the king, who adorned the triumph of the conqueror, and the dismemberment of the

Macedonian empire, which was broken up into four oligarchic republics. Further, the imperial republic stopped Antiochus Epiphanes in his career of Egyptian conquest, ordered him instantly to abandon his acquisitions, and accepted the protectorate of Egypt, which the grateful and frightened monarch offered her (168 B.C.). We may here, for the sake of connection, anticipate the course of history, and mention the last *Greek* and *Punic* Wars. Both of these came to an end in the same year (146 B.C.). The former was caused by an expiring outburst of pseudo-patriotism in the Achaian League, consequent on the return of the exiles from Rome, and was virtually closed on the destruction of Corinth by the consul Mummius. The latter was not so much a war as a bloody sacrifice to the genius of Roman ambition. After Hannibal's death, his party in Carthage seems to have recovered the ascendency, and as coincident therewith, the commercial prosperity of the city began to revive, a bolder front was shewn in resisting the encroachments of Masinissa, the Numidian ruler, whom the Roman senate protected and encouraged in his aggressions. This was enough. Fierce old Cato only expressed the instinctive sentiment of the Roman burgesses, when he came to utter incessantly *Delenda est Carthago*, and in 149 B.C. the senate adopted his barbarous conviction. After a siege of three years, in which the inhabitants displayed superhuman energy and heroism, Carthage was stormed by the younger Scipio, and the Carthaginian empire vanished for ever from the earth.

POSITION OF ROME AT THE CLOSE OF THE PUNIC WARS, AND SKETCH OF ITS SUBSEQUENT SOCIAL CONDITION TO THE TERMINATION OF THE REPUBLIC.

'Polybius dates from the battle of Pydna the full establishment of the universal empire of Rome. It was in fact the last battle in which a civilised state confronted Rome in the field on a footing of equality with her as a great power; all subsequent struggles were rebellions or wars with peoples beyond the pale of the Romano-Greek civilisation—the barbarians, as they were called.' But contemporaneous with this enormous extension of power and authority in foreign lands, the national character underwent a complete and fatal alteration. The simplicity and stern integrity of life, the religious gravity of deportment, and the fidelity with which common civic and household duties were discharged—well expressed in the saying of Cato, that it was 'better to be a good husband than a great senator'—which in early times nobly distinguished the Roman burgess, had now all but disappeared. Those hardy virtues—frugality, temperance, justice, and rectitude—which, combined with courage and energy, had given the strength to the nation that made it great, required for their permanence the social conditions out of which they sprang. But the class of peasant proprietors who had laid the foundations of Roman greatness were either extinct or no longer what they once had been. The victories of Rome abroad furthered rather than retarded that degradation. The long and distant wars made it more and more impossible for the soldier to be a good citizen or a successful farmer. The freedom and licentiousness of camp-life, the sweets of pillage and rapine, ever grew more pleasant to the Italian burgess and colonist; thus indolence, inaptitude, and spendthrift habits aided the greedy designs of the capitalists, and in most cases the paternal acres gradually slipped into the possession of the great landlords, who found it more profitable to turn them into pasture or cultivate them by gangs of slaves. The rise of the slave-system, though an inevitable result of foreign conquest, was, indeed, the most horrible curse that ever fell on ancient Rome; and the atrocities inflicted on its unhappy victims are far beyond the possibility of description. If the Italian farmer honourably strove to retain his small farm, he was exposed to the competition of the capitalists who shipped immense quantities of corn from Egypt and other granaries, where slave-labour rendered its production cheap, and of course he failed in the unequal struggle. Not less pernicious was the change that passed over the character of the rich. We have already shewn how the old Roman patricians lost their exclusive privileges, how the plebeians gradually acquired a full equality with them, and how the germs of a new social aristocracy originated, based on wealth rather than pedigree, and comprising both plebeians and patricians. During the fourth and third centuries B.C. the political power of this order immensely increased. In fact, the whole government of the state passed into their hands. Regarding themselves as the Roman community *par excellence*, and the poor burgesses as a mere *canaille*, whose wishes and interests were unworthy of a moment's consideration, they virtually relapsed into the exclusiveness of the ancient *populus*, with this difference for the worse, that their wealth, influence, and pride were a thousandfold greater than those of Coriolanus or Camillus. But far worse than even the nepotism and selfishness of the nobles was their ever-increasing luxury and immorality. When Rome had conquered Greece, and Syria, and Asia Minor, the days of her true greatness were ended. The wealth that poured into the state coffers, thence to be (really if not formally) distributed among the clique of nobles, the treasures which victorious generals acquired, enabled them to gratify to the full the morbid appetites for pleasure engendered by exposure to the voluptuousness of the East. Such results were, it is true, not brought about in a day, nor without a resolute protest on the part of individual Romans. The attitude of Cato Major towards the Hellenising tendencies of his brother nobles was doubtless patriotic, and posterity has been generous in its laudation of his antique virtue; but Cato Major was nevertheless only a political fanatic and incarnate anachronism. So long as Rome chose to subdue foreign nations, and to hold them by the demoralising tenure of conquest—that is, as mere *provinces*, whose inhabitants, held in check by a fierce and unscrupulous soldiery (like the Kabyles of Algeria by the French, or, until recently, the Hindus by the British), neither possessed political privileges nor dared cherish the hope of them—it was morally impossible for the citizens, either at home or abroad, to resume the simple and frugal habits of their forefathers. After Cato's time, things grew worse instead of better, nor from this period down to the final dissolution of the empire was a single

radical reform ever permanently effected. The momentary success of Tiberius, and of his far abler brother Caius, Gracchus, in their desperate and revolutionary attempts to prevent the social ruin of the state, by breaking down the powers of the senate, redistributing the domain lands, reorganising the administration, and partially restoring the legislative authority of the popular assemblies, hardly survived their death; and the reaction that ensued proved that the senate, like the Bourbons, could learn nothing from adversity, and that the rabble of the city were incapable of elevation or generosity of political sentiment. Henceforth, the malversation of the public money by prætors and quæstors became chronic, and the moral debauchery of the mob of the capital by the largesses of ambitious politicians and the vile flattery of demagogues, complete. The old Roman faith, so deep, and strong, and stern, disappeared from the heart. The priests became Pharisees, the nobles 'philosophers' (*i.e.* unbelievers), their wives practisers of oriental abominations under the name of 'mysteries;' while the poor looked on with unmeaning, yet superstitious wonder at the hollow but pompous ceremonies of religion.

FROM THE DESTRUCTION OF CARTHAGE TO THE TERMINATION OF THE REPUBLIC.

We have already alluded to the wars waged in Spain during the first half of the second century B.C. The humane and conciliatory policy pursued towards the natives by Tiberius Sempronius Gracchus, father of the ill-fated tribunes, brought about a peace, 179 B.C. that lasted 25 years; but in 153 B.C. a general rising of the Celtiberians took place, followed by another on the part of the Lusitanians of Portugal. The struggle maintained by these gallant barbarians against their mighty oppressor lasted, with intervals of peace, for the space of 20 years, but ended, in spite of gleams of brilliant success, as such contests invariably do, in the final overthrow of the undisciplined and uncivilised combatant. All the valour of the shepherd-warrior, Viriathus, even if the assassin's steel had spared his life, would not have prevented the annexation of Lusitania to the Roman empire, nor did the unsurpassable heroism of the besieged Numantines avail to baffle the military skill of the younger Scipio.

Towards the conclusion of the Numantine War occurred the first of those horrible social outbreaks known as 'servile' or 'slave' wars, which marked the later ages of the republic. The scene of the revolt was Sicily (134 B.C.), where the system was seen at its worst. Its leader was one Eunus, a Syrian, who, mimicking his native monarch, took the title of King Antiochus. The suddenness and barbaric fury of the affair for a time rendered all opposition impossible. The slaves overran the island, like demoniacs let loose; and routed one Roman army after another. But a slave insurrection has no aim beyond immediate revenge, and when the first wild paroxysms of ferocity are over, it becomes powerless, more even from a moral than a physical exhaustion, and can be quelled with ease. In 132 B.C. the consul Publius Rupilius restored 'order' in the island. In the East, fortune continued to smile upon the Roman arms. Attalus III., Philometer, a villainous despot of the true oriental stamp, who massacred or poisoned every one that ventured to give him advice, dying 133 B.C. bequeathed his client-kingdom of Pergamus to its protector—Rome; and after a fierce struggle with an ambitious pretender called Aristonicus, the Romans obtained possession of the splendid bequest, and formed it into the province of Asia, 129 B.C.

We may here enumerate the different provinces into which the Roman senate divided its foreign conquests in the order of their organisation. 1. Sicily, 241 B.C.; 2. Sardinia and Corsica, 238 B.C.; 3. Hispania Citerior, and 4. Hispania Ulterior, 205 B.C.; 5. Gallia Cisalpina, 191 B.C.; 6. Macedonia, 146 B.C.; 7. Illyricum, *circa* 146 B.C.; 8. Achaia (or Southern Greece), *circa* 146 B.C.; 9. Africa, (*i.e.* the Carthaginian territory), 146 B.C.; 10. Asia (kingdom of Pergamus), 129 B.C. A few years later, 118 B.C. an 11th was added by the conquest of the southern part of Transalpine Gaul, and was commonly called, to distinguish it from the rest of the country, 'the Province;' hence the modern *Provence*.

In Africa, the overthrow of Jugurtha, 104 B.C. by the consul Marius, added yet further to the military renown and strength of the republic. Meanwhile, from a new quarter of the world, a gigantic and unforeseen danger threatened the Roman state. North of the Alps there had long been roaming in the region of the Middle Danube an unsettled people called the *Cimbri*, whose original home was probably the north-west of Germany. They first came into collision with the Romans in Noricum, 113 B.C.; after which they turned westward, and poured through the Helvetian valleys into Gaul, where they overwhelmed alike the native tribes and the Roman armies. At Arausio (Orange) on the Rhône, 105 B.C. a Roman army of 80,000 was annihilated; but instead of invading Italy, the barbarians blindly rushed through the passes of the Pyrenees, wasted precious months in contests with native tribes of Spain as valiant and hardy as themselves, and gave the Romans time to recover from the effects of their terrible defeat. Marius, who had just returned from his Numidian victories, was reappointed consul; and at Aqua-Sextiæ (Aix, in Dauphiné), he literally exterminated the dreaded foe, 102 B.C. Next year, near Milan, the same doom befell another northern horde—the Teutones, who had accompanied the Cimbri in their irruption into Spain; but on their withdrawal, had parted from their associates in Gaul, forced their way back through Switzerland, and descended into Italy by the Tyrolese valleys. In the same year a second insurrection of the slaves in Sicily, which had reached an alarming height, was suppressed by the consul Marcius Aquillius.

For the next ten years the internal history of Rome is a scene of wild confusion and discord. Marius, an admirable soldier, but otherwise a man of mediocre talents, and utterly unfit to play the part of a statesman, was the idol of the poor citizens, who urged him to save the state from the rapacious misgovernment of the rich. His attempts were pitiable failures; the brave honest soldier fell into the hands of unscrupulous demagogues like Glaucia and Saturninus, and sullied the laurels he had won in war by associating with men who did not hesitate to assassinate a political opponent. Not less fruitless was the wise and

patriotic effort of Livius Drusus—'the Gracchus of the aristocracy'—to effect a compromise between the privileges of the rich and the claims of the poor. The oligarchic party among the former, *i.e.* the senate, were enraged by his proposition to double their numbers by the introduction of 300 equites; the latter by his offer to the 'Latins' and 'Allied Italians' of the Roman franchise. Drusus fell, 91 B.C. by the steel of a hired bravo. Hardly a year elapsed before the whole of the subject 'Italians'—*i.e.* the Marsians, Pelignians, Marrucinians, Vestinians, Picentines, Samnites, Apulians, and Lucanians—were up in wild and furious revolt against Rome; and, though the rebellion was crushed in less than two years by the superior generalship of Marius, Sulla, and Pompeius Strabo (father of the 'great' Pompey), the insurgents virtually triumphed; for the promise which Drusus had held out to them of the 'Roman franchise,' was made good by the *Lex Plautia Papiria*, 89 B.C. Yet the cost was terrible. It is calculated that 300,000 men—the flower of Rome and Italy, perished in the struggle; nor was even this tremendous holocaust sufficient to appease the Fates. The jealousy that had long existed on the part of Marius towards his younger and more gifted rival, Sulla, kindled into a flame of hate when the latter was elected consul, 88 B.C. and received the command of the Mithridatic War—an honour which Marius coveted for himself. Then followed the fearful years of the 'civil wars' between the two chiefs, 88–82 B.C. when blood was spilt like water; and proscriptions and massacres were the order of the day. It was a 'Reign of Terror'—surpassing even the excesses of the French Revolutionists. Sulla, the leader of the aristocracy, which was nominally the party of order, triumphed, but the ferocious energy displayed by the revolutionists convinced him that the 'Roman franchise' could never again be safely withdrawn from the 'Italians;' and Roman citizens, therefore, they remained till the dissolution of the empire; but, on the other hand, his whole legislation was directed towards the destruction of the political power of the burgesses, and to the restoration to the senatorial aristocracy and priesthood of the authority and influence they had possessed in the times of the Punic Wars. That his design was to build up a strong and vigorous executive, cannot admit of doubt, but the rottenness of Roman society was beyond the reach of cure by any human policy.

Abroad, the Roman army continued as before to prove irresistible. About 13 years after the extermination of the northern barbarians, the Cimbri and Teutones, or in 88 B.C. broke out in the far East the first of the 'Mithridatic Wars,' which, like the Samnite, Punic, and Macedonian Wars, were three in number. Begun by Sulla, 88 B.C. they were brought to a successful close by Pompey, 65 B.C. although the general that had really broken the power of Mithridates was Lucullus. The result was the annexation of the sultanate of Pontus, as a new province of the Roman republic. Next year, Pompey marched southward with his army, deposed Antiochus Asiaticus, king of Syria, and transformed his kingdom also into a Roman province, while in the following year (63 B.C.) he reduced to a state of dependence Phœnicia, Cœle-Syria, and Palestine, storming Jerusalem, and, to the horror of the Jews, violating their Holy of Holies.

But what a terrible commentary it is upon these glittering triumphs to remember that during the same year there was hatched at Rome the Conspiracy of Catiline, which, if it had not been crushed by an extraordinary display of decision on the part of the consul Cicero, would have placed at least the city of Rome at the mercy of a crew of aristocratic desperadoes and cut-throats. One thing now becomes particularly noticeable, viz. the paralysis of the senate—that 'governing board' as Mommsen calls it, that had once been the mightiest power in the world. Henceforth the interest as well as the importance of Roman history attaches to individuals, and the senate sinks deeper and deeper into insignificance, until at last it becomes merely the obsequious council of the emperors. The famous coalition of Crassus, Pompey, and Cæsar (known as the *First Triumvirate*), which dates from the year 60 B.C. proves how weak the government and how powerful individuals had become; and the same fact is even more dismally brought out by the lawless and bloody tribunates of Clodius and Milo (58-57 B.C.), when Rome was for a while at the mercy of bravos and gladiators. The campaigns of Cæsar in Gaul (58–50 B.C.), by which the whole of that country was reduced to subjection; his rupture with Pompey; his defiance of the senate; the civil wars; his victory, dictatorship, and assassination; the restoration of the senatorial oligarchy; the Second Triumvirate, composed of Antony, Lepidus, and Octavian; the overthrow of the oligarchy at Philippi; the struggle between Antony and Octavian; the triumph of the latter, and his investment with absolute power for life (29 B.C.), which put an end at least to the civil dissensions that had raged so long (and was therefore so far a blessing to the state), are among the most familiar and picturesque passages in Roman history.

THE ROMAN EMPIRE.

When Augustus had gathered up into himself all the civil and military powers of the state, its political life was at an end; henceforth the voices of the citizens are dumb, and only the rude clamour of the legions or the Prætorians is heard, as emperors rise and fall. It is, indeed, amazing to consider how long brute-force managed to keep under the elements of anarchy and dissolution in the empire; but it must be remembered that it was the East that ruined Rome, and not Rome the East. Even in the worst days of the republic, the Roman administrators of the provinces were acknowledged to be less unjust, ravenous, tyrannical, and cruel than the native princes and sultans; and the servile myriads of Asia Minor and Syria witnessed the deposition of their dynasts without a shadow of regret—sometimes even with a cry of joy. The Romans had, therefore, comparatively little difficulty in retaining and even increasing their eastern conquests, while the superior discipline of their well-trained soldiery enabled them to repel and subdue even the intrepid barbarians of the North, though singly these were probably more gallant men than the rank and file of the imperial legions. But no military prowess, however great, will, beyond a certain time, serve to keep a nation alive that is otherwise moribund; and even Christianity, with all its antiseptic and revivifying influences,

came too late to reanimate the national life of the empire. When Augustus died (14 A.D.), the Roman empire was separated in the north from Germany by the Rhine, but it also included both Holland and Friesland; from about the lake of Constance it ran along the Danube to Lower Mœsia, though the imperial authority was far from being firmly established there. In the east, the boundary-line was, in general, the Euphrates; in the south, Egypt, Libya, and, in fact, the whole of Northern Africa, as far west as Morocco, and as far inland as Fezzan and the Sahara, acknowledged Roman authority. The Roman franchise was extended to transmarine communities, and in the western provinces especially it became quite common. To keep this enormous territory, containing so many different races, quiet, an army of 47 legions and as many cohorts was maintained, most of whom were levied among the newly admitted burgesses of the western provinces. The reigns of Tiberius, Caligula, Claudius, Nero, Galba, Otho, and Vitellius, present little of any moment in a general survey of the external history of the empire, though the chronicle of their lives—those of Galba and Otho, perhaps, excepted—has all the horrible and revolting interest that attaches to records of conspiracy, assassinations, poisonings, massacres, lust, debauchery, and delirious madness. The most notable incident of this period is probably the concentration of the Prætorian Guards in the vicinity of Rome during the reign of Tiberius, which Niebuhr even pronounces 'the most momentous event in the history of the emperors;' and not without reason, for, until their dissolution by Diocletian, they were the real sovereigns of the empire. In Nero's time, Armenia was wrested from the Parthians, and only restored to them on condition of their holding it as a 'fief' of the empire; the Roman authority in England was likewise extended as far north as the Trent; and a great rebellion in Gaul (not, however, against Rome, but only against Nero), headed by Julius Vindex, a noble Aquitanian and a Roman senator, was crushed by T. Virginius Rufus, the commander of the Germanic legions. During the profound peace that the empire had enjoyed everywhere, except on its frontiers—since the usurpation of the imperial authority—its material prosperity had greatly increased. The population was more than doubled; the towns became filled with inhabitants, and the wastes were peopled, wherever, at least, the Publicani, or farmers-general, had not got the land into their rapacious hands; but the immorality of the rich, especially among the females, became yet worse than before, and virtuous men actually preferred concubinage with a slave, to marriage with a free-born Roman lady.

With the accession of Vespasian, a better era commenced, which, if we except the reign of Domitian, continued uninterrupted for a space of 100 years, comprising the reigns, besides those mentioned, of Titus, Nerva, Trajan, Hadrian, Antoninus Pius, and Marcus Aurelius. These were all men of fine and honourable character—some, as, *e.g.* Trajan, Hadrian, and Marcus Aurelius, were really illustrious rulers, worthy of the best days of Rome. Under all of them, the provinces were better governed, the finances better administered, and public morals wonderfully improved. Nothing, indeed, is more clear than that, after the time of Vespasian—that *restaurator rei publicæ*, as he has been justly called—the worst days of Rome (in a moral point of view) were over. Never again did she give way to the horrible sensuality, gluttony, and profligacy of the first century. Bad emperors she had as well as good, but they did not again succeed in corrupting their age. Blood, indeed, was shed freely enough, hostilities on the frontiers were as frequent as ever, and the violence and selfishness of military ambition were things that paganism did not seek, and had not the power, to quell; but the wild abyss of anarchy into which the empire latterly fell is less dreadful than the saturnalia of vice that filled the soul of Juvenal with indignation in the days of Domitian. How far the change was due to the influence of the ever-extending Christian religion, it is impossible to tell; but that Christianity did send a reinvigorating breath of new life through the old decaying body of the state is beyond all dispute, and is written on the very face of the history of the first centuries. The chief military events, from the days of Vespasian to those of Marcus Aurelius, are the final conquest of Britain by Agricola; the final conquest of the Dacian monarchy, the victorious invasion of Parthia and of Northern Arabia, and the conquest of the valley of the Nile as far south as Upper Nubia, by Trajan; the chastisement of the Marcomanni, Quadi, Chatti, &c. by Marcus Aurelius. Hadrian's long rule of 21 years was peaceful, but is memorable as the most splendid era of Roman architecture. The reigns of Commodus, Pertinax, and Didius Julianus were insignificant, except in so far as they shew us the wretched confusion into which the administration of affairs inevitably fell when bad, or hated, or feeble rulers were invested with the purple. Able generals, respectable jurists, honourable senators are not wanting, but their influence is personal and local. The reign of Septimius Severus (193–211 A.D.) is memorable as marking the first real change in the attitude of the emperors towards Christianity. The new religion was beginning to make itself felt in the state; and Severus, who was a Carthaginian, while his wife was a Syrian, may have felt a special interest in a faith that, like themselves, was of Semitic origin. At all events, it was taken under the imperial protection, and began to make rapid way. Caracalla and Elagabalus are perhaps the worst of all the emperors in point of criminality; but the mad brutality of the one and the monstrous debauchery of the other were purely personal affairs, and were regarded with horror by the citizens of the empire. The reign of Alexander Severus is marked by the downfall of the Parthian dynasty of Persian kings, and the rise of the native Sassanidæ, which, as Niebuhr observes, 'was one of the unluckiest things that could have happened to the Roman empire,' for the latter proved far more formidable enemies than the Parthian rulers. After the assassination of Severus (235 A.D.) followed a period of confusion, bloodshed, and general mismanagement. The names of Maximin, Maximus, Balbinus, Gordianus, and Philip recall nothing but wretched quarrels, often ending in assassination. Then followed 'the beginning of the end.' The whole of Europe beyond the Roman frontier—the mysterious North—began to ferment. The Franks

shewed themselves on the Lower Rhine, the Swabians on the Maine; while the Goths burst through Dacia, routed the forces of Decius, and slew the emperor himself at Mount Haemus, crossed the Euxine, and ravaged the whole northern coast of Asia Minor. A little later—during the reigns of Valerian, Gallienus, and the so-called *Thirty Tyrants*—the empire is nothing but a wild distracted chaos, Franks, Alemanni, Goths, and Persians rushing in from their respective quarters, like vultures scenting prey. The Goths swept over the whole of Achaia, pillaging and burning the most famous cities—Athens, Corinth, Argos, &c.; while the Asiatic hordes of Sapor committed even greater havoc in Syria and Asia Minor; and but for the courage and skill of Odenathus, husband of Zenobia, who had built up a strong independent kingdom in the Syrian desert, with Palmyra for its capital, might have permanently possessed themselves of the regions which they merely devastated. With Claudius Gothicus (268–270 A.D.), the fortunes of the empire once more begin to brighten. By him, and his successors Aurelian, Probus, and Carus, the barbarians of the north and north-west, as well as the Persians in the east, were severely chastised. Nay, when Diocletian obtained the purple (284 A.D.), it seemed as if the worst were over, and the empire might still be rescued from destruction; but his division of the empire into East and West, with separate *Augusti* and assistant *Cæsars*—though it sprang from a clear perception of the impossibility of one man administering successfully the affairs of so vast a state—led to those labyrinthine confusions and civil wars, in which figure the names of Maximian, Constantius, Galerius, Maxentius, Maximin, Licinius, and Constantine, and which were only brought to a close by the surpassing genius of the last-mentioned. Under Constantine (324–337 A.D.), as all the world knows, occurred the greatest revolution in Roman history since the birth of Christ, namely, the establishment of Christianity as the religion of the state. He also transferred the seat of government from Rome to Byzantium on the Bosporus, where he founded a new city, and named it after himself. But no sooner was the great statesman dead than the mutinous discords that he had kept under by the vigour of his rule, broke loose; the empire underwent a triple division among his sons; and though Constantius, the youngest, ere long became sole ruler, he failed to display the genius of his father, and in his repeated campaigns against the Persians reaped nothing but disaster and disgrace. But the political fortunes of the empire now possess only a secondary interest; it is the struggles of the Christian sects and the rise of the Catholic Church that mainly attract the attention of the historian. There, at least, we behold the signs of new life—a zeal, enthusiasm, and inward strength of soul that no barbarism could destroy. Christianity came too late to save the ancient civilisation, but it enabled the Roman world to endure three centuries of utter barbarism, and afterwards to recover a portion of the inheritance of culture that it once seemed to have lost for ever. Julian's attempt to revive paganism was a lamentable anachronism, but his efforts, when governor of Gaul under his kinsman Constantius, to repel the incessant incursions of the Franks and Alemanni, displayed a fine valour and generalship, and were crowned with success. The judgment of the poet Prudentius on the Apostate is that of posterity: *Perfidus ille Deo, sed non et perfidus orbi.* But after the death of Julian, the signs of the approaching dissolution of the empire became more unmistakable. Yet the great state was, if we may so speak, loath to die; and again and again in her death-agony, she put forth a momentary strength that amazed her foes, and taught them that even the expiring struggles of a giant were to be feared. Valentinian, Gratian, and Theodosius were rulers worthy of better times. The last-mentioned is even known to history as the 'Great.' But they fought against destiny, and their labour was in vain. Already swarms of ferocious Huns from the east had driven the Goths out of Dacia, where they had long been settled, and forced them to cross the Danube into the Roman territory, where the cruelty and oppression of the imperial officers goaded the refugees into insurrection; and in their fury, they devastated the whole east from the Adriatic to the Euxine. Theodosius indeed subdued and even disarmed them; but he could not prevent them from drawing nearer to the heart of the empire, and already they are found scattered over all Mœsia, Servia, and Northern Illyricum. Hardly was Theodosius dead when they rose again, under their chief, Alaric, against Honorius, emperor of the West. Rome was saved (for the moment) only by the splendid bravery and skill of Stilicho, the imperial general; but after his assassination, the barbarians returned, sacked the city (410 A.D.), and ravaged the peninsula. Three years earlier, hordes of Suevi, Burgundians, Alemanni, Vandals, and Alans burst into Gaul (where the native Celts had long been largely Romanised in language and habits), overran the whole, and then penetrated into Spain, where a Vandal empire was rapidly set up. It is utterly impossible (within our limits) to explain the chaotic imbroglio that followed in the West—the struggles between Visigoths and Vandals in Spain, between Romans and both, between usurpers of the purple and loyal generals in Gaul—the fatal rivalries of those otherwise noble and gifted men—Boniface, governor (*comes*) of Africa, and Ætius, governor of Gaul—which led to the invasion of Africa by Genseric, and its devastation from the Strait of Gibraltar to Carthage (429 A.D.). While such was the state of affairs in the West, things were not a whit better in the East. There the Huns, from mere love of havoc, had reduced vast regions to an utter desert; for nearly 50 years, indeed, the little ferocious demons had rioted in destruction. At last, a trivial quarrel sent them into Gaul; but somewhere in Champagne, they were routed with great slaughter (451 A.D.) by a combined force of Visigoths, Burgundians, Franks, and Roman mercenaries, under Ætius and Theodoric, king of the Goths; and in spite of their successful invasion of Italy in the following year, their strength was permanently broken, and henceforth they play an insignificant part in history. But Ætius, the only man who could have decently propped up the wretched ruin called the Western Empire, was assassinated by his contemptible sovereign Valentinian, whose own outrages led to his murder too; while his widow, Eudoxia, to be revenged on his murderer

and successor, Petronius Maximus, invited Genseric, the 'scourge of God,' over from Africa, and exposed Rome to the horrors of pillage for 14 days. Ricimer, a Sueve, next figures as a sort of governor of the city, and what relics of empire it still possessed; for Gaul, Britain, Spain, Western Africa, and the islands in the Mediterranean, had all been wrested from it. While Majorian—the last able emperor—lived, Ricimer's position was a subordinate one, but, thenceforth, the western emperor merely was an emperor in name—a *roi fainéant*—while the real sovereignty was exercised by this Suevic *Maire au Palais*, who was succeeded in his functions by the Burgundian King Eunobald, and the latter, again, by Orestes, in whose time the final catastrophe happened, when Odoacer, placing himself at the head of the barbarian mercenaries of the empire, overthrew the last, and the most ridiculous, occupant of the throne of the Cæsars (476 A.D.), who, by a curious coincidence, bore the same name as the mythical founder of the city—Romulus.

ROMAN LANGUAGE AND LITERATURE.

The Latin language, as has been already noticed, is a member of the great family commonly called Indo-European, or Aryan (see LANGUAGE). It was primarily developed among the people who inhabited that part of Western Italy which lies between the rivers Tiber and Liris; and though the city of Rome stamped her name on the political institutions of the empire, yet the standard tongue of Italy still continued to be called the *Latin* language, *not* the Roman. As the Roman conquests extended, Latin spread with equal strides over the conquered countries, and was generally used by the educated classes in the greater part of Italy, in France, Spain, Portugal, Germany, and other Roman provinces. But even in Italy itself, and in Latium, there seem to have been two forms of the language, differing very considerably from each other—a polished dialect and a rustic one. It was in the last years of the Republic and the first of the Empire that the polished language reached its highest point of perfection in the writings of Cicero, Horace, Virgil, and others. But by the influx of strangers, by the gradual decline of Roman feelings and Roman spirit, and by the intermixture of the classic forms with the dialects of the provinces, it became corrupted. Thus were formed the modern French, Spanish, Italian, and Portuguese.

For the first five centuries of their existence as a people, the Romans possessed no literature. A kind of rude poetry was cultivated from the earliest times, and was employed in such compositions as the *Hymn of the Fratres Arvales* (dug up at Rome in 1778), in the sacred songs to particular deities, in triumphal poems and ballads, in the *Fescennine Carols*, and other rude attempts to amuse or dupe an illiterate and vulgar audience. But it was not till they came in contact with the Greeks that the Romans began to develop their faculties in genuine literary compositions; and then, as was natural, their first productions were translations from, or imitations of, Greek writers. Livius Andronicus and Cneius Nævius (240 B.C.), the earliest Roman poets, seem to have been copyists of the Greek; as were also Fabius Pictor and Cincius Alimentus, the first Roman annalists, and who lived during the second Punic War. Between the second Punic War, however (202 B.C.), and the dictatorship of Sulla (81 B.C.), there arose a number of writers of no ordinary power, in whose hands the Latin language acquired force and flexibility, and whose works illustrate the native character of the Romans. Among these should be mentioned Ennius, the father of Roman poetry; Plautus, his contemporary, a man of rich comic genius; the elder Cato, the first prose writer of note; and Terentius, or Terence, a comic poet of a less rude style than Plautus, and whose first play was acted in the year 165 B.C.

The period from the dictatorship of Sulla (81 B.C.) to the death of Augustus (14 A.D.) is the Golden Age of Roman literature. Then flourished Cicero, undoubtedly the greatest as well as the most voluminous of Roman prose authors; Cæsar, whose brief *Commentaries* on his own campaigns are among the simplest and most compact of historical writings; his friend Sallust (born 68 B.C.), who has left us spirited accounts of the Jugurthine War and the conspiracy of Catiline; the didactic poet, Lucretius; his contemporary, Catullus, whose lyrical effusions are among the sweetest and most truly poetic things in the Latin language; and, not to mention a host of others, Virgil and Horace, the two chief classic poets of the Augustan age—the former the author of the celebrated epic poem, the *Æneid*, and if not an original, at least a graceful and pathetic writer; and the latter a sagacious and good-humoured observer of mankind, and the author of many odes, satires, and epistles. Somewhat later were Livy, the great historian of Rome, in 142 books, only thirty-five of which, however, have reached us; and Ovid, who ranks second to none of the Roman poets for ease and elegance.

Under the emperors, the Latin authors became more and more numerous, springing up in all parts of the Empire, and cultivating all departments. Out of the long list of authors intervening between the reign of Tiberius and that of Commodus, we may mention the poets Lucan and Silius Italicus; Martial, the writer of epigrams; Seneca, the Stoic philosopher, put to death by Nero; Quintilian, the rhetorician; Pliny, the celebrated natural historian, who was killed 79 A.D. by the great eruption from Vesuvius which destroyed the city of Herculaneum; Tacitus, the historian of the declining age of Rome; and Juvenal, whose satires reveal too horribly the immorality of the society in the midst of which he lived.

The host of petty rhetoricians, poets, &c. both Greek and Roman, who lived in the various cities of the Empire in the second, third, and fourth centuries, may be passed over. During these centuries, Christianity was overspreading the Empire, and drinking up all the intellect and enthusiasm of the various nations; and nothing more strikingly marks the decrepitude of polytheism at that time, as compared with the freshness of the new religion, than the contrast between the miserable verse-making, which seemed to be the only literary occupation practised in polytheistic circles, and the earnest and powerful writings of the Christian Fathers on those great theological topics which concerned the Divine nature and the everlasting destinies of man.

HISTORY OF THE MIDDLE AGES.

INTRODUCTION.

DURING the fifth century of our era, a succession of irruptions of tribes from the north overthrew the western portion of the Roman Empire, and shattered to pieces the organisation of its society. The mingling of these barbarians, as they were called, with the Roman or Romanised inhabitants of the various countries, produced for a time a chaotic confusion ; but as the amalgamation proceeded, a reorganisation of society under new forms began to shew itself, and those nationalities gradually emerged which, with greater or less modification, have continued to the present day. It is this reconstruction of society out of the newly infused barbaric elements, together with the fragments of the old civilisation, that forms the transition from the ancient world to the modern ; and the period during which the transition took place is called the 'Middle Ages,' the earlier and more chaotic portion being known as the 'Dark Ages.' It may conveniently be considered as extending from the dethronement of Romulus Augustulus (476 A.D.) to the end of the fifteenth century—the period of the 'revival of learning,' as it is called.

Society is always in a state of transition ; England under Victoria is very different from England under George I. But in such cases as this, the change is one of continuous growth ; whereas, in the transition from ancient civilisation to modern, there was a violent disruption of the continuity ; there was a disintegration and then a reorganisation. To understand rightly the nature of this mighty change, we require to take a brief survey of the state of the world immediately preceding it.

On the death of the Emperor Theodosius (395 A.D.), the Roman Empire was finally divided into two parts—the Latin Empire, or Empire of the West, the capital of which was Rome ; and the Greek Empire, or Empire of the East, the capital of which was Constantinople. The Latin Empire consisted of six *dioceses*—Italy, Gaul, Britain, Spain, Western Illyricum, and Africa ; the Greek Empire consisted of seven dioceses—the East, Egypt, Asia, Pontus, Thrace, Macedonia, and Dacia. These dioceses were again divided into provinces, and the administration of government was carried on by a multitude of functionaries in various grades of subordination—Prefects, Vicars, Consulars, &c. Though subject to one plan of civil government, the two empires presented many points of contrast. In the West, the Latin genius and habits predominated ; in the East, Greek habits of thought and feeling were more apparent. The Latin language, indeed, was the legal or official language over both empires ; but in the East, the general medium of communication, and the sole literary language, was the Greek.

But however different in physiognomy, dress, manners, and language the inhabitants of the various dioceses and provinces might be, society was everywhere, throughout both empires, divided into four grades or classes—the senatorial class ; the curiales or municipals ; the common people ; and the slaves. The *senators* formed a sort of aristocracy or peerage, with titles denoting various grades of nobility (*Nobilissimi*, *Illustres*, &c.). The *curiales* or *municipals* comprised those inhabitants of towns possessing landed property of a certain amount ; on them devolved the functions of magistracy in the various towns. The *common people* was composed of all freemen ranking below the curiales ; the greater portion consisted of free artisans. The *slaves* were a numerous class, and were either domestic servants in the more wealthy households, or rural slaves employed in agriculture.

Towards the close of the fourth century, the society of the Roman world was universally tending to corruption and decrepitude. Among the causes of this decay, the two principal seem to have been, the systematic oppression of the curiales by bad laws, and the universal prevalence of slave-labour. The curiales were compelled to undertake municipal office, and all deficiencies of revenue had to be made good by the general body ; nor did the laws permit them to escape from their hated position. The consequence was, that this most important section in every community—the middle or moderately wealthy class—became almost extinct. From the operation of the two causes, agriculture had sunk into the most miserable condition ; whole districts became deserted ; and at the beginning of the fifth century, there were lying untilled in Campagna the Happy, the most fertile district of the Roman domain, as many as 330,000 acres.

Amid the universal decay, however, with which the fabric of Roman society was thus afflicted, there was one element of vigorous and energetic life : this was the element of Christian ecclesiastical rule, independent of the course of civil procedure, and yet powerfully influencing it. The introduction and spread of Christianity gave an entirely new character to the ancient communities within the Roman Empire. The old paganisms, with their cruel rites, disappeared ; and, coming in their place, the beneficent doctrines of the Gospel, besides morally improving, stimulated the intellectual energies of mankind. As the accompaniment of this change, there had sprung up a new system of social organisation—that of the Christian Church, which was extended over the empire under the special administration of bishops and of pastors or clergy.

Beyond the pale of the organised society of the Roman world lay a great barbaric society, divided into two parts—the German or Teutonic half, geographically adjoining the Western Empire ; and the Slavonic or Scythian half, adjoining the Eastern Empire. The German barbarians were divided into a number of nations—Goths, Burgundians, Alemanni, Vandals, Franks, Angles,

Saxons, &c. The Slavonians, the ancestors of the modern Russians, Poles, and others, had their seats further east, and took less share in the events of medieval history. In the destruction which preceded the resurrection of modern European society, it was chiefly the western or Latin half of the Roman Empire that was involved, and the destruction was effected by the irruption chiefly of German nations, among whom the Goths were most prominent. The Gothic tribes were located, at the period when the movement began, in the extensive tract between the Vistula, the Danube, the Black Sea, and the Don, and were divided into Visigoths or Western Goths, and Ostrogoths or Eastern Goths.

The determining cause of the precipitation of the German races on the Latin Empire was, it is well known, the sudden invasion of Europe (375 A.D.) by the Mongolian or Kalmuck nation of the Huns. Subduing the Slavonic region of Europe, and establishing there a Hunnish Empire, which superseded that of its previous conquerors the Goths, these fearful Asiatic invaders produced a violent agitation among the Germanic peoples, and pressed them westward, as it were, in a mass —Goths, Vandals, Burgundians, Suevi, Alemanni, Franks, Angles, and Saxons, all together. The detailed narration of these agitations produced in Europe by the Huns, and of the consequent irruptions, protracted over a whole century, of the Germanic nations, sometimes in confederacy, and sometimes singly, into the provinces of the Western Empire, belongs to Roman history. It will be sufficient here to mention generally that the diocese of Gaul was overrun chiefly by Visigoths, Burgundians, and Franks; Spain, by Vandals, Suevi, and Visigoths; Africa, by Vandals crossing over from Spain; in Italy, successive invasions had left a deposit among the feeble native Italians, of Visigoths, Vandals, Huns, &c.; Britain, abandoned by its Roman garrison as early as 410, had become a prey to the Angles and Saxons.

As soon as this intermixture of the two societies —the Roman or civilised, and the Germanic or barbarian—had taken place, they began to act upon each other. Modern society, in short, is the perfected result of the incorporation of Roman with barbaric society; and it derives ingredients from both. From the barbarians were derived the love of personal liberty, and the sense of individual independence. From the Romans, on the other hand, were derived the forms of a regular and long-established civilisation. But more efficient still, as a means of acting on the barbarian conquerors, was the great institute of the Christian Church. No sooner were the invasions over, than the Roman clergy — on whom, in the state of civil disorganisation then prevailing, the duty of conducting negotiations between the conquered and the conquerors almost wholly devolved—exerted themselves to the utmost to obtain influence over the rude minds of the new lords of the soil. Their efforts were very successful. The barbarians regarded the clergy of their vassals with superstitious awe, and soon became enthusiastic converts.

The history of the reconstruction of civil society in the West may be divided into three periods—the Frankish Period, the Feudal Period, and the Period of National Monarchies. Our space prevents anything beyond a bare outline of the leading events.

I. THE FRANKISH PERIOD: 410–888 A.D.

The Franks, the Lombards, the Arabs, and the Greeks.

The Franks, a confederation of Low-German tribes, originally inhabiting the countries between the Lower Rhine and the Elbe, had, as early as 440, made conquests on the left bank of the Rhine. In 486 their leader, Clovis, or Ludwig (Louis)—who had been left by his father in possession of Tournay, in Belgium, and who was the true type of a young German warrior, brave, ardent, ferocious, and with long flaxen hair flowing down his back—made himself master of all Roman Gaul by one great victory gained over the Gallo-Romans at Soissons. He was then but nineteen years of age, but he seems to have already conceived the design of a Frankish monarchy. As a step to this end, though still a pagan himself, he obtained in marriage the Christian princess Clotilda, of the royal house of the Burgundians (493). Clotilda did her best to convert her heathen husband to her own faith. But though he yielded so far as to let the sons he had by her be baptised, he could not be persuaded to abandon his own gods. At length, while opposing (496) a host of new German adventurers, at a moment when the battle seemed to be going against him, Clovis vowed that if he obtained the victory, he would give up his idols, and worship the God of Clotilda. Accordingly, having repelled and subdued the invaders, he made open profession of the Christian faith, and caused himself to be publicly baptised, along with 3000 of his Frankish warriors, by Remigius, archbishop of Rheims.

After a series of wars and intrigues, Clovis overcame the Burgundians, who occupied the south-east of Gaul, and the Visigoths, who had established themselves in the south, and secured the supremacy of Gaul. In the year 507, he removed his capital from Soissons to Paris; and from that year may be dated the commencement of the Frankish monarchy.

The conquering Franks, comparatively a mere handful, dispersing themselves over the country, and seizing the best lands, constituted a class of landed proprietors. The Gallo-Romans were still permitted to be governed by the Roman laws; the Franks, Burgundians, and Visigoths had each their own code.

On the death of Clovis (511), his dominions were divided among his four sons; but after fifty years of quarrels and wars, the Frank Empire was again united (558) under Clotaire. A like division, followed by wars, poisonings, and other violent means, ending again in reunion, took place on the death of Clotaire, and was continually repeated throughout the bewildering history of the first Frankish dynasty—called the *Merovingian kings*, after Merowig, the supposed grandfather of Clovis. In the meantime, each monarch was becoming more cruel and debauched, and at the same time more weak and imbecile than his predecessor; and the real authority came to be wielded by an officer styled Mayor of the Palace, who was a sort of leader of the aristocracy attached to the court. At last, one of these, Pepin d'Heristal, attained such power as to be the virtual king; and the

nominal monarchs are styled in history the Rois Fainéans or 'Sluggard Kings.' Pepin was succeeded (714) in power by his son Charles, surnamed Martel. Charles's son, Pepin le Bref ('the Short'), put an end to the anomalous rule of the mayors of the palace, by shutting the puppet-king up in a monastery, and causing himself to be formally invested with the title of 'King of the Franks' (752). The dynasty founded by Pepin is known as that of the *Carlovingian kings.*

Before proceeding to sketch the occurrences that took place under that dynasty, it will be necessary to cast a retrospective glance at certain important events that had in the meantime altered the face of other parts of the conquered Roman world.

Lombard Invasion of Italy.—The Empire of the West had been extinguished in 476 by the Visigoths, who had left their settlements on the Danube, and penetrated into Italy as early as the beginning of the fourth century. Odoacer, who deposed the last emperor, had continued since that time to rule Italy, pretending, however, to derive his authority from the emperor of the East. In the meantime, the Ostrogoths had penetrated from the northern borders of the Black Sea, and, under their young hero-king, Theoderic or Dietrich, had established an Ostrogothic kingdom between the Black Sea and the Adriatic. Instigated by the Greek emperor Zeno, who wished to get rid of so powerful a neighbour, Theoderic now invaded Italy, took Ravenna, Odoacer's capital, put that monarch to death, and became himself king of Italy (493). Though illiterate, he was a man of large and enlightened views, and his conduct, during his long reign of thirty-three years, earned for him the name of 'Great.' But under his worthless successors, Italy fell into anarchy, and the Greek emperor sending his great general Belisarius, and then Narses, succeeded in wresting the country from its Gothic masters, and annexing it to the Empire of the East (553). Eighteen years before, Africa had shared the same fate, having been wrested from the Vandals by Belisarius. Thus, three of the ancient dioceses of the Latin Empire—Italy, Western Illyricum, and Africa—were incorporated with the Eastern Empire; while Gaul, Spain, and Britain remained in the hands of the barbarians.

It was while Italy was thus a dependency of Constantinople, and governed by an exarch residing at Ravenna, that it was invaded by the Lombards,* a German nation, settled since 527 in Pannonia on the Danube. Under their king Alboin, they took possession (568), with little resistance, of the northern part of the peninsula, and made Pavia their capital. The dominion they established was of the nature of a confederacy of dukedoms presided over by an elective sovereign. The centre and south of Italy remained subject to the exarchs of Ravenna; but the Lombards continued gradually to extend their sway southward at the expense of the exarchate. Among the Lombard kings may be mentioned Rothari (638–654), who caused a code of laws for Lombardy to be composed; and Luitprand (713–744), the most illustrious of all, eminent both in peace and war, and the friend of Charles Martel.

* Lango-bards, which may mean either Long-beards, or having long battle-axes; in the latter case the root, *bard* or *bart*, is the same as appears in hal*bert* and *part*isan.

The Arabic Conquests.—Arabia had never formed part of the Roman Empire, and though the Arabs were and are in every way a fine race of men, they had, about six centuries after Christ, sunk into a comparatively degraded condition. Suddenly, however, a man appeared, who was destined to restore the Arabic name, and to lead the Arabs into a career of unexampled glory. This was the famous Mahomet, or Mohammed Ibn Abdallah. Born at Mecca in 570 or 571, of the highest branch of the noble tribe of Koreish, to whom belonged the government of Mecca, and the guardianship of the *Kaaba*, or central temple of all Arabian worship, Mohammed lived to the age of forty without exciting much remark. It was in the year 613, that, at a meeting of his kinsmen, the chiefs of Mecca, he made the startling announcement that he had received a divine commission to reform the faith and practice of the whole Arabian nation. His account was, that, three years before, while he was holding the fast of the sacred Arabic month Ramadhan, alone in the desert, an angel had appeared to him, and told him that God had chosen him to be the prophet of the Arabs. This miraculous call he had kept secret at first; but gradually convinced of its genuineness, he had at length communicated it to his most intimate friends. His wife, Kadijah, had been his first convert; his relatives, Ali and Abubeker, had followed; and now he called upon all his other kinsmen and friends to acknowledge his authority, forsake their idols and their habits of unbelief and profligacy, and worship the one only true God, who had made the heavens and the earth, and who would judge the world at the last day.

The kinsmen of Mohammed laughed at him, and the Meccans denounced him as either a madman or an impostor. But he persevered in his design, and daily preached to all who would hear him the doctrines of a future life and of the unity of God. These doctrines, written down from time to time, were collectively known as the Koran—that is, the 'Reading,' and the religion itself was called *Islam*—that is, 'Resignation' or 'Submission,' *i.e.* to the will of God. (See MOHAMMEDANISM, HINDUISM, &c.)

Islam had made but little progress in Mecca, when Mohammed was obliged to flee from the city to save his life. He betook himself, with his disciples, to what is now Medina. The date of this flight, or *hejira*, as the Arabians call it—the 16th of July 622—has ever since been recognised in all Mohammedan countries as the commencement of the Mohammedan era.

At Medina, Mohammed was received with open arms. He was invested with the supreme command; and adapting his conduct to his new position, he began to propagate his religion with the sword. Tribe after tribe was subdued; and before the lapse of ten years, the whole peninsula acknowledged the sovereignty of Mohammed, and could boast of an unmixed population of *Moslems* or True Believers. Mohammed was preparing to disseminate Islam beyond the bounds of Arabia, when he was cut off by a fever at Medina (632).

The impulse communicated to the Arabian race by the enthusiasm of Mohammed did not cease with his death. The whole nation had been roused to an unexampled pitch of religious zeal, and were eager to continue the work which

Mohammed had begun. Accordingly, the reigns of the *Califs*—as the successors of Mohammed in the conjunct spiritual and temporal sovereignty of Arabia were called—were one long series of invasions, wars, and conquests, undertaken for the express purpose of adding new countries to the Mohammedan Empire. In the reign of Abubeker, the first of the califs, Syria and Mesopotamia were subdued by Arabic armies; and under his successor, Omar, Egypt was conquered, and the northern coast of Africa overrun as far as Tripoli. By these conquests, the limits of the Empire of the East were considerably curtailed. Nor was it only westward that the Arabians extended their victories; after several invasions, Persia was obliged to succumb. The seat of the califate was first at Kufa, on the Euphrates; but under the second dynasty, or *Ommiade* califs, it was transferred to Damascus.

The Mohammedan Empire attained its fullest extent in the reign of Walid I. the second of the Ommiade califs (705-715). Tarik ben Zaid, a Mohammedan leader in Africa, crossed over into Spain, landing at a spot afterwards named *Jibel Tarik*, or the 'Mountain of Tarik,' a name which has been corrupted by usage into *Gibraltar*. Tarik defeated the Visigothic king, Roderic, in a battle fought at Xeres de la Frontera, on the 19th of July 711, and thus established the dominion of the Arabs over Murcia, Granada, Andalucia, and other parts of Southern Spain. Meanwhile, other emirs of the calif Walid were extending his power in Asia. Bokhara, Turkestan, and other countries lying east of the Caspian, were rapidly subdued; and under one bold leader, the Arabians even penetrated into Northern India. In the califate of Soliman, the successor of Walid (715-717), the Greek Empire was still further weakened by the seizure of the greater portion of Asia Minor by the Arabs, who even proceeded to lay siege to Constantinople. The incompetence, however, of Soliman and his successors, Yezid II. and Hesham (720-743), arrested the progress of the Arabic conquests in the East.

In Spain, the emirs ('commanders') soon extended their dominion over the whole peninsula with the exception of the mountainous districts in the north, where a Gothic chieftain, Pelayo, was able to found the little Christian kingdom of the Asturias. The Arabs of Spain, or, as they now began to be called, the *Saracens* ('Eastern people'), next ventured on an incursion into Gaul (718); and in a few years their language and their religion prevailed over a large tract to the north of the Pyrenees, and 'the vineyards of Gascony and the city of Bordeaux were possessed by the sovereign of Damascus and Samarcand.' Even these limits, however, did not satisfy them. In the year 728, Abd-el-rahman, a Saracen of great abilities, was appointed by the calif to the emirship of Spain. Full of the conquering spirit of his race, he resolved that not only France, but all Europe, should be included within the sway of the Moslems. Accordingly, invading France (732) at the head of the largest Mohammedan army that had ever been assembled in Europe, he pushed on, carrying all before him, as far as the river Loire. Between Tours and Poitiers, however, his career was arrested by Charles Martel, Mayor of the Palace for the Frankish Empire, who in a bloody battle defeated and slew him in October 732.

Shortly after these events, a new dynasty (the Abbasides) seized on the califate, and the Saracens of Spain espousing the cause of the old dynasty, the Mohammedan power split into two—the Arabic Empire proper, stretching from India to the Atlantic shores of Africa; and the kingdom of Spain. The Abbaside calif, Al-mansur, transferred the capital of his empire to Bagdad, on the Tigris (753).

The Arabic invasions which we have thus narrated are not to be regarded as a mere series of violent or barbaric exploits that produced no good effects. No sooner were the first conquests over, than the believers in the Koran began to direct their energies towards the cultivation of the arts and sciences. The accession of the Abbasides to the califate was the epoch of a splendid intellectual outburst among the Arabs. Law, astronomy, mathematics, medicine, and philosophy, were studied with zeal at Bagdad, and in other cities of the califate; books were multiplied by native authors on all these subjects; and the best works in the Greek language were translated into Arabic. Architecture, and the arts of polished and luxurious life, had likewise their devotees; and the fertility of the Arabic mind displayed itself in numerous manufactures and inventions. Nor were the Arabs of Spain behind their brethren of the East in these respects: they not only embellished the land they had subdued by noble architectural edifices, but also introduced into it new trees, new fruits, and new processes in the arts. Cordova became a seat of Arabic learning, and a place celebrated for civilised magnificence. In short, were we to compare the Arabic invaders of the seventh and eighth centuries with our Celtic or Teutonic ancestors, we should certainly be obliged to assign the palm of superior culture to the former. It was the 'Dark Ages' everywhere in Europe, except in Spain.

The Franks—resumed.—The most important event in the reign of Pepin (752-768) was his laying the foundation of the temporal power of the papacy. The pope and the Lombards had quarrelled, and the former sought the help of Pepin, king of the Franks, the policy of whose family had always been to favour the interests of the church. Pepin responded to the call. Twice he invaded Italy, defeated Astolphus, and compelled the Lombards to cede all the territories they had taken in Central Italy. These territories were given up by Pepin, not to the Byzantine emperors, but to the popes themselves, or, according to the formal expression of the treaty, to 'the Holy Church of God and the Roman Republic.' The original deed by which the Frankish king thus conveyed over to the popes of Rome so large a portion of the lands of Central Italy has, unfortunately, been lost; but the dotation itself (756) is recognised as one of the most important transactions in the history of the modern world. It laid the foundation of the temporal power of the papacy.

Pepin's son and successor, Charlemagne (Ger. Karl der Grosse), was the most illustrious monarch of the middle ages, and in every respect a great man. In activity, in a craving desire to be ever doing something, he resembled Napoleon. From the affairs of his own household to the state of the markets or the monasteries in the most distant parts of his empire, he made himself acquainted with everything, intermeddled with everything.

He wearied out all about him by his astonishing powers of invention and labour, and the amount of work he exacted from them. His favourite place of residence was Aix-la-Chapelle, in the present Prussian province of the Lower Rhine. Wherever he was, he was usually surrounded by learned churchmen, whom he drew to his court from all quarters, and with whom he delighted to hold conversations on literary and other subjects. The man in whom he placed most confidence, and who, during the greater part of his reign, acted as his most intimate friend and adviser, was Alcuin, an Englishman by birth, and perhaps the most cultivated scholar of his time. Charlemagne gave him three abbeys, and employed him as a kind of prime minister, in all matters connected with the church or with the education of his subjects.

In the course of Charles's long reign of forty-six years, he carried out no less than fifty-three expeditions, most of which he commanded in person. Eighteen of these were against the fierce pagan nations of Germany, especially the Saxons, who, after much bloodshed, and being repeatedly baptised by thousands at Charles's order, were at last reduced to submission and the profession of Christianity. Charles continued to act, as his father had done, as the patron and defender of the popes against the Lombards, who were again assailing the Roman territory. Called upon by Pope Adrian I. he crossed the Alps (773), defeated the king of the Lombards, shut him up in a monastery, and assumed himself the Lombard crown. At the same time, he confirmed the donation of his father, Pepin, whereby all those portions of Central Italy that had belonged to the Greek exarchate, as well as certain towns and cities of the Lombards, were bestowed on the papal see; in return for which act of generosity, the pope acknowledged him as Patrician of Rome, and Suzerain of Italy, with the right of ratifying the elections of the popes. Thus, almost at the beginning of his reign, Charles found himself master of Italy. The Lombards, however, especially those of the duchy of Benevento, continued to give him some trouble; and it required several subsequent expeditions to subdue them.

Charlemagne led or sent seven expeditions against the Arabs of Spain, adding portions of Northern Spain to the Frankish Empire. In returning from the first of these expeditions (778), his army was defeated by the Saracens and Basques in the famous battle of Roncesvalles, the subject of so many legends.

The general result of all the wars and conquests which we have described was, that by the year 800, Charlemagne, who had inherited from his father, Pepin, a kingdom scarcely equal to all Gaul, found himself lord of an empire as large as the ancient Roman Empire of the West, and extending from the Ebro, in Spain, to the Oder and the Baltic, and from the coasts of Brittany to the Elbe and the Save. That year may be selected as the climax of his reign, as in it he visited Italy in great state, and was solemnly crowned 'Emperor of the West,' by Pope Leo III., the successor of Adrian I., with the title of 'Carolus I., Cæsar Augustus.' His power being thus confirmed, all the world hastened to pay him homage. The Arabian calif himself, the celebrated Haroun al Raschid, the fifth of the Abbaside dynasty, exchanged courtesies with his great Christian brother of the West, sending him, among other presents, an ape, an elephant, and a curious clock which struck the hours.

Up to the time of Charlemagne, the Romans had in a vague way regarded the Greek emperor as the true monarch of Rome; but when Constantine VI. was deposed by his mother Irene, who put out the eyes of her son, and reigned in his stead, it was thought a good opportunity to throw off the authority of the Eastern ruler, and the greatness, as well as the services of Charlemagne pointed him out as the right man for the vacant imperial dignity. Freeman, in his *General Sketch of European History*, points out that Charlemagne was always considered, in his own time, the successor of Constantine.

The great monarch died at Aix-la-Chapelle, in January 814. His son and successor, Louis le Débonnaire ('the Gentle'), was unable to manage the vast empire, and began to partition it among his sons during his lifetime. This led to quarrels and civil war; and after Louis's death (840), his three surviving sons came to a formal agreement at Verdun (843), and divided the empire among them. Lothaire received the kingdom of Italy, including Switzerland, Provence, and Lorraine; Louis the German, the kingdom of Germany; and Charles, styled the Bald, the kingdom of France. Charles is thus the first king of modern France; his ancestors having been kings of 'the Franks.'

But the process of dismemberment did not stop here; from the incapacity of the sovereigns, the local dukes and chieftains became virtually independent; and in the course of forty years after the treaty of Verdun, each of the three kingdoms was broken up into fragmentary states, having little or no connection with one another. Charles the Fat, the son of Louis the German, contrived, amid the universal anarchy, to get possession of the sovereignty of France, in addition to that of Germany and Italy (884), and thus momentarily reunited the empire of Charlemagne. But he was soon deposed, and died (887), and with him ended the line of the Carlovingian emperors.

Church History.

Origin of the Monastic System—Separation of the Greek and Latin Churches—Rise of the Papacy.—The practice of religious retirement was of great antiquity, being known among the heathen and the Jews. Among Christians in the East, it had become a prominent usage as early as the middle of the third century, having spread first from Egypt. To regulate the abuses of the practice, St Basil, bishop of Cæsarea, established a model monastery in Pontus, and framed a set of regulations for the government of such institutions in general. This code, or Rule of St Basil, was extensively adopted throughout the East, and imparted to monastic life the form in which it was introduced into the West. At first, monks were generally laymen, but in time they all belonged to the priestly order, and came under vows of perpetual chastity and of submission to the higher ecclesiastical authorities. The monastic system received its most perfect organisation from St Benedict, an Italian who formed a monastery on a new and severe rule. In addition to the usual monastic vows, this rule included that of unquestioning obedience to superiors, and the novel

feature of industrious occupation. Agriculture was especially recommended, and in the middle ages the Benedictine monks were the best husbandmen in Europe. Before the death of St Benedict (543), his Rule had found its way into every part of Europe. The clergy now went in crowds into the monasteries, and monks took holy orders in the church. Clergymen who thus lived under *Rule* in a monastery were called the *regular* clergy; while bishops and parish priests were distinguished as the *secular* clergy, from their living in the world.

The Eastern and Western, or, as they are also called, the Greek and Latin Churches, began early to manifest different tendencies. The main doctrines held by both as orthodox were the same; but in the West a belief in purgatory seems to have prevailed as early as the sixth century, whereas the Greek Church never admitted it. The Latin Church began also to enforce the celibacy of the clergy, while the Greek permitted them to marry; and in the West the use of carved images was encouraged as an aid to devotion, a practice which the Greek Church utterly condemned.

There was a still greater difference in their external relations. The Greek Church continued to retain its original connection with and subjection to the civil power. But the disruption of all civil authority in the Western Empire threw an immense sway into the hands of the Latin clergy. The individual bishops at first exercised this sway without control. But in the end, the whole came to be organised into a system, the centre of which was the Roman pontiff. On the overthrow of the Western Empire, the very position of the bishop of Rome, as the first personage in what had been the capital of the world, would naturally invest him with great influence, and make him be looked up to for counsel and direction. The moral power thus arising was soon converted into a right, and a theory of supremacy was set up, claiming for the bishops of Rome the 'power of the keys,' as the successors of St Peter. It took centuries, however, to turn this theory into a fact; and it was not till the papacy of Nicholas I. (858-868) that the Frankish clergy submitted to the authority of the Romish see. The universal primacy of the Roman pontiffs in the West was from that date established. About the same time, the Latin and Greek churches came to a decided rupture. Photius, patriarch of Constantinople, had annexed the newly converted Bulgarians to his patriarchate. Nicholas claimed them as belonging to the Roman see, and excommunicated Photius (862); and Photius retaliated by excommunicating the pope, and declaring the creed of the Western Church to be in some points heretical.

II. THE FEUDAL PERIOD: 888–1300 A.D.

History of the West.

During the ninth and tenth centuries, there occurred the irruption of two invading races—the Magyars or Hungarians, and the Normans. The Magyars, a people of the same family of nations as the Turks, leaving their native region to the north of the Caspian, moved gradually westward till, about the year 889, under a chief of the name of Arpad, they settled on the Danube, and subjugating the Slavonians round about, formed the kingdom of Hungary—a kingdom the ruling caste of which was the Magyar invaders, and the subject caste the native Slavonians. From that time forward, the Hungarians were a formidable power in Europe.

The Normans.—The Scandinavians had continued in their primitive condition, under a multitude of independent and equal chiefs, until Harold Haarfager, subduing the neighbouring petty kings, succeeded in making himself monarch of all Norway (870–895). By a similar process, about the same time, Sweden and Denmark were formed into kingdoms. Many of the dispossessed chiefs, rather than submit to the new rule, took to a life of roving adventure. A band of Swedes, led by Ruric, penetrated into the very heart of Russia, and there established the Grand Dukedom of Muscovy, which constituted the beginning of the power of Russia. The Norwegian and Danish adventurers, known as Vikings, betook themselves to their ships, and became the terror of the populations along the coasts of Western Europe. Some of them settled in Iceland; others conquered the Shetland and Orkney Islands, the Isle of Man, and parts of the coasts of England, Scotland, and Ireland; and even ravaged the coasts of France and the Mediterranean, where they were known as *Normans* or 'Northmen.' One of these bands, under their chief, Rolf or Rollo, established themselves (898) at Rouen, on the Seine, and compelled (912) the French king to cede to Rollo, as a dukedom, the territory thenceforward called Normandy. Rollo married the daughter of the French king, and embraced the Christian religion; and his companions, intermarrying also with the French, became the progenitors of the French-Norman race.

Adverting now to the several states into which Europe became divided on the final dissolution of the empire of Charlemagne, the histories of the more important during the tenth and eleventh centuries may be thus briefly sketched:

Spain.—The Ommiade califs of Spain continued their independent rule in the south of that peninsula from 749 till 1027, when the califate was extinguished in revolution; and the various Saracen viceroys set up a number of petty kingdoms at Cordova, Seville, Toledo, Lisbon, Saragossa, &c. In the north, again, the Christian kingdom of Asturias, Oviedo, or Leon, increased in power as the power of the califs waned. Another Christian kingdom, also, that of Navarre, which had been part of the empire of Charlemagne, arose to be the ally and rival of Leon; to which was added (1035) a third—Aragon.

France.—This kingdom was split up into a number of fiefs, the holders of which were almost independent princes. There was still a succession of kings, of the blood of Charlemagne, but the allegiance paid them by the powerful dukes of Normandy, Francia, Burgundy, &c. was only nominal. The accession of a new dynasty in the person of Hugh Capet, Duke of Francia (987), gave greater strength to the crown, the real root of national unity.

Germany.—The 'states' or noble houses in Germany acquired from the first a more regular and independent authority than in other feudal countries; accordingly, on the deposition of

Charles the Fat, the nobles asserted their right to *elect* each successive sovereign. The first chosen was Arnulph (887-899), Duke of Carinthia, who was thus but one German noble selected by the rest to wear the German crown. The early German emperors were incessantly occupied in confirming their power within Germany, and in extending the empire at the expense of the contiguous countries. Henry I. of the House of Saxony, elected in 918, annexed Lorraine to Germany, and extended his dominion at the expense of the Slavonians, from the Elbe to the Oder. His son, Otho I. 'the Great' (936-973), made the Danes and Bohemians submit to the empire, and renounce paganism; but his greatest achievement was the reduction of Italy to a fief of the German Empire. He assumed the crown of Italy at Milan (961), and visiting Rome, revived in his own favour the dignity of Emperor of the West, and was consecrated as such by the pope (962). This pope having become a scandal to Europe by his licentiousness, Otho caused him to be deposed, and another to be elected; and claimed for the emperors the right of veto on all future appointments. From this time, every German emperor contined to receive a triple coronation—as king of Germany, as emperor of the West, and as king of Rome. After three more emperors of the Saxon line, the states chose Conrad II. (1024-1039), of the house of Franconia.

We can only afford space to note in passing the rise of the Norman power in Sicily; the conversion of the Hungarians to Christianity, under their monarch Stephen, in the year 1000; the establishment of a Polish Christian kingdom about the same time; and above all, the introduction of the new religion into Russia (988), through the marriage of Vladimir the Great with a Byzantine princess.

Scandinavian Kingdoms.—Sweyn, king of Denmark (1000), renounced the Christianity and allegiance imposed upon his father by Otho of Germany, and extended his sway over Norway and England; this sway was retained by his son, Canute (1014), who reintroduced Christianity into Denmark. On the death of Hardicanute (1042), England threw off the Danish yoke, as did also Norway. Norway and Sweden were both Christianised about 1000.

The history of the *British Islands* will be given in succeeding numbers.

The Feudal System and the Church.—Amid this multiplicity of independent petty states into which Europe was parcelled out, there were two grand influences at work, producing social resemblances, and also a feeling of mutual connection; these were the feudal system and the church. The Feudal System was in existence in a rudimentary condition among the Franks as early as the time of Clovis, and also among the Lombards in Italy. But it soon acquired a more exact and legal form; and by the eleventh century, had spread into all the countries to which the German conquests extended, and even to others. Every free German who had assisted his chief in conquering the country received, as his share of the spoil, a particular estate, which was called his *allodium* or *freehold*—this estate being absolutely his own property. The holders of such allods were subject to the king only in this respect, that they were amenable to the general laws established for the government of the state. But as it so happened that the king, who in the general division of the land received, of course, a very large domain as *his* share, did not usually keep all this land to be farmed by himself as one great estate, but gave portions of it away to his favourites, on certain conditions mutually agreed upon; and as, in a similar manner, the holders of extensive allods gave away portions of these allods for a like consideration, the result was, that there arose in all the Germanic countries a second kind of property called *beneficium*, *fief*, or *leasehold*. This kind of property was not hereditary by right, but was held only during the pleasure of the real owner, and so long as the conditions on which it was granted were duly fulfilled. Holders of this kind of property were called vassals or liegemen, to distinguish them from freeholders; and the real owner of the property which the vassals occupied as tenants was called the liege, the seigneur, or the suzerain. The usual tenure by which vassals held their fiefs was that of military service and homage—in other words, the proprietors who held fiefs from the king were bound to attend his court on occasions of ceremony, and to assist him in case of war with a stipulated number of men, armed and furnished in a stipulated manner; and the smaller proprietors, who held fiefs under great lords, were bound after the same fashion to appear at the castles of their lords when summoned, and to give them military assistance. The seigneurs, on the other hand, were bound to protect their vassals.

It very soon happened that the feudal tenure of property prevailed over every other. The great nobles were but too glad to become vassals of the kings, in return for the rich gifts which they had to bestow on them; and it very frequently happened that the holder of a small allod, or freehold, voluntarily gave it up to a powerful lord in his neighbourhood, whose protection he wished to secure, receiving it back from him as a fief. Gradually, therefore, almost the whole property of a country became a connected system of fiefs: the lands were fiefs; the offices and dignities, from the governorship of a province down to the pettiest function, were fiefs; and society, from the king down to the poorest freeman, consisted of a chain of ranks, each retaining from that above it.

In addition to the influence of this universally prevalent system of feudalism, there was the influence of the Church, contributing in a different manner to the same result. It was customary at this period for churchmen and scholars, born in one country, to leave that country in early or mature life, and either to settle in another country as bishops, monks, or teachers, or to devote themselves to a missionary life, and wander, as ministers of the Gospel, into the remote and still heathen corners of Europe. We have only to conceive this fact distinctly, and to fancy German and French, and Italian and English ecclesiastics, distributed over Europe, all engaged in the same intellectual or spiritual labours, all using the Latin tongue for learned purposes, all considering themselves members of the great institute of the church, and all communicating, by means of letters and books, with distinguished men of their own order in the chief cities of Europe; and we shall have a vivid idea of that powerful system of religious communion which pervaded a society, otherwise

torn and disunited, and spread like a network from the Mediterranean to the Icy Sea.

Struggle of Emperors and Popes.—We have already seen by what steps the sovereigns of Germany had risen into ascendency, and acquired the title of Emperors of the West. Their right to this title was recognised by all the sovereigns of Europe; there was not a king of Northern Europe who did not regard the German emperor as the political head of the civilised nations, and Germany as the ruling power; and the notion began to gain ground, and was sedulously inculcated both by the emperors themselves and the popes, that all Christendom consisted in reality of one great confederation of states, of which the emperors were the secular, and the popes the spiritual chiefs. No one can understand the state of Europe at this time, without keeping distinctly before his mind the two words *pope* and *emperor*, with the meanings thus attached to them.

The political position of the German emperor was inherently weak. Not only was the office elective, but it depended on the concurrence of the 'states' or nobles to supply the emperor with troops to carry out his schemes. The dukes, counts, and margraves, who governed the provinces or defended the marches, had been at first regarded as imperial officers, removable by the emperor; but they gradually contrived to render their offices or fiefs hereditary, and became almost independent princes. The same was the case with the great dignitaries of the German Church; they became temporal nobles with permanent jurisdictions.

But the weakest point of the German Empire was Italy. When Otho had established his authority over the chaos of fragments into which the kingdom of Italy had fallen, he and his successors not unnaturally conferred the fiefs and other honours on Germans, rather than on native Italians; and hence there was kept alive a spirit of vehement hostility to German influence. This anti-German feeling naturally gathered round the pope, who, as temporal magistrate of Rome, was a vassal of the German crown, but, as spiritual head of Christendom, had an advantage over all the other temporal lords owing allegiance to the emperors. Thus the dealings of the popes with the emperors, and of the emperors with the popes, assumed in the eyes of all parties a high degree of importance; and the struggle that arose between them affected the whole history of Europe for several centuries.

The election of the popes as bishops of Rome had from the earliest times been vested in the college of *cardinals*, composed of the principal clergy of Rome; their choice being confirmed or annulled by the acclamations of the people in the streets. In the anarchical period between Charlemagne and Otho (814–962), the elections had been the occasion of much turbulence and bloodshed; and the papal chair had been generally filled by profligates, or by men of weak minds managed by others. At one time, the papacy was actually in the patronage of two sisters, women of infamous character, named Marozia and Theodora, who appointed their paramours and illegitimate children. The extension of the German power into Italy produced a change in this state of things. The ratification of the German emperor was made necessary to the election of a pope, and the emperors naturally sought to have popes elected that were favourable to their views. This policy was fully carried out by Henry III. of the house of Franconia, under whom the empire attained the highest prosperity. He looked upon the popes as his viziers in spiritual things; and on the occasion of a contention for the papal chair (1046), he set all the parties aside, and appointed a German bishop, Clement II. whose three successors were also nominees of Henry.

But the imperial policy was thwarted by the most illustrious man of the middle ages—Hildebrand, who became pope as Gregory VII. in 1073. The first blow he struck was at the right of *investiture* claimed by the temporal sovereigns—that is, the right of bestowing on bishops and abbots the ring and staff, which were the symbols of their office, a right by virtue of which the sovereign had the clergy completely under his control. A papal decree was now issued (1074) forbidding, under pain of excommunication, all sovereigns from exercising investiture, and all ecclesiastics from accepting it at the hands of laymen. At the same time, he pursued another measure tending to detach the church from worldly influences. The *celibacy* of the clergy had long been a favourite doctrine of the Church of Rome; but though encouraged, it had never become a positive rule, and it was as common, especially in the north of Christendom, for a priest to have a wife as not. Gregory now (1074) decreed that all the married clergy must either quit their wives or renounce the priestly order. The decree was violently resisted; but with the aid of the monks and of the populace—who, strange to say, sided with them against the married clergy—Gregory triumphed, and celibacy became the law of the church.

The emperor Henry IV. at first set the decree against the right of investiture at defiance. Gregory thundered out a sentence of excommunication and suspension against him; and such was the appalling effect, that Henry, whose tyrannical conduct had made him many enemies, seeing the universal defection, was obliged to submit. Humiliated and grieved, he crossed the Alps in the depth of winter (1077), to seek the pardon of his pontifical enemy. He found the pope in the Modenese territory, where he was residing with the Countess Matilda of Tuscany, one of the most devout friends of the church, at her castle of Canossa. Here it was only after the most abject confessions of his error, and standing as a penitent for three days in an outer court of the castle, barefooted, and clad only in a woollen shirt, that he obtained absolution, and the removal of the sentence of interdict. Such a spectacle had never before been seen in Europe.

Gregory henceforth asserted the superiority of the spiritual over the temporal power; he urged on all kings the duty of acknowledging themselves vassals of the Holy See, and even demanded tribute in the name of 'Peter's pence.' Many of the minor princes actually made the required submission, and all were careful not to offend the pope by any display of independence. But Henry IV. had not forgot his humiliation at Canossa. Having defeated a rival emperor, set up by the pope's party, he declared Gregory deposed, appointed a new pope, Clement III. (1080), marched into Italy, took Rome after a siege of three years, and was crowned by the anti-pope, Gregory being obliged to take refuge with Guiscard

at Salerno, where he died (1085). The remainder of Henry's life was imbittered by the rebellions of his sons, at the head of the partisans of the successors of Gregory. At last, his second son, Henry, defeated his father, stripped him of his robes, and turned the aged monarch adrift on the world. He was refused admission into a church built by himself, and died a beggar at Liege (1106), where his body lay for long in a cellar, no one daring to bury an excommunicated man.

The peace of the empire continued to be distracted by the controversy between popes and emperors about the right of investiture. The papal party in Germany were headed by the Duke of Bavaria, the opposing nobles by Conrad of Hohenstaufen. After a great battle fought in 1140, the house of Hohenstaufen secured the imperial crown. It is from this battle that the names of *Guelphs* and *Ghibellines*, so famous in Europe during the twelfth and thirteenth centuries, are said to have taken their rise. The war-cry of the army opposed to Conrad on this occasion was 'Welf' or 'Guelph,' the name of their leader, and the family name of the house of Bavaria; that of Conrad's army was 'Waiblingen,' the name of a small town in Franconia from which the Franconian dukes traced their origin. Hence, ever afterwards these names were used to distinguish the two great parties into which the inhabitants of Germany and of Italy were divided—a partisan of the popes against the emperors being called a Guelph, and a partisan of the emperors against the popes, a Ghibelline.

The most prominent figures in the remaining history of the struggle are Frederick I. of Hohenstaufen—better known as Barbarossa ('Redbeard')—Pope Innocent III., and Frederick II. Barbarossa was an emperor of extraordinary energy and ability, and devoted himself to the re-establishment of the imperial supremacy in Italy, where he subjugated the most of the Lombard towns, which had become almost independent republics. At the invitation of Pope Adrian IV. he marched to Rome, and put down an insurrection that had arisen against the papal rule; on this occasion, the emperor held the pope's stirrup, and the pope in return placed the imperial crown on the head of the emperor. But the feud again broke out; the emperor appointed anti-popes, and the real popes and their partisans enabled the Lombard cities to assert the right of self-government.

On the death of Henry VI. son of Barbarossa (1197), there were two claimants for the imperial crown, and the struggle between them is chiefly interesting as having been contemporary with the papacy of Innocent III. (1198–1216), the greatest pontiff, after Gregory VII. that ever sat on the papal throne. No pontiff carried his prerogative higher than Innocent III. He affirmed even more explicitly than Gregory VII. had done the maxim, that 'the pope, as the successor of St Peter, was set up by God to govern, not only the church, but the whole world.' He was the first also to promulgate the doctrine, that the popes have a plenary power, enabling them to dispense with established laws, and to overrule them. Nor did he confine his views to theory. He issued decrees, and sent legates to all parts of Christendom; he summoned lords and bishops to Rome, to answer for their conduct; he compelled the kings of France and Leon to put away their wives; and the kings of Portugal, Aragon, and England paid him tribute as vassals.

The reign of Frederick II. (1215–1250) was the dying struggle between the empire and the church. Frederick was a man of strong character and of considerable culture, but the partisans of the papacy have represented him in a dark light. Frederick's exertions, continued over a period of thirty-five years, were all in vain. In the complex wars in which he was engaged in Italy—wars in which the Sicilians, the Lombards, and the popes had all a share—he often gained great successes, but always suffered in the end a greater loss. Ever in the midst of the turmoil, the popes were present to watch the progress of the conflict, and to interpose with their excommunications. Frederick was excommunicated so often, that he became accustomed to it; and very probably the scepticism of which he was accused arose from the necessity thus imposed upon him of going through life as an outcast from the church. But the sentence of excommunication, though it did not terrify Frederick himself, never lost its power over the majority of his subjects. Even the Ghibelline cities and houses wavered in their allegiance, and his own son rebelled against him. When he died (1250), the struggle may be considered to have ended.

Italy had in like manner by the end of the thirteenth century become studded over with a multitude of independent city-republics, divided between the Guelph and Ghibelline interests, and in continual hostilities with one another. Two of these republics were the great maritime powers in Europe. Venice, whose constitution was rather a permanent oligarchy than a republic, conquered the coast of Dalmatia, and the islands of Corfu, Cephalonia, and Crete, and was the acknowledged sovereign of the Adriatic. Genoa, the commercial rival of Venice, had possession of several islands and ports in the Grecian Archipelago and the Black Sea, as well as numerous commercial stations in the Mediterranean. In Central Italy, the temporal sovereignty of the popes had been definitely established over 'the Patrimony of St Peter,' by Innocent III. (1198–1216). The kingdom of Naples and Sicily, which had passed by marriage to the German emperors of the Hohenstaufen line, was wrested from them, at the instigation of the pope, by Charles of Anjou (1265), who brought with him a great retinue of Frenchmen. But the insurrection known as the *Sicilian Vespers*, in which 8000 French were massacred, deprived Charles of Sicily, which was taken possession of by the king of Aragon.

In France, as elsewhere at this period, the chief subject of interest was the struggle carried on between the kings and their great vassals. During the reigns of the earlier monarchs of the line of Hugh Capet, France was in reality a cluster of independent sovereignties. Philip-Augustus (1180–1223), the seventh of that dynasty, was the first that curbed the power of the nobles, and became to some extent the head of the French nation. In the reign of his successor occurred the final persecution of the Albigenses in the south of France—a sect who, among other heretical opinions, disowned the supremacy of the pope. Louis IX. (1226–1270) was one of the most exemplary and conscientious monarchs that ever reigned. Under his wise government, the royal prerogative gained strength.

In Spain, the Christian kingdoms of the north continued to gain on the Mohammedans, now called the Moors, in the south; and by 1236, there remained to the latter only the kingdom of Granada. Out of a portion of the peninsula thus wrested from Mohammedan rule, was formed the kingdom of Portugal (1095).

State of Feudal Society.—Every feudal country was parcelled out into a number of fiefs or feudal estates, each of which had a complete social organisation of its own. A fief consisted properly of two things—the *castle*, in which the lord or proprietor lived with his family and men-at-arms; and the *village* or *attached domain*, inhabited by the agricultural population, subject to the proprietor. Some of these were actual slaves or serfs, the born property of the lord of the soil, but the greater part were *villeins*—that is, free-born men serving for a consideration or renting land. Theoretically, the lord had not full power over such villeins; but if they were aggrieved by him as proprietor, he was the sole magistrate within the fief, and thus his power was practically absolute.

The three influences that gradually undermined the feudal system were *royalty*, the *municipalities*, and the power of the *clergy*. At the outset, the monarch was merely to the great suzerains what these were to their vassals—the head of a system of fiefs. The idea of nationality was foreign to the feudal system, which tended to segregation. The first, from his position, to be inspired with that idea would be the king, who naturally looked at the nation as a whole, and tried to pierce down through the intermediate ranks of barons, counts, &c. to the heart of the subject population, and establish a direct communication between the crown and the people at large. By issuing decrees also to be put in force over the whole kingdom, the throne became the fountain of *law*, as something distinct from the mere will of the feudal chiefs for the time being.

Many of the municipalities of the Roman Empire survived the shock of the German invasions, which destroyed all the rest of the fabric, and formed little republics or self-governing bodies in the midst of the feudal society. In addition to these, feudalism gradually created similar communities for itself. During the turbulence and insecurity of those times, people naturally congregated in large numbers around the castles of powerful chiefs. Any lord on whose property such a concentration of population, with its attendant industry, took place, found it advantageous to him, both in respect of wealth and of influence, and hence sought to foster and augment it, by relaxing his feudal authority over it, and granting privileges and immunities to its inhabitants. Hence arose *towns*, governed by bailiffs or provosts appointed by the suzerain of the territory, and the still more highly privileged *boroughs*—that is, towns possessing regular charters of enfranchisement, empowering them to govern themselves by mayors, aldermen, and the like, chosen by the burghers from their own body. These towns and boroughs were oases of freedom amid the general desert of feudal despotism, and constituted the nurseries of that social power which we now call the commonalty of a country.

The Clergy.—It has been estimated that every twentieth man in the thirteenth century belonged to the clerical order; and that the clergy held more than *one-half* of the entire landed property of most European countries. The possession of this wealth, added to their moral and spiritual influence, gave them immense sway; and the connection of the clergy everywhere with the central authority of Rome, made the church a great independent empire, superimposed upon the kingdoms of the earth, and able to control and modify all temporal and local authorities.

Chivalry.—This sentiment was the natural and gradual product of feudalism. It was the custom for the sons of the various vassals of a suzerain to form a little court or school in his castle, where they were educated under his eye and along with the members of his family in military exercises and feudal etiquette. When these youths—called *squires* while in training—arrived at manhood, they were admitted to the dignity of full-grown warrior, styled *miles* (Lat.) or *knight* (Ger. implying 'service'), and the admission was attended by an imposing ceremonial tending to invest it with religious interest, and to inspire ideas of something higher and nobler than was expected of ordinary men. Under this feeling, the conviction would grow in generous minds, that the power which their arms and training gave them ought to be exercised in the defence of the weak and oppressed; and what was at first mere individual feeling, soon became matter of rule. The knights of each country as an order bound themselves to observe certain regulations; and different countries vied with each other as to which should produce the most perfect specimens of knighthood. There was no virtue, actual or conceivable, which was not in theory associated with the character of a perfect knight; and however far short the practice may have fallen of the theory, there can be no doubt that some of the noblest characters of the middle ages were nursed by the ideas of chivalry. The institution attained its highest form during those great historical occurrences known as the Crusades, of which we now proceed to give a brief sketch.

History of the East.

The Turkish Conquests and the Crusades.—It had been customary from an early period in the history of Christianity for believers from every part of the Christian world to make pilgrimages to the Holy Land of Palestine. After the Mohammedan conquest of the East, the earlier califs, notwithstanding their fanaticism, had, in return for certain tribute, suffered the patriarchate of Jerusalem to remain, and the Christians to exercise their worship; the later califs were more liberal still, and pilgrims continued to arrive from all parts of Christendom.

But about the beginning of the tenth century, pilgrimage had become precarious. The condition of the Mohammedan world was by that time greatly changed. While the refined Abbaside califs were cultivating literature at Bagdad, the emirs of the provinces had succeeded in establishing themselves as independent sovereigns. In the very vicinity of the capital, 'the Bowides,' as the emirs of Shiraz called themselves, became so powerful that, by the middle of the tenth century, the califs of Bagdad were mere puppets in their hands, and nothing remained to them but their nominal dignity as spiritual heads of the Mohammedan world. In Africa, again, an extensive

Mohammedan empire had been formed under the dynasty of the *Fatimites*, claiming descent from Fatimah, the daughter of the Prophet. They built Cairo (970), which became the capital of their dominions; conquered Palestine, and contested the possession of Syria with the Byzantine emperors, who, taking advantage of the decrepitude of the califate of Bagdad, had begun to re-extend their power over part of their former dominions.

About this time a new power made its appearance on the arena of the oriental world—namely, that of the Turks. The name Turks was a general appellation for the numerous tribes inhabiting the region to the east of the Caspian Sea, now called Independent Tatary. Many of these tribes had embraced the religion of the Koran, and from them the califs drew their best soldiers. These Turkish mercenaries, introduced as servants of the califate, soon found that they could become its masters. One of them, Alepteghin, originally a slave, became an independent military chief (961); took the town of Ghuznee in the east of Persia; and founded the dynasty of the sultans of Ghuznee. Mahmoud, the son of Sabactagi (successor to Alepteghin), carried his arms into Hindustan (1001), and led the way to the Mohammedan conquest of that country. Another race, called *Seljuk Turks*, from the name of the founder of the dynasty, established themselves in Khorasan, and under Togrul Beg, the grandson of Seljuk, overthrew the power of the Bowides (1055), and assumed their place as administrators of the empire in the name of the califs of Bagdad.

The career of Eastern conquest which had been begun by Togrul Beg, was continued by his immediate successors, Alp-Arslan (1063-1073) and Malek-Shah (1073-1093). Alp-Arslan carried on a vigorous warfare against the Greek Empire, from which he wrested not only what remained to it in Syria, but also the greater part of Asia Minor, called by the Turks 'Roum'—that is, the country of the Romans. From the Fatimite califs of Egypt he also wrested Palestine (1070). These conquests were confirmed and increased by Malek-Shah, an able and even cultivated prince, in whose reign the empire of the Seljuks extended from the Ægæan and the Levant to the confines of Chinese Tatary. On his death (1093), the empire of the Seljuks fell asunder, different dynasties of the Seljuk stock establishing themselves in different parts of it. Of these, the most powerful were the sultans of Iran, who were masters of Upper Asia, and the sultans of Roum, who retained all the Turkish conquests in Asia Minor, and continued the wars against the Greeks on the one hand, and the Fatimite califs of Egypt on the other. The first sultan of Roum was Soliman, called also Kilidge Arslan, the great-grandson of Seljuk. After securing his power by his own military activity, he established his headquarters at Nice, in Bithynia, within one hundred miles of Constantinople. He was unable, however, to retain Palestine, which again (1096) passed into the hands of the Fatimites of Egypt.

In the midst of these wars and revolutions with which the East was distracted, Palestine had fared worse than almost any other country. No sooner had the Fatimite califs of Cairo become its masters, than the Christian inhabitants found the difference between their rule and that of the mild Abbaside califs of Bagdad. But even the cruelties of the Fatimite califs were insignificant, compared with those which had to be endured when Palestine came into the hands of the Turks. Full of ferocious zeal for the religion to which they were but recent converts, the Turks delighted in persecuting the Christians of Palestine, whether residents or pilgrims, and in committing outrages on the shrines and holy places which the Christians frequented.

The news of the cruelties perpetrated by the Turks on the Christians of Palestine, produced a deep feeling of indignation among the Christian nations of the West, and a desire to arrest the progress of the hated religion of Mohammed, and recover the Holy Land from the desecration of the infidel. At the same time, the Greek emperors, the very existence of whose empire was menaced by the Turks, sent repeated embassies to the popes and temporal potentates, imploring the Christian powers of the West to come to their aid.

By the enthusiasm of a monk, called Peter the Hermit, a native of Amiens, in France, who had made a pilgrimage to Jerusalem, and witnessed the cruelties perpetrated by the Turks, and the help of the pope, the Crusade fever spread over Europe like an epidemic. After some preliminary failures on the part of undisciplined rabbles, the chivalry of Europe mustered for the enterprise in 1096. The feudal chiefs, each at the head of his own vassals, ranged themselves under distinguished leaders—Godfrey of Bouillon; Robert, Duke of Normandy, son of William the Conqueror; Count Robert of Flanders; Bohemond, Prince of Tarentum, second in command to whom was Tancred, the flower of chivalry, and the favourite hero of the Crusade; Count Raymond of Toulouse; and others. Six separate armies were thus formed, which marched separately by different routes to the common rendezvous, Constantinople. The appearance of this vast force—amounting to at least 600,000 men, exclusive of women and priests—alarmed the Greek emperor, who, though he had repeatedly invoked the aid of the West, was now afraid lest the Latin princes might seek to secure the mastery of the East for *themselves*, and not for *him*. It was only by the threat of attacking Constantinople that he was made to withdraw his opposition, and further the transit of the Crusaders into Asia Minor. Here their first step was the siege and capture of Nice, the capital of Soliman, sultan of Roum (1097), and the defeat of his army in a great battle. They then marched on to Antioch, the capital of Syria, the siege of which consumed seven months, and melted away the army of the Crusaders. No sooner was Antioch captured (1098), than the Crusaders were in their turn besieged by an army of 200,000 Mohammedans, sent by the Persian sultan; but this host was defeated, and the way was now open to Jerusalem. It was on a morning in the summer of 1099 that the 40,000 Crusaders—who were all that war, famine, pestilence, and desertion had left out of the 600,000 who, two years before, had crossed from Europe into Asia—first came in sight of the Holy City. The emotion produced by the sight was intense. Some leaped and shouted; some threw themselves on the earth and kissed it; some gazed and wept; 'all had much ado,' says an old historian, 'to manage so great a gladness.' The siege of Jerusalem

began on the 7th of June 1099. The city was obstinately defended for six weeks by a garrison of 40,000 Turks, in the employment of the Fatimite califs of Egypt, into whose power Palestine had reverted three years before. A terrible massacre followed the capture of the city.

The Crusades are usually reckoned seven in number, and extend over a period of two centuries, the first and greatest, now sketched, beginning in 1096, and the last and least terminating in 1291. One result of the First Crusade was to restore the best part of Asia Minor to the Greek Empire. Out of the Syrian territories conquered from the Turks and Egyptian califs, there were formed three feudal sovereignties—the *kingdom of Jerusalem*, conferred on Godfrey of Bouillon; the *principality of Antioch*, conferred on Bohemond of Tarentum; and the *principality of Edessa*, in Mesopotamia, conferred on Baldwin, the brother of Godfrey. Such of the Crusaders as resolved to remain in the East, attached themselves to one or other of these princes, receiving lands from them, and yielding them feudal allegiance; while thousands of immigrants and merchants from the various countries of Europe, arrived by sea to partake of the same benefits.

During a period of fifty years, the three Latin principalities in the East maintained themselves against the attacks of the surrounding Mohammedans, and even increased their power, Jerusalem being naturally the most important. It was at Jerusalem, and during the generation that succeeded the First Crusade, that the two famous orders of the Knights Hospitallers of St John and the Knights Templars took their origin. Their object was to deliver Palestine from the bands of Mohammedans to whose inroads it was still liable. The Hospitallers had their name from the Hospital of St John, which had been converted from a monastic foundation into a military institution; the Templars, from having their quarters near the Temple.

But after the lapse of fifty years, dangers began to arise, threatening the very existence of the Latin kingdoms in the East, and calling for a Second Crusade. The empire of the Seljukian Turks had passed away; but in the emirs or governors of provinces there was always a fresh source of conquering adventurers ready to raise a new structure of power on the ruins of the old. One of these, named Zenghi, emir of Mosul, took Edessa (1144), slaughtered the Christian inhabitants, and extinguished the principality. His son, Noureddin, a man of extraordinary abilities and noble character, from being simple emir of Aleppo, became sultan of a kingdom extending from the Tigris to the Nile. The Christians of Syria were trembling for their safety; and to arrest the progress of Noureddin, Europe sent 1,200,000 men (1147) under her two most powerful monarchs, Louis VII. of France, and Conrad III. emperor of Germany. Yet the Crusade was a total failure. The Greek emperor was hostile; his emissaries misled the Western armies on their way through Asia Minor, and they were either cut to pieces by the Turks or perished among the mountains. The relics that made their way into Syria in no way arrested the activity of Noureddin, who pressed upon the kingdom of Jerusalem as much as ever. But the death-blow came from another quarter. Salah-Eddin, generally called Saladin, a young Kurdish chief, sent by Noureddin on a political mission into Egypt, contrived to get the power into his own hands, put an end to the dynasty of the Fatimite califs, and aspired to the presidency of the Mohammedan world. Taking advantage of the distracted state of the kingdom of Jerusalem, arising from a disputed succession to the throne, Saladin invaded Palestine, took town after town, and lastly Jerusalem, after a siege of fourteen days (1187). The only place that remained to the Christians in Palestine was Tyre, which was defended by Conrad, Marquis of Montferrat.

The news of the extinction of the kingdom of Jerusalem called forth a *Third Crusade*, led by Frederick I. (Barbarossa) of Germany, King Philip-Augustus of France, and King Richard I. of England. Barbarossa led his army through Asia Minor, but was himself drowned while fording a river in Syria, and only a wreck of his army reached Tyre. The kings of France and England conveyed their forces by sea. The Christians in Syria had in the meantime rallied, and were laying siege to Acre, a town of such importance, that its capture was regarded as almost equivalent to a reconquest of the country. In vain Saladin now attempted to raise the siege and relieve Acre. Numerous battles were fought in the plains around between the chivalry of the West and the Moslem myriads; and after a siege of twenty-three months, Acre surrendered to the Crusaders. But this was the sole result of the Crusade. Rivalries and jealousies sprang up among the Christian leaders, and especially between the kings of France and England; and the progress of the war against Saladin was impeded. At length, Philip abandoned the Crusade, and returned to France. The Lion-hearted Richard remained, and continued the struggle for some time with various success; but at last he agreed to a truce with Saladin, the terms of which were on the whole favourable to the Christians, and creditable to the liberality and tolerance of the Mohammedan. He took his departure from the East in October 1192; but being detained on the way as a prisoner of the Duke of Austria at Vienna, did not reach England till March 1194. His great antagonist, Saladin, between whom and Richard there had been established a mutual admiration and regard, died in 1193.

Of the remaining Crusades, the only one that produced any result was that undertaken in 1228 by the German emperor, Frederick II. who entered Jerusalem in triumph, and compelled the sultan of Egypt to cede that city and several others to the Christians. But the fruits of this and of the Crusades in general were once more lost by the irruption of a new race of conquering Turks, who established themselves in Syria in alliance with the sultans of Egypt, defeated the Christian forces, and burned and pillaged Jerusalem (1244). Palestine thus again relapsed into the dominion of the infidel. The unfortunate expedition of St Louis of France (1249), usually considered the *Seventh* and *Last* Crusade, in which the king himself and the relics of his army were made prisoners in Egypt, had no other effect than to produce a revolution in that country. The Mamalukes—that is, the Turkish or Tatar slaves who served as the officers and body-guards of the sultans—offended that the French invaders were

allowed to ransom themselves so easily, murdered the Ayoubite sultan, and set their own commander, Ibek, on the throne of Egypt (1250).

Although the Crusades utterly failed in their immediate object—the recovery of the Holy Land from the Mohammedans—they yet produced important results, and reacted, in many respects favourably, upon the intellectual condition of the Western nations. By having to act in concert, these nations were brought to know one another better, to interchange chivalrous courtesies, to feel mutual sympathies, and entertain more liberal sentiments. The Crusaders also brought from the East the knowledge of many products and processes tending to promote the arts and manufactures; and it was during these expeditions that modern commerce was first developed. Another effect was to diminish the strength of the feudal aristocracy, by occasioning the breaking up and sale of many feudal properties. At the outset, the Crusades seemed to rivet and extend the power of the popes, for they brought the best knights and warriors of Europe directly under the banner of the church; but in the end, the effect was to weaken the influence of fanaticism and of the papacy. Instead of the mere feeling of abhorrence with which Mohammedans had at first been regarded, many of them had inspired the Christian knights with esteem and admiration; the crusading spirit flagged; men began to ask the reasons, and to count the costs; and in the latter half of the thirteenth century, Peter the Hermit himself might have preached a crusade in most parts of Europe, and found but cold audiences. About this time, in fact, as is proved by the institution of the Inquisition in various countries, Europe began to be full of sceptics, who questioned both the doctrines of the Romish Church, and the methods by which she acted upon society.

III. NATIONAL MONARCHIES: 1300–1517 A.D.

History of the West: Formation of Modern European Governments.

Spain and Portugal.—During the fourteenth and fifteenth centuries, the Spanish peninsula continued to be divided into four parts—the three Christian kingdoms of Aragon, Castile, and Portugal, and the Moorish kingdom of Granada. At last, by the marriage of Ferdinand of Aragon with Isabella of Castile, these two important kingdoms were united under one government (1479)—an event of great importance in the history of Spain. The Moorish kingdom of Granada had gradually been reduced to narrow and narrower limits. A final crusade against the Moors was now undertaken by the united chivalry of Aragon and Castile, and after a sanguinary war of ten years, the city of Granada was taken, and Moorish supremacy in Spain was at an end (1492). From this time, the peninsula has continued to be divided into the two kingdoms of Spain and Portugal. The close of the fifteenth and the beginning of the sixteenth century form the most splendid era in the annals of these countries. Under John II. (1481–1495), Portugal rose to eminence in commerce and maritime discovery. It was in the service of Ferdinand and Isabella of Spain that Columbus discovered the New World (1492); and before the death of Ferdinand in 1516, the West India islands of Haiti, Cuba, and Jamaica had been added to the Spanish crown. Joanna, daughter of Ferdinand and Isabella, had been married to Philip, Archduke of Austria, and her son, Charles, became, on his father's death, sovereign of the Netherlands. To this Austrian grandson, then, already Prince of the Netherlands and Franche-Comté, Ferdinand bequeathed a real *Spanish empire*, consisting of Spain Proper, together with the kingdom of Naples and Sicily, Sardinia, and the West Indies.

France.—The successors of St Louis (1270) inherited a kingdom compact, well arranged, and accustomed to the rule of royalty, and such it continued till the direct line of the Capetian kings terminated in Charles IV. (1322–1328), when a period of anarchy and disaster begins. Two competitors appeared for the crown—Edward III. of England, whose mother, Isabella, was Charles's sister; and Philip of Valois, who was cousin-german to Charles. The English king was undoubtedly the nearer in kin had not the Salic Law interfered, which was held to debar female succession. Edward, while admitting that his mother could not personally ascend the throne, maintained that she could transmit the inheritance to her son; but the states decided in favour of Philip, who took the crown as Philip VI. Edward, after acquiescing for a time, revived the dispute in 1337, and commenced a series of campaigns, which made the English at one time all but masters of France. These wars were signalised by three splendid victories—that of Sluys (1340), in which the whole French fleet of 200 ships was taken by the English; of Cressy (1346), where 30,000 English defeated 100,000 French; and of Poitiers (1356), in which 8000 English, led by the Black Prince, defeated 60,000 French. This led to a treaty of peace (1360), by which a large portion of France was ceded in full sovereignty to England. But under Charles V. (1364–1380), the French rallied, and a series of reverses deprived the English of all their conquests, except a few important towns. Charles VI. (1380–1422) becoming insane, the kingdom was plunged into the confusion of civil war by the factions of the Dukes of Orleans and of Burgundy contending for the regency. Henry V. of England seized the opportunity of reviving his pretensions to the crown of France, and the great victory of Agincourt (1415) made him master of the north of France. The Burgundian party, entering into alliance with the English, it was agreed (1422) that Henry should marry Catherine, the daughter of Charles, and succeed to the kingdom, to the exclusion of the dauphin. Henry, however, died suddenly (1422), leaving an infant son by Catherine; and Charles VI. dying soon after, the dauphin was proclaimed king by his adherents as Charles VII. The whole of the country north of the Loire was in possession of his enemies the Burgundians and of the English, and though the hero of Agincourt was dead, the Duke of Bedford, as regent for the young king Henry VI. was leading the English to fresh victories. Orleans was about to fall into the hands of the foreigners, and the fortunes of Charles seemed at the lowest ebb, when a deliverer appeared in the person of a simple peasant-girl, Joan of Arc, who believed herself commissioned by Heaven to save her country. She put herself at the head of the French soldiers,

and partly by real boldness, partly by the moral effect of her example, and the terror inspired by her supposed supernatural character, she soon turned the tide of war, and drove the English from post to post. At last, she was taken by the Burgundians, and sold by them to the English, who put her to death at the stake on a charge of witchcraft (1431). After this disgraceful event, Charles, by little and little, recovered his dominions; and in 1453, all that remained to the English of the French territory was Calais. Charles VII. was the first modern sovereign that substituted a standing army for the service of mere feudal bands. The reigns of his three immediate successors—except that of Louis XI. (1461–1483), whose policy of humbling the barons, and exalting the power of the crown, required that he should favour and foster the growth of civic communities—possess little general interest; that of Francis I. (1515–1547) forms an important era in the history of France.

The German Empire and Austria.—The death of Frederick II. (1250) was followed by what is called the *Great Interregnum*—a period of anarchy, from which the empire was delivered by the accession to the crown of the energetic Rudolph of Hapsburg (1273–1291). In the reign of Charles IV. was promulgated the *Golden Bull* (1356), which fixed the constitution of the German empire—the mode of election of emperors, and the composition and procedure of the diet or common parliament of the states.

The component parts of the empire were, in respect of internal government, independent states, some of them of great magnitude. Austria, especially, from small beginnings, rose to be the preponderant power in Germany. Originally a mere military frontier or 'mark' of the empire of Charlemagne, and therefore called Oester-reich, or 'Eastern government,' it had been raised to the rank of a duchy; and when Rudolph of Hapsburg came to the empire, he took this Austrian duchy from its possessor, who had opposed his election, and conferred it on his own son Albert (1283), afterwards emperor. Around this small nucleus the Austrian Hapsburgs gathered from time to time new acquisitions, mostly by marriage with heiresses, until their possessions attained the dimensions of an empire. In 1438, Albert II. Duke of Austria, was chosen Emperor of Germany; and from that time the German emperors were all Austrians, so that the history of the Austrian dynasty becomes henceforward identical with the history of the German Empire.

A great accession to the possessions of the house of Austria was made by the marriage of Maximilian, son of Frederick III. to the heiress of Charles the Rash, Duke of Burgundy. At Charles's death, Burgundy Proper was appropriated by the French monarch, but the rest of the duke's dominions, including the whole of what we now call the Netherlands and Belgium, came into the possession of Maximilian's son, Philip, and finally of Philip's son, Charles (Charles V.), who by his mother's side was also heir of the Spanish monarchy.

Switzerland.—Helvetia, up to the end of the thirteenth century, had formed part of the German Empire, governed in some districts by lords and bishops, and in others by municipal corporations, as in other parts of the empire. Three districts, under the name of *cantons*, enjoyed a sort of self-government under a peculiar imperial grant—the cantons of Uri, Schweitz, and Unterwalden. Albert, son of the Helvetian count, Rudolph of Hapsburg, who had been made Emperor of Germany, sought to convert the whole of Helvetia into a principality of his own. The mountaineers rose in insurrection (1308), and the three cantons forming a league, the new people were called Swiss, after the name of one of the cantons. According to tradition, the popular hero in this war was the famous William Tell. Other cantons were soon added to the confederacy, and the two great battles of Morgarten (1315) and Sempach (1386) convinced the Austrian dukes that further efforts against the Swiss were vain. In 1500, the independence of the Swiss as a nation was formally recognised by the emperor Maximilian.

Italy.—The Italian Republics.—On the decay of the imperial authority, the cities of Northern Italy formed a congeries of small independent states, bearing the name of republics, though some of them were more aristocratic than democratic. It frequently happened that ambitious individuals raised themselves to the position of petty despots. Of the families that thus rose to importance in the fourteenth and fifteenth centuries, the most remarkable were the Visconti, and afterwards the Sforzas in Milan, and the Medici in Florence. Cosmo and Lorenzo dei Medici (1448–1492), whose great fortune arose from commerce, rivalled princes in their munificent patronage of learning and the arts; and a son of Lorenzo's became Pope Leo X. (1513–1521).

The histories of *Genoa* and *Venice*, during the period in question, consist chiefly of mutual wars, occasioned by commercial rivalry. At first the Genoese were the more successful; but in 1380, the loss of a great sea-battle near Chioggia crippled their power, and gave the sovereignty of the sea to the Venetians. From that time, Genoa, torn by political factions among its citizens, was obliged to lean on foreign support. Meanwhile, the Venetians, growing wealthy and wealthier by their commerce with the East, extended their domain at home, detaching Verona, Padua, Cremona, and other cities from the dukedom of Milan, and adding them to their own republic.

The States of the Church.—In the pontificate of Nicholas III. Rudolph of Hapsburg formally relinquished the feudal rights of the German emperors over the territories of the Church (1278), and made the popes the acknowledged temporal sovereigns, as they had long been the virtual. Still the state was distracted by the contentions of the powerful families, the Colonnas, Orsini, and others. In the beginning of the fourteenth century, a quarrel broke out between Pope Boniface VIII. and King Philip of France, which led to important consequences. Boniface, who rivalled Gregory VII. in asserting the papal power, interfered between Philip and his vassals. When the king asserted the independence of the French crown, the pope retaliated by excommunicating him; but the French, including the clergy, gathered manfully round their monarch, and laughed at the pope and his fulminations. The most important result of this struggle was, that it produced a permanent antagonism between the French crown and the papacy; so that it became the object of the French king to procure the election of a Frenchman to

the papal chair. In this he triumphed in 1305, and Bertrand, archbishop of Bordeaux, became pope as Clement V. Clement fixed on the French town of Avignon as the seat of his court; and for a period of seventy years (1305–1376), known in history as the Babylonish Captivity, the popes, who were all Frenchmen, resided at Avignon, and attempted to govern Rome by legates.

It was during this period that the old republican spirit of the Romans blazed up for a moment under the famous Cola di Rienzi, who governed Rome for a year (1347) as tribune, and was afterwards appointed senator by the pope, but was finally murdered by the fickle populace (1354).

Gregory XI. (1376) at last restored the papal see to Rome. On his death (1378), two rival popes were elected—a Neapolitan, named Urban VI. by the Italian party; and a Frenchman, named Clement VII. by the French party, who desired that the papacy should be transferred back to Avignon. Both popes proceeded to exercise the papal functions—Urban at Rome, and Clement at Avignon; and thus began what historians call the Great Schism of the Latin Church. This schism lasted forty years, or from 1378 to 1417, during which period the Catholic world found its allegiance divided between two distinct lines of popes —the one residing at Rome, the other at Avignon. The nations of Europe chose which pope they should obey, and called the other an anti-pope. The Romans, of course, took the side of the Roman line of pontiffs. This scandal was terminated in 1417 by the Council of Constance, which cleared away the rival popes and appointed a new one. But it was not till the pontificate of Nicholas V. (1447–1455) that Rome experienced a cessation of civil disorder. This illustrious pope crushed the factions, and established his government on a firm basis. He was the first pope who systematically appointed ecclesiastics to civil offices—a policy which has been pursued by all subsequent popes.

In regard to *Hungary*, it is only necessary to note that in the fifteenth century it became the battle-field of Europe against the Turks, and that its monarchs, John Hunyady and his son, Matthias, filled Christendom with the fame of their valour and their victories.

Russia.—The grand-dukedom of Russia continued under princes of the line of Ruric, till it was overrun (1237) by a host of half a million men under Jujy, a son of Genghis Khan, and thence constituted the westernmost province of the Mongolian Empire. On the breaking-up of this empire, at the death of Kublai Khan (1294), Russia fell to the share of the khans of a horde of Tatars, called the Golden Horde; who, from their place of encampment between the Caspian and Volga, continued to tyrannise over the country for nearly two centuries, plundering, burning, and destroying at pleasure. At last, a native prince, Ivan III. of Moscow, taking advantage of the dissensions and weakness of the Golden Horde, destroyed the last vestiges of their power (1480), and with his reign (1462–1505) the modern history of Russia begins. Under Ivan and his son Basil (1505–1533), Moscow became the capital of an empire covering an area nearly corresponding to that of modern Russia in Europe.

The Scandinavian Kingdoms.—In 1389 a temporary union took place of the three crowns of Denmark, Norway, and Sweden, under Margaret, called the 'Semiramis of the North;' but although an attempt was made at a convention held at Calmar (1397) to perpetuate the union, the settlement was soon broken through, and Denmark and Sweden chose separate kings.

Progress of Civil Society.—During this period, the feudal system continued more and more to crumble down, and its elements to melt into one another. The power formerly exercised by the great feudal lords over their inferior vassals was gradually concentrated in the person of royalty, and distributed by means of courts of law. Another important movement was the enfranchisement of the serfs. The manumission of serfs had always been encouraged by the clergy; and a king, as soon as he rose to the idea of being the head of a nation, and not merely of a system of fiefs, naturally favoured the same movement, and facilitated it by legal enactments. In this way, and without any direct attempts at general enfranchisement, absolute slavery had nearly died out in some parts of Europe—particularly in Italy —before the middle of the fourteenth century. In other countries, it required more direct acts of enfranchisement. An edict of Louis X. of France (1315) orders that 'freedom be given on good and fitting conditions,' meaning reasonable composition. Gradually, therefore, serfdom ceased to exist in France and in the Germanic countries; although in some parts of Northern Europe, and even in Britain, there were traces of personal serfdom as late as the seventeenth century. In the Slavonian countries, the example was not followed.

It was during this period that the first germs of constitutional government shewed themselves. In England, *parliaments;* in Germany, the *diets;* in France, the *states-general;* and in Spain, the *cortes* —all date their regular organisation from the fourteenth and fifteenth centuries. In their origin, too, all these assemblies were identical; they were at first nothing more than the great councils of the kings, in which they took advice with their chief nobles on matters of importance. They have since taken very different developments according to the genius of the several nations.

History of the East: the Progress of Maritime Discovery.

After the subversion of the power of the Seljuk sultans in Roum or Asia Minor by the Mongol invasions (1258), one of the petty Turkish emirs who shared the territories with the conquerors, soon began to build up a new Turkish Empire out of the ruins. His name was Osman or Ottoman (1289–1326), and the new power that he formed was called that of the Osmanlis or Ottoman Turks. Having established their dominion over Asia Minor, the Ottoman sultans crossed into Europe (1358), and inundated Thrace and Greece. Sultan Amurath I. reduced the Byzantine empire to a corner of Thrace, 1500 miles square. His son, Bajazet I. surnamed Ilderim, or 'Lightning,' reduced the Greek emperor to the condition of a tributary. The irruption of the Tatar hordes under Timur checked for a few years the progress of the Ottoman arms, but in the beginning of the fifteenth century, the successors of Bajazet commenced anew their aggressions on the Greek

Empire and on Europe; and under Bajazet's great-grandson, Mohammed II. Constantinople was besieged and taken (1453), and the Ottoman Empire took the place of the Greek. Sultan Selim, in 1516, extended his dominion over Mesopotamia and Egypt.

Discovery of the Sea-route to the East Indies.—Till towards the close of the fifteenth century, the whole trade of Europe with the East was in the hands of the Venetians and Genoese. The conveyance of the goods to the ports of the Levant and of the Black Sea, where the Venetian and Genoese ships received them, was chiefly by caravans overland, the sea-traffic by the Indian Ocean and the Red Sea being of inferior importance. But the Portuguese had been gradually extending their discoveries along the west of Africa, and at last Vasco da Gama doubled the Cape of Good Hope, and, crossing the Indian Ocean, landed on the western coast of India at Calicut (1498). To reach these same East Indies, the mysterious lands of silks, gems, and spices, Columbus had, in 1492, carried out the bold idea of sailing westward across the Atlantic, and thus discovered the New World.

History of the Church.

Three events of this period, more especially relating to the church, deserve notice. 1. *The establishment of Friars*, a new ecclesiastical body distinct from the ordinary monks. The higher secular clergy were rolling in wealth, and neglecting their office of spiritual guides; the monasteries also had become immensely rich, and their inmates were leading lazy, luxurious lives. To infuse fresh life into the church, there were formed communities of Friars (Fr. *frère*, brother) or Mendicant orders, differing from the ordinary monks in not secluding themselves, but roaming about as itinerant preachers, mixing with the people, and living upon their voluntary alms. They soon cast the monks and secular clergy into the shade, and became the zealous allies of the popes, by whom they were exempted from ordinary church rule. The numerous orders of this kind that sprang up at first, beginning with that founded by the Spaniard, Dominic de Guzman, in 1215, were in 1274 consolidated into four—the Dominicans, or Black Friars (from the colour of their robes); the Franciscans, or Gray Friars; the Augustinians or Austins; and the Carmelites, or White Friars.

2. *Rise of the Inquisition.*—In the early ages of the church, the duty of inquiring into and punishing heresy devolved on the local bishops and clergy. But the Crusades gave an impetus to the church in this sort of work; and the old process being too slow, special inquisitorial commissions were appointed by the popes. The first was appointed by Innocent III. for the extermination of the heretical Albigenses in the south of France (1215). In this commission the most active agent was St Dominic, the founder of the order of friars of that name; and the Dominicans became ever after the special agents of the popes in this odious function. Following the example of Innocent III. his successors soon planted, with consent of the civil authorities, tribunals of Dominicans in all the cities and states of Italy, then full of heretics. In the year 1416, no fewer than 300 persons were burnt in the diocese of Como alone, the average annual number being 100. The Inquisition was extended into other countries; but in some—such as England, where the rulers were adverse to it—it never took root. In Spain, it was organised into a permanent institution (1483), under a terrible functionary appointed for life, called an Inquisitor-general.

3. *Movement for a Reform in the Church.*—The inordinate power of the popes, which had all along been resisted by the civil rulers, began to press upon the bishops and clergy, now that they found their influence swamped by those papal emissaries, the Mendicant Friars. This begot a desire to revive the authority of general councils of the church, and to subordinate the popes to this authority. The result was the convening of the council of Constance (1414), and afterwards that of Basle (1431); in which, however, all attempts at reform were rendered abortive by a strong party in the papal interest.

But not merely was there dissatisfaction with the administrative abuses of the system; doctrines and ideas began to prevail contrary to the usual teaching of the church, and aiming at the very foundations of the papacy. Among the chief promulgators of those views were John Wycliffe in England (died 1384), and his disciples, John Huss, and Jerome of Prague, in Bohemia. The doctrines of Wycliffe (called Lollardism) and of Huss were almost identical with modern Protestantism. Though kept down for a time by persecution, they were never entirely rooted out, but burst forth anew in the more successful 'Reformation' of the sixteenth century.

HISTORY OF GREAT BRITAIN AND IRELAND.

BRITAIN BEFORE THE ROMAN CONQUEST.

ALTHOUGH it was to the ambition of the Romans that the British Islands owed their introduction within the pale of authentic history, there is yet reason to believe that they were known more or less vaguely to other nations before the time of Julius Cæsar. When Hecatæus speaks of a large island off the coast of Gaul inhabited by a sacred race of Hyperboreans, there can be little doubt that it is the island subsequently known as Britannia that he refers to, and it is a moot-point whether Britain or Iceland is the Ultima Thule of the ancients. The Phœnicians, the chief traders of the ancient world, were the first to make any use of the knowledge that the British Islands existed, if they did not discover them. The tin ores of Spain beginning to fail, certain Phœnician adventurers from Cadiz were induced to explore the south-western coasts of Britain, and found what they wanted in a group of ten islands, called, on account of their chief product, Cassiterides or the Tin Islands, the Scilly Isles of modern history. So carefully did the Phœnicians, for the purposes of trade, conceal their discovery, that Herodotus, about five centuries before the birth of Christ, acknowledged that he had been unable to ascertain the geographical position of the Cassiterides. Ultimately, however, they were re-discovered by the Carthaginians, the Grecian colonists of Marseilles, and others; and at the time of the Roman invasion, the inhabitants of Britain exported, to a considerable extent, not only tin, but hides, lead, and even iron, receiving in exchange such articles as salt, earthenware, and brass.

The ancient British tribes, whom the Romans encountered when they crossed the English Channel, belonged, no doubt, to the Aryan race, which came into Europe from the east, and to the Celtic branch of it. The probability is, that they were originally immigrants from Gaul and Belgium, although it is possible that the south-western portions of the island were colonised, as suggested by the historian Tacitus, from Spain. There is also a strong probability, from the weapons and tools found in British tombs, that the Celtic tribes conquered and extirpated or absorbed another and still more ancient savage people. These tribes were about forty in number, according to the most ancient accounts, and divided into two important sections, the Gael in the north, and the Cymri in the south and south-west. Each tribe had its chief or king, who lived in a wooden hut, defended by boughs of trees, while his subjects dwelt in poorer huts or in caves. They had little knowledge of agriculture, and lived very much as the North American Indians do, upon animals caught in hunting and upon fruits. The exigences of climate had made them singularly patient of fatigue and privation, but had also made them sanguinary, vindictive, and rapacious. They stained their bodies blue with the plant woad, to render them formidable in battle; and they used in warfare both cavalry and chariots.

The religion of the British tribes is known as Druidism. There is no evidence that they worshipped images, although they are said to have had both principal gods and local deities or genii; but the great objects of their veneration were the oak and the mistletoe. The bulwark of this religious system was the priests or Druids, who knew and administered the laws, had a high reputation for learning, and were the most powerful class in the island. By their persuasion, human sacrifices were frequently offered up to the gods, these being captives, or, more commonly, malefactors. The island of Anglesea (Mona) was considered the sacred centre of the Druidical system.

CONQUEST BY THE ROMANS.

It was the sword and the pen of Caius Julius Cæsar that first made Britain something more than a myth to the rest of the world. In the year 55 B.C. this great commander, statesman, and historian found himself on the north coast of Gaul (now France), which he had traversed in triumph from the foot of the Alps to the mouth of the Rhine. From thence he descried the white cliffs of the island, separated from Gaul by what is now known as the English Channel. Desirous to add to his own knowledge, and ambitious to conquer a new province for Rome, he took advantage of the pretext that the Britons had given assistance to a Gallic tribe (the Veneti), with whom he had been engaged in hostilities; and, sailing from Portus Itius, he invaded Britain, landing near Deal. The Britons offered a gallant resistance, doing much execution with their javelins; but the discipline of the Roman legions prevailed, and they effected a footing on the island. They did nothing more, however; and after staying twenty days, Cæsar, fearing the approach of winter, returned to Gaul. Next year (54 B.C.), he landed again with a force of five legions, defeated the Britons, under Cassivellaunus, in several engagements, and conquered a large portion of what now forms the counties of Middlesex and Essex. The Britons sued for peace, and obtained it on condition of paying an annual tribute. This promise was disregarded by the Britons; Cæsar, being fully employed elsewhere, was unable to punish the neglect, and his conquests produced little or no effect upon Britain.

For about a hundred years after the second invasion of Cæsar, Britain enjoyed peace. In the year 43 A.D. however, when the Emperor Claudius was reigning at Rome, another large army, commanded, first, by Aulus Plautius, and subsequently by Claudius himself, invaded the island, and subdued several tribes. A British

prince, the king of the Silures, a tribe dwelling on the banks of the Severn, called Caradoc, or Caractacus, who had made a noble defence against their arms, was finally betrayed into their hands, and sent prisoner to Rome. His bold bearing in Rome, however, so struck the emperor, that he gave him his freedom, and allowed him to return to his country. In 61 A.D. the Roman governor or legate, Suetonius Paulinus, reduced the sacred Druidical island of Mona (Anglesea), destroyed its altars, and cut down its groves. The extortions and outrages of the Romans roused the subject Britons, and under Queen Buddug or Boadicea, they fell upon and destroyed the Roman settlements of Londinium (London), Camalodunum (Colchester), and Verulamium (St Albans), massacring their garrisons. She was defeated, however, in a bloody battle by Suetonius, and is believed to have poisoned herself.

Julius Agricola, the father-in-law of the historian Tacitus, who was governor of Britain from 77 to 85 A.D., was the true conqueror of the country. A beneficent ruler as well as an able general, he not only conquered England, but extended the influence of Rome to the Firths of Forth and Clyde, which he connected by a chain of forts. He was the first to sail round the island, discovering the Orkneys. He even pushed north of the Forth, and was opposed, according to Tacitus, by a large army of the inhabitants, under a chief named Galgacus, whom he completely overthrew at a place called by the historian *Mons Graupius*.* Agricola did much by the fairness of his administration to conciliate the Britons to Roman rule. He induced them to adopt the Roman language, religion, and dress; under him, good roads, some of which still remain, were made; and temples, courts of justice, dwelling-houses, and even towns were built.

It appears that Agricola, while on the west coast of Scotland, was desirous of making the conquest of Ireland, which he thought would be useful, both as a medium of communication with Spain, and as a position whence he could overawe Britain. He formed an acquaintance with an Irish chief, who, having been driven from his country by civil commotions, was ready to join in invading it. By him, Agricola was informed that the island might be conquered by one legion and a few auxiliaries. The inhabitants, according to Tacitus, bore a close resemblance to the Britons. Prudence, however, prevented Agricola from attempting the conquest of this other island.

Although the Romans had now effectually conquered the Britons, they were baffled in all their attempts upon the northern part of Scotland, which was then called Caledonia. The utmost they could do with the inhabitants of that country was to build walls across the island to keep them by themselves. The first of these was built in the year 120, by the Emperor Hadrian, between Newcastle and the Solway Firth. Parts of this are still in existence, under the name of the Picts' Wall. Under the reign of Antoninus Pius, however, and in the year 139, a fresh rampart, called now Graham's Dike, was made along Agricola's line, from near Blackness on the Forth to West Kilpatrick on the Clyde. The Caledonians still proving troublesome, the Emperor Severus marched in person into the north of Scotland, and, about the year 210, built a chain of forts along the line of Hadrian's Wall. Frequent attempts were afterwards made to extend the Roman Empire north of Hadrian's Wall, and under Lollius Urbicus and other commanders, the Romans must have penetrated Scotland beyond the more northerly rampart, and from remains it is believed they reached the north-east end of Loch Ness, near the present town of Inverness. There is, on the other hand, historical ground for believing that the Caledonians or Picts, as they were otherwise called, penetrated southward as far as Kent.

Under the Romans, Britain assumed all the appearance of a Roman province. Most of the towns which arose during this rule sprung from colonies, as Lincoln (Lat. *colonia*, the colony of Lindum, as the Romans originally named the place), or from stationary camps, as Chester (Lat. *castra*, a camp). Both agriculture and trade made some progress, but Roman luxury and vice demoralised a once hardy race. Christianity was introduced probably by missionaries from Asia Minor, although it is not exactly known when. The first martyr is believed to have been St Alban, who was put to death at Verulam in 304. In 314, and in the reign of Constantine, British bishops attended the council of Arles; and after that date, Christians, whether Roman or Briton, were allowed to live peacefully on the island.

CONQUEST BY THE SAXONS.

The Roman Empire was already in its decadence when Agricola made Britain one of its provinces, and that decay became more rapid as the empire grew older. Hard pressed by the attacks of enemies in almost all quarters, the emperors, after the time of the Antonines, were unable to defend Britain as before against the Picts and the Scots—the latter a Celtic tribe which had immigrated into Scotland from the north of Ireland. At the same time, new enemies assailed Britain from the sea. These were Teutonic tribes, who came chiefly from the mouths of the Elbe and the Weser, in North Germany, and spoke a Low-German or Low-Dutch dialect. There seems good ground to believe that, before this, Teutonic mercenaries had served in the Roman armies in Britain, as in other portions of the empire, and that settlements of such soldiers became small though permanent colonies. Whether these attracted kinsmen from Germany or not, three tribes of pirates at this time became famous—the Angles, the Saxons, and the Jutes. Matters in Britain grew worse and worse, and in 409 the Emperor Honorius withdrew the Roman legions, and left the Britons to themselves. They, rendered unwarlike and effeminate by the long continuance of Roman dominion, and divided among themselves, were unable to make head against the assailants both by land and sea. The popular story is, that, taking the advice of Gwrtheyrn or Vortigern, one of their chiefs, they called in the aid of Hengest and Horsa, two princes of the Jutes, in the year 449, against

* The accepted reading of the text until quite recently was *Grampius*; and as the battle was assumed to have been fought near the great central ridge of the country, that central ridge came to be called the Grampians—a name quite unknown to native history or tradition. A more careful examination of the manuscripts shews that Tacitus wrote *Graupius*; and the locality of the battle is thought to be indicated by the remains of a Roman camp at Ardoch, between Dunblane and Auchterarder, in Perthshire.

the barbarians of North Britain; and it is probable enough that they had recourse to Teutonic mercenaries, as the Romans had done. The remedy, however, was found no better than the disease. The Teutons, indeed, defeated the Picts; but having acquired a footing in the island, the traditional account is, that the isle of Thanet was ceded to the followers of Hengest and Horsa, as a reward for their assistance. These hardy adventurers sent over for fresh swarms of their countrymen from North Germany, and made war, on their own account, against the Britons. The war lasted for 150 years, and there is some reason to believe that the victory was not always with the invaders; on the contrary, the British prince, Arthur, now celebrated more in romance and poetry than in history, would seem to have defeated the Saxons at Badbury, in Dorsetshire, in the year 520, and to have checked their conquests for a considerable time. Finally, however, the Britons or Welsh (that is to say, strangers), as their opponents styled them, were completely overthrown. In many districts, they were absolutely extirpated or enslaved; and so completely was the population changed, that, excepting in the names of some of the hills and rivers, the British language was extinguished, and even the name of the country was changed from what it originally was to Angleland or England, the land of the Angles. By the end of the sixth century, the Teutonic dominion extended from the German Ocean to the Severn, and from the English Channel to the Firth of Forth. Some of the Britons fled to France, giving their name to the province of Little Brittany; but the majority of them sought shelter in what is now known as Wales, the peninsula containing Cornwall, Devon, and part of Somerset, and in what was subsequently styled the kingdom of Strathclyde, stretching from Dumbarton to Chester.

After a time, and about the end of the sixth century, seven kingdoms of the Teutonic settlers became pre-eminent—Kent, founded by the Jutes under Hengest; Sussex (South Saxons), founded by the Saxons under Ella; Wessex (West Saxons), founded by Cerdic; Essex; Northumbria (which extended from the Humber to the Forth), founded by the Angles under Ida; East Anglia, founded by Offa; and Mercia, founded by Crida. These seven kingdoms have sometimes been called the Heptarchy, but historical criticism has shewn that they were never under the supremacy of a single overlord, although occasionally one chief gained a certain authority over the others, and was called a Bretwalda, or leader of Britain.

The Anglo-Saxons were heathens; their chief deities were Wodin or Odin—the giver of valour and victory—and Thunder or Thor, the ruler of the sky (whose names are still perpetuated in the two days of the week, Wednesday and Thursday); and they believed in a Walhalla, or heaven, in which the brave were to continue their favourite earthly pursuits, such as war and the chase. Their kings were taken from the royal house, but still were elected. The king was guided by a sort of parliament, called the Witan or Witena-gemôt, or Meeting of the Wise, in which all freemen could take part. The freemen were divided into Earls and Churls, corresponding very much to 'gentle' and 'simple.' There were also *thralls*, or slaves, many of whom had been originally Welshmen or Britons. The king had his *thegns*, or thanes, warriors specially devoted to his service. The chief district divisions were the *shire*, or county; the *hundred*, a division of the county; and the *mark*, or township.

In the northern part of the island were the Picts, first mentioned in 296, and generally believed to be of Celtic origin, and who held the east of Scotland; the Britons, who held Strathclyde or Cumbria, stretching from Lancashire to the Clyde, having as their chief seat Alclyd or Dumbarton; the Scots or Dalriads, a Gaelic tribe who, in 503, under a famous chief, Fergus Mor MacEarca or Loarn More, crossed in leathern coracles from the north-eastern coast of Antrim to the coast of Southern Argyll; and the Saxons, who struggled much with the Picts, often extending their conquests to the Forth, while the former often extended theirs to the Humber. The Picts and Scots continued distinct until the latter proved the superior race, and Kenneth united both under himself in 843. Kenneth's successors conquered Strathclyde, and made further progress, until one of them, Malcolm II. held nearly the whole of Scotland north of the Tweed, and even laid claim to Cumberland and Northumberland.

The conversion of the Teutonic population to Christianity was due, not to the Welsh, but directly to Rome. Pope Gregory the Great, in 597, sent a band of monks, having at their head the celebrated Augustine, into Britain. He converted Æthelbert, king of Kent, then the chief prince in Southern Britain, partly through his wife Bertha, who was a Christian, and the daughter of Charibert, a Frankish king in Gaul. He gave Augustine and his monks a home in Canterbury, and the former became the first archbishop of Canterbury. Edwin of Deira, who ascended the Northumbrian throne in 617, and who was the most powerful monarch of his time in England, was converted by Bishop Paulinus, whom his wife, the daughter of Æthelbert, brought with her, and he founded York Minster. The Northumbrians subsequently lapsed into heathenism, and were reconverted by Aidan, a monk from the Scotch monastery of Iona, who fixed his episcopal see in Lindisfarne, since called Holy Island. The other kingdoms of England were converted to Christianity during the seventh century. It is not certain how Christianity was introduced into Scotland, but the first great name that occurs is that of Ninian, who founded a religious house at Whithorn, in Wigtownshire, and who is said to have died in 432, the same year that St Patrick evangelised Ireland. It was from Ireland, then a land of peace and enlightenment, that the great missionary of Christianity to Scotland, Columba, came. Excommunicated by the Irish church, on account, it is said, of a deadly quarrel between two Irish clans about the appropriation of a Psalter, Columba, who was connected with chiefs in Argyll, sailed from Ireland to Iona in 563, and founded there a monastery, which became both a missionary centre and an ecclesiastical training college. The original Columbites, whose successors the simple brotherhood of Culdees were believed to be, did not acknowledge the supremacy of Rome, and it was not till 716 that they conformed to the Roman ritual.

For a time three of the Anglo-Saxon monarchies,

Mercia, Northumbria, and Wessex, struggled for the supremacy; but ultimately the last, under Ecgberht, or Egbert, who succeeded to the throne in 802, obtained the first place. He conquered the Saxons and Jutes, the Welsh in Cornwall; and Wales submitted to him, and the kings of Mercia, East Anglia, and Northumbria became his vassals. In his reign began the incursions of the Danes or Northmen, a Teutonic race, speaking a kindred tongue to that of the English, and among whom piracy was a highly esteemed profession. It was in 864, and in the reign of Æthelred, one of Egbert's grandsons, that they made a formidable invasion under two famous chiefs, Ingvar and Ubba, overrunning Northumbria and Mercia. Æthelred was succeeded, in 871, by the celebrated Ælfred or Alfred, then twenty-two years of age. He reigned for seven years, until his sovereignty was virtually overturned in 878, by Guthrum, a Danish chief, who suddenly overran Wessex; and for a time he had to hide himself in the swamps of Somersetshire. Gathering strength, however, he fell upon the Danes, and gave them a crushing defeat, when they thought themselves in no danger, and regained a considerable part of his kingdom. Alfred spent the rest of his life in literary study, of which he was very fond, and in forming laws and regulations for the good of his people. He was one of the most able, most virtuous, and most popular princes that ever reigned in Britain. He died in the year 901, in the fifty-third year of his age.

SAXON AND DANISH KINGS.

Alfred's son, Eadward or Edward, who succeeded him on the throne, was perhaps the most powerful of the Saxon kings. He was called Lord of all Britain; the Northumbrians, the Scots, and the Welsh of Strathclyde, doing him homage. The Danes had, however, obtained a firm footing in the time of Alfred, having received, by a treaty concluded with him, East Anglia and part of Essex and Mercia. For many reigns there was a perpetual struggle with varying success between them and the English. In the reign of Æthelred II. (surnamed *the Unready*), who reigned from 979 to 1016, their invasions increased to such an extent that the king endeavoured to buy them off with money, obtained by a tax called *Danegeld*. In 994, Swend or Swegen, the king of the Danes, himself invaded England, and, after a severe struggle, in which Æthelred sought shelter with his brother-in-law Richard, Duke of Normandy, and London four times drove off the invaders, became in 1013 master of England. After Swend's death the struggle was renewed between his son Cnut or Canute, and the son of Æthelred, Edmund, surnamed *Ironside*. Ultimately, the two divided England between them. On Edmund's death, Cnut, who was also monarch of Denmark, and had conquered Norway and a portion of Sweden, became sole monarch of England. After him, there reigned two other Danish kings, Harold and Harthacnut. When the latter died, in 1042, the old Saxon line was restored, the people electing to the throne Eadward or Edward, the son of Æthelred, and surnamed *the Confessor*. Edward had been brought up in Normandy, and shewed a decided preference for the Normans, many of whom he brought to England and loaded with honours. The Saxons were jealous of the Normans, and their jealousy found a champion in Godwin, the powerful earl of the West Saxons. He was at one time banished, but returned with such a powerful following, that the Norman adventurers fled, and Edward, to make peace with his powerful subject, married his daughter Edith. Godwin was succeeded in the earldom by his son Harold, who in reality ruled England, and who gained many victories over the Welsh.

THE NORMAN CONQUEST.

Edward died in 1066, and although he was said to have promised the throne of England to William, Duke of Normandy, he also seems, on his death-bed, to have recommended to his people and nobles his brother-in-law, Harold. The latter, in spite of his having, according to report, sworn allegiance to William himself, and although Edgar Ætheling, the grandson of Edmund Ironside, might be considered to have the most legitimate title to the throne, was elected king by the Witan on the day of Edward's death. Duke William resolved to contest the throne, and being recognised by Pope Alexander II. as the rightful heir, made preparations for an invasion of England. Before he landed, Harold had other enemies to encounter in Harold Hardrada, a gigantic warrior, and king of Norway; and his own brother Tostig, who had been banished from his government of Northumberland during the previous reign, and now invaded the north of England together with Hardrada. Harold met them at Stamford Bridge, in Yorkshire, on 25th September; the invaders were completely defeated, and both the leaders of the invasion were left among the slain. William landed on the 28th at Pevensey, on the Sussex coast, and occupied Hastings. Harold marched southward with all haste, and pitched his camp on the field of Senlac. On the 14th October, the conflict for the supremacy of England took place. It was long and doubtful, but the English king falling, pierced in the eye with an arrow, his army gave way, and the day was William's. The English even in London were so completely paralysed by Harold's defeat, that, although for a time they made a show of making young Edgar king, they ultimately tendered the crown to the Norman duke, who was formally crowned at Westminster on Christmas Day.

THE EARLY NORMAN KINGS.

WILLIAM, surnamed *the Conqueror*, reigned from 1066 to 1087, being chiefly engaged all that time in completing the subjugation of the Saxons, especially in the north, which he harried mercilessly. He is allowed to have been a man of much sagacity, and a firm ruler; but his temper was violent, and his disposition brutal. At the time of his death, which took place in Normandy, WILLIAM, who was the second son, seized upon the crown, which it was also the wish of his father that he should have, Robert, the eldest son, having been frequently in rebellion against him, and having received besides the dukedom of Normandy. William, who was an unpopular monarch, and much addicted to sensual vice, was shot accidentally, it was maintained, by Walter

Tyrrel, in the New Forest, in the year 1100. Towards the close of this reign, the whole of Christian Europe was agitated by the first Crusade—an expedition for the recovery of the Holy Land from the Saracens. Robert of Normandy had a high command in this enterprise, and gained much fame as a warrior, having even mortgaged his dukedom for the means with which to go to Palestine; but while he was in Italy, on his return, his youngest brother Henry usurped the throne left vacant by William, so that he was again disappointed of his birthright. HENRY I. —surnamed *Beauclerc*, from his being a fine scholar—was a prince of some ability; but he disgraced himself by putting out the eyes of his eldest brother, whom he defeated at Tinchebrai in Normandy, in 1106, wresting his dukedom from him, and keeping him nearly thirty years in confinement.

It was in the reign of William II. or *Rufus*, that Scotland came first into notable connection and collision with England. Allusion has been already made to Malcolm II. as the first monarch who could claim anything like supremacy over the whole of Scotland, although even he had but scant obedience from communities of mixed but mainly Celtic origin in the north, which were generally under chiefs called Maarmors, and were also generally engaged in hostilities with each other. Malcolm, who had obtained the throne by slaying his predecessor Kenneth IV. seems to have been succeeded by his grandson Duncan. He in turn was slain by Macbeda, the Maarmor of Ross, whose wife, Gruach, was, according to tradition, the grand-daughter of Kenneth IV. Macbeda is the Macbeth of Shakspeare; but although in popular belief a monster, he was the most powerful monarch that had yet ruled in Scotland, holding sway over the whole of the country, except the isles and a portion of the Western Highlands; and, curiously enough, he appears in history as the first Scotch monarch that was a benefactor of the church and offered his allegiance to Rome. Duncan had married a sister of Siward, Earl of Northumberland, and on the death of the former, his two sons sought refuge with their uncle. Fifteen years after Duncan's death, the elder of these, Malcolm, invaded Scotland with a large army. A battle was fought at the famed Dunsinane; but the decisive engagement of the war was at Lumphanan in Aberdeenshire, in 1056, where Macbeda was killed. The war was carried on for a short time by Lulach, a son of Queen Gruach by a former marriage. But he also was slain; and MALCOLM (surnamed *Canmore*, or Bighead) was crowned at Scone, this being the first Scottish coronation mentioned in history. In the reign of Malcolm, a number of Saxons, on account of the Norman Conquest, sought refuge in Scotland. Among these were Edgar Ætheling, the Saxon pretender to the throne, his mother, and two sisters. Malcolm married Margaret, one of these sisters, and endeavoured to assist Edgar, his brother-in-law, against the Conqueror. After a struggle, the ancient chronicle informs us that 'Malcolm became agreed with King William, and became his man.' In the reign of Rufus, however, the struggle was renewed; and in the course of an invasion into the north of England, in 1093, Malcolm was surprised and slain near Alnwick, by Robert, Earl of Northumberland. Both Malcolm, who was a sagacious and energetic ruler, and his wife Margaret, who was a woman of high culture and great piety, did a great deal to improve Scotland. At Malcolm's death, the crown was contested for a time by Donald Bane, a brother of Malcolm, and by Duncan, a son by a former wife; but in 1097, EDGAR, a son by Margaret, ascended the throne. He, in turn, was succeeded by his two brothers, ALEXANDER I. in 1107, and DAVID I. in 1124, who, as Earl of Huntingdon, had been a powerful English nobleman. In the reign of David, the Church of Rome gained complete ascendency in Scotland, and a large number of churches and monasteries were founded.

Henry Beauclerc of England, in order to strengthen his claim to the throne of England and the loyalty of its people by a Saxon alliance, married Matilda or Maud, the daughter of Malcolm Canmore and of the Princess Margaret. By her he had an only daughter of the same name, whom he married first to the Emperor of Germany, and then to Geoffrey Plantagenet, eldest son of the Earl of Anjou, in France. Through the death by drowning, in the English Channel, in 1120, of Henry's only son William, this lady, and her children by Plantagenet; were properly the heirs of the English crown; but on the death of Henry, in 1135, it was seized by STEPHEN of Blois, Count of Boulogne, and son of Henry's sister Adela, and a man of easy and popular manners, who reigned for nineteen years, during which the country was rendered almost desolate by civil contests, in which David of Scotland joined in the interests of Matilda. The most remarkable conflict of the war was 'The Battle of the Standard,' which was so named from a tall cross raised on a car accompanying the English army which ventured to oppose David, and which was fought at Northallerton in Yorkshire, in 1138. After a severe engagement, David, baffled rather than beaten, withdrew from the field.

On the death of Stephen, in 1154, the crown fell peacefully to HENRY II. who was the eldest son of Maud, and the first of the Plantagenet race of sovereigns. Henry's reign was principally marked by a series of measures for reducing the power of the clergy, in the course of which some of his courtiers, in 1171, thought they could not do him a better service than to murder Thomas-à-Becket, archbishop of Canterbury, who had been the chief obstacle to his views, and a man of great ability and ambition. For his concern in this foul transaction, Henry had to perform a humiliating penance, receiving eighty lashes on his bare back from the monks of Canterbury.

Henry was the most powerful king that had yet reigned in Britain. Besides the great hereditary domains which he possessed in France, and for which he did homage to the king of that country, he exacted a temporary homage from WILLIAM of Scotland, the grandson of David, a monarch of great valour, who took the surname of *the Lion*, and who reigned from 1165 to 1214. Henry also added Ireland to his dominions. This island had previously been divided into five kingdoms —Munster, Leinster, Meath, Ulster, and Connaught. The people were perpetually quarrelling among themselves; and this fact, taken in conjunction with their heathen religion, furnished

a flimsy pretext for invading them from England. Dermot Macmorrough, king of Leinster, having been dethroned by his subjects, introduced an English warrior, Richard, Earl of Pembroke, generally called *Strongbow*, for the purpose of regaining his possessions. A body composed of 50 knights, 90 esquires, and 460 archers, in all 600 men, was enabled by its superior discipline to overthrow the whole warlike force that could be brought against it; and the conquest was easily completed by Henry in person, who went thither in 1171. The military leaders were left to rule over the country; but they managed their trust so ill, that the Irish never became peaceable and improving subjects of the Norman king, as the English had gradually done.

RICHARD CŒUR DE LION—JOHN—MAGNA CHARTA.

Henry II. was much troubled in his latter years by the disobedience of his children. At his death, in 1189, he was succeeded by his son RICHARD, styled *Cœur de Lion*, or the *Lion-hearted*, from his headstrong courage. At his coronation, the people were permitted to massacre many thousands of unoffending Jews throughout the kingdom. Almost immediately after his accession, he joined the king of France in a second Crusade. To obtain funds, he sold crown lands and even state offices, and for 10,000 marks gave up to William the Lion 'all the conditions which Henry by new deeds and by his capture had extorted.' Accompanied by Philip Augustus of France, he landed in Palestine (1191), and fought with prodigious valour, but with no good result. On one occasion, being offended at a breach of truce by his opponent Saladin, he beheaded 5000 prisoners, whose deaths were immediately revenged by a similar massacre of Christian prisoners. In 1192, he returned with a small remnant of his gallant army, and being shipwrecked at Aquileia, wandered in disguise into the dominions of his mortal enemy, Leopold, Duke of Austria, who, with Henry VI. Emperor of Germany, detained him till he was redeemed by a ransom, which impoverished nearly the whole of his subjects. This prince spent the rest of his life in wars with Philip of France, and was killed by an arrow at the siege of a castle in Limousin, in 1199, after a reign of ten years, of which he had spent only about three months in England.

JOHN, the younger brother of Richard, succeeded, although Arthur, Duke of Brittany, the son of his elder brother Geoffrey, was the lawful heir. John, a vain, cruel, and weak prince, alienated the affections of his subjects almost at the very first by his conduct towards his nephew, who suddenly disappeared, and whom he was said to have assassinated with his own hands. The tyranny and wickedness of John, shewn in his imposition of oppressive taxes and his revival of the forest laws, as well as in his cruelty, his licentiousness, and his struggles with the church, caused his barons to rise against him, and the result was, that, on the 15th June 1215, he was compelled by them to sign what is called the *Magna Charta*, or Great Charter, granting them many privileges and exemptions, and generally securing the personal liberty of his subjects. The principal point concerning the nation at large was, that no tax or supply should be levied from them without their own consent in a Great Council.

John, however, induced the pope (Innocent III.) to annul the Great Charter, and renewed his struggle with the barons, who even offered the throne to Louis, eldest son of Philip of France. The struggle between John and Louis continued till the death of the former in 1216. Some time after his death, Louis, deserted by the barons, withdrew from England.

HENRY III.—ORIGIN OF PARLIAMENT.

John was succeeded by his son, HENRY III. a weak and worthless prince, who ascended the throne in his boyhood, and reigned fifty-six years, without having performed one worthy act of sufficient consequence to be mentioned. In his reign was held the first assemblage approaching to the character of a parliament. It was first called in 1225, in order to give supplies for carrying on a war against France. Under the earlier Norman kings, and even, it is believed, under the Saxons, an assembly called the Great Council had shared with the sovereign the power of framing laws; but it was only now that the body had any power to balance that of the sovereign, and it was not till 1265 that representatives from the inhabitants of towns were introduced.

EDWARDS I. AND II.—ATTEMPTED CONQUEST OF SCOTLAND.

Henry III. at his death in 1272 was succeeded by his son, EDWARD I. a prince as warlike and sagacious as his father was the reverse, and who had distinguished himself, even in his father's reign, by relieving him from the barons, into whose hands he had fallen, and defeating them and their leader, Simon of Montfort, Earl of Leicester, at the battle of Evesham in 1265. Early in his reign Edward reduced Wales, whose prince, Llywelyn, had refused to do what his predecessors had done, swear fealty to the English monarch. An insurrection by Llywelyn's brother, David or *Daffyd*, was crushed, and David executed in 1283. In the meantime, from the death of William the Lion in 1214, Scotland had been ruled by two princes, ALEXANDERS II. and III. under whom it advanced considerably in wealth and civilisation. On the death of Alexander III. in 1285, the crown fell to his grand-daughter, MARGARET, a young girl whose father was Eric, king of Norway. Edward formed a treaty with the Estates of Scotland for a marriage between this princess and his son Edward, styled Prince of Wales. Unfortunately, 'the Maid of Norway,' as the young queen was styled, died at Orkney, on her way to Scotland, in 1290; and the crown was left to be disputed by ten distant relatives, of whom JOHN BALIOL and ROBERT BRUCE seemed to have the best right. Edward, being resolved to make Scotland his own at all hazards, interfered in this dispute, and being appointed arbitrator among the competitors, persuaded them to own in the first place an ill-defined claim put forward by himself of the right of paramountcy or superior sovereignty over Scotland. When this was done, he appointed Baliol to be his vassal-king, an honour which the unfortunate man was not long

permitted to enjoy. Having driven Baliol to resistance, and alliance with the king of France, he invaded the country, overthrew the Scotch army, and stripping Baliol of his sovereignty, assumed to himself the dominion of Scotland, as a right forfeited to him by the rebellion of his vassal.

It is at this time that the celebrated William Wallace, the Scottish national hero, appears on the scene. Wallace's father was a knight and landowner, having the estate of Ellerslie, in Renfrewshire, and a representative of the Saxon element in the population, as opposed to the Norman, to which the nobility belonged, and which was ranged on the side of Edward. Whether or not the stories as to Wallace's personal bulk and strength are true, he must have been a military and political genius of the first order, while his name is synonymous with the purest patriotism. From the first, he chafed under the rule of Edward, and as he became known as a daring opponent of English authority, other patriots joined him, and proceeding from small successes to great, he was able to reduce nearly all the strongholds held for Edward. On the 11th September 1297, he utterly routed at Stirling Bridge an army sent against him and commanded by Warenne, Earl of Surrey, who had been appointed by Edward governor of Scotland. After this defeat he cleared the country of the English invaders, and ruled the country as Guardian of the kingdom. Edward himself, however, marched into Scotland, and on the 22d July 1298, defeated Wallace at Falkirk, in spite of a gallant resistance with an inferior army. After this defeat, Wallace unaccountably vanishes from Scotch history, and certainly from the Guardianship of Scotland; and there is some reason to believe that for a time he lived in France. The war was continued, however, and ultimately Edward again established his authority in Scotland. Wallace, who still held out with a small following, was captured in Glasgow, having been betrayed, it is stated, by his man, John Short, to Alexander de Monteith, Edward's governor of Dumbarton Castle. He was taken to London, tried for treason, and executed on the 23d August 1305.

Some time after the death of Wallace, while Edward was engrossed with his French wars, ROBERT BRUCE, Earl of Carrick, grandson of him who had competed with Baliol, conceived the idea of putting himself at the head of the Scots, and endeavouring by their means at once to gain the crown, and to recover the independence of the kingdom. After a series of adventures, beginning with the stabbing of his rival, Comyn of Badenoch, in Dumfries in 1306, Bruce was crowned at Scone. For some time after, he had to skulk as a fugitive, being unable to maintain his ground against the English officers; but at length he became so formidable, that Edward found it necessary (1307) to lead a large army against him. The English monarch, worn out with fatigue and age, died on the coast of the Solway Firth, at Burgh-on-the-Sands, in 1307, when just within sight of Scotland, leaving his sceptre to his son EDWARD II. That weak prince immediately returned to London, leaving Bruce to contend with his inferior officers.

After several years of constant war, in which one English fortress after another fell into the hands of Bruce, Edward resolved to make a decisive effort to reduce Scotland to subjection, and save Stirling Castle, which held out. In the summer of 1314, he invaded it with an army of 100,000 men. Bruce drew up his troops, which were only 30,000 in number, at Bannockburn, near Stirling. Partly by steady valour, and partly by the use of stratagems, the Scots (June 24) were victorious, and Edward fled ignominiously from the field. The Scottish king gained an immense booty, besides securing his crown and the independence of his country. He next year sent his brother Edward with a body of troops to Ireland, to assist the native *septs*, or clans, in resisting the English. This bold young knight was crowned king of Ireland at Carrickfergus, and for some time held his ground against the English forces, but was defeated at Athenree in 1316, and two years afterwards fell in battle near Dundalk.

The weakness of Edward II. was chiefly shewn in a fondness for favourites, into whose hands he committed the whole interests of his people. At length Queen Isabella and the Prince of Wales raised an insurrection against the king, and he was deposed by parliament as being unworthy to reign. The prince was then crowned as EDWARD III. (1327), being as yet only about fourteen years of age; and in the course of a few months the degraded sovereign was cruelly put to death in Berkeley Castle, the chief instrument in causing his death being Roger Mortimer, the queen's favourite and paramour.

During the minority of the young king, the reins of government were held ostensibly by guardians, but in reality by the queen and Mortimer. Under their administration, a peace was concluded, in 1328, with King Robert of Scotland, of which one of the conditions was a full acknowledgment of the independence of the Scottish monarchy.

EDWARD III.—RICHARD II.

Edward III. who soon after assumed full power by overthrowing and executing Mortimer, was a warlike monarch, and inspired by all his grandfather's desire of conquest. In 1329, Robert Bruce died, and was succeeded by his infant son DAVID, to whom Isabella, a young sister of the English king, was married, in terms of the late treaty. Notwithstanding this connection, Edward aided a son of John Baliol in an attempt to gain the Scottish crown. Edward Baliol overthrew the Regent of Scotland at Dupplin, September 1332, and for two months reigned as King of Scots, while David and his wife took refuge in France. Baliol was, however, obliged to flee, it being believed that he had consented to cede some of the southern counties to England; but an incessant border warfare was kept up, the Scots being assisted by France.

But for his attention being diverted to France, Edward III. would have made a more formidable effort to subdue Scotland. He was led into a long course of warfare with France, to the crown of which he made a claim on the death of Charles IV. without issue, because his mother was a daughter of Philip IV. against the actual monarch, Philip VI. In the victories which he gained at Crecy (August 26, 1346) and Poitiers (September 19, 1356), the national valour, his own, and that of his celebrated son, the Black Prince, were

shewn conspicuously; but this lavish expenditure of the resources of his kingdom, in which he was supported by his parliament, was of no permanent benefit, even to himself, for whom alone it was made. John, king of France, who had been made captive at Poitiers, and David, king of Scotland, who had been taken at Nevill's Cross in 1346, while conducting an invasion of England, were prisoners in England at the same time. In 1360, after about twenty years of active fighting, the English king left France with little more territory than he had previously enjoyed. Edward had invaded Scotland with a powerful army in 1356, but without making any impression. The Scots, under David's nephew, Robert Stewart, effectually protected themselves, not only from his arms, but from a proposal which David himself basely undertook to make, that Lionel, the second son of the English king, should be acknowledged as his successor. Edward died in 1377, a year after the decease of his son, the Black Prince.

England was at this time affected more than at any other by the fashions of chivalry—a military enthusiasm which for some centuries pervaded all Christian Europe, which prompted, as one of its first principles, a heedless bravery in encountering all kinds of danger. Its votaries were expected to be particularly bold in behalf of the fair sex, insomuch that a young knight would sometimes challenge to mortal combat any one who denied his mistress to be the loveliest in the world. It was a system full of extravagance, and tending to bloodshed; but nevertheless it maintained a certain courtesy towards females, and a romantic principle of honour, which we may be glad to admire, considering how rude was almost every other feature of the age. In 1363, John Wycliffe, an Oxford doctor, became famous for the attacks he made on the orders of Begging Friars. He questioned some of the doctrines of the church, and hence he has generally been considered the herald of the Protestant Reformation. He also translated the Bible. His disciples, nicknamed Lollards, were frequently burned as heretics. He died in 1384.

EDWARD III.—in whose later days the government had been conducted chiefly by his third son, John of Gaunt or Ghent, Duke of Lancaster—was succeeded by his grandson, RICHARD II. then a boy of eleven years of age, and who proved to be a person of weak character. The Commons took advantage of the irregularity of his government to strengthen their privileges, which they had with difficulty sustained during the more powerful rule of his predecessor. Early in this reign, they assumed the right, not only of taxing the country, but of seeing how the money was spent. Indignant at the severity of a tax imposed upon all grown-up persons, the peasantry of the eastern parts of England rose, in 1381, under one Walter, a tiler, of Dartford, commonly called Wat Tyler, and advanced, to the number of 60,000, to London, where they put to death the chancellor and primate, as evil counsellors of their sovereign. They demanded the abolition of villeinage or slavery, the free exercise of trades, fixed rents in place of compulsory service, and a general pardon. The king came to confer with them at Smithfield, where Walworth, Mayor of London, stabbed Wat Tyler with a dagger—a weapon which has since figured in the armorial bearings of the metropolis. The peasants were dismayed, and submitted, although not before the king had conceded their demands, which concessions, however, he afterwards got parliament to annul.

The country was misgoverned by Richard II. till 1399, when he was deposed by his subjects under his cousin, Henry, Duke of Lancaster, whom he had sent into exile, and Percy, the powerful Earl of Northumberland. Lancaster was crowned as HENRY IV.; and his predecessor, Richard, soon after disappeared mysteriously, the general belief being that he was murdered in Pontefract Castle.

In the meantime, David of Scotland died (1371), and was succeeded by his nephew, ROBERT STEWART, who was the son of Marjory Bruce, daughter of Robert I. and the first monarch of that family. ROBERT II. dying in 1390, was succeeded by his son ROBERT III. who was a good and gentle prince. He had two sons, David and James: the former was starved to death by his uncle, the Duke of Albany; and the latter, when on his way to France for his education, was seized by Henry IV. of England, and kept captive in that country for eighteen years. Robert III. then died of a broken heart (1406), and the kingdom fell into the hands of the Duke of Albany, at whose death, in 1419, it was governed by his son, Duke Murdoch.

HOUSE OF LANCASTER.

Henry IV. proved a prudent prince, and comparatively a good ruler. As Edmund, Earl of March, great-grandson of Lionel, the second son of Edward III. had a better right to the throne, Henry was much troubled by insurrections, the most formidable of which were those of the Percies. Hotspur, the celebrated son of the Earl of Northumberland, was, however, slain in battle at Shrewsbury; and Northumberland himself, after being the moving power in two other insurrections, was also slain. At the same time, Owen Glendower, who claimed to be descended from the ancient princes of Wales, rose against English authority, and kept his ground for many years. Somewhat strange to say, Glendower died a peaceful death.

On the death of Henry IV. in 1413, he was succeeded by his son, who was proclaimed under the title of HENRY V. The young king attained high popularity, on account of his impartial administration of justice, and his zeal to protect the poor from the oppressions of their superiors. His reign is less agreeably marked by the persecutions of the Lollards, the most notable of whom was a Sir John Oldcastle, Lord Cobham, who was executed as a traitor and a heretic. Being determined to use every endeavour to gain the crown of France, which he considered his by right of birth, he landed in Normandy with 30,000 men (August 1415), and gave battle to a much superior force of the French at Agincourt, October 25. He gained a complete victory, which was sullied by his afterwards ordering a massacre of his prisoners, under the apprehension that an attempt was to be made to rescue them. The war was carried on for some years longer, and Henry would have probably succeeded in making good his claim to the French crown, if he had not died prematurely of a dysentery (August 31, 1422), in the thirty-fourth

year of his age, leaving the throne to an infant nine months old, who was proclaimed as HENRY VI. king of France and England.

Under Henry VI. whose power was for some time in the hands of his uncle, the Duke of Bedford, the English maintained their footing in France for several years; and at the battle of Verneuil, in 1424, rivalled the glory of Crecy and Poitiers. In 1428, when France seemed completely sunk beneath the English rule, the interests of the native prince were suddenly revived by a peasant-girl of sixteen, named Joan of Arc, who declared herself to have been commissioned by Heaven to save her country; and entering into the French army, was the cause of several signal reverses to the English. By her enthusiastic exertions, and the trust everywhere reposed in her supernatural character, Charles VII. was crowned at Rheims in 1430. Being soon after taken prisoner while heading a sally from Compiègne, the heroic maiden was, by the English, condemned for witchcraft, and burned, May 30, 1431. Nevertheless, about the year 1453, the French monarch had retrieved the whole of his dominions from the English, with the exception of Calais.

Henry VI. was remarkable for the extreme weakness of his character. His cousin, Richard, Duke of York, descended from an elder son of Edward III. and therefore possessed of a superior title to the throne, conceived that Henry's imbecility afforded a good opportunity for asserting what he thought his birthright. Then commenced the famous *Wars of the Roses*, as they were called, from the badges of the families of York and Lancaster—the former of which was a white, while the latter was a red rose. In 1455, at St Albans, the duke gained a decisive victory over the forces of Henry. In some succeeding engagements the friends of Henry were victorious; and at length, in the battle of Wakefield (December 24, 1460), the forces of the Duke of York were signally defeated, and himself, with one of his sons, taken and put to death. His pretensions were then taken up by his eldest son Edward, who, with the assistance of the Earl of Warwick, gained such advantages next year that, entering London, he was declared king, 1461. Before this was accomplished, many thousands had fallen on both sides. Henry, who cared little for the pomp of sovereignty, was confined in the Tower.

Scotland, in the meantime (1424), had redeemed her king from his captivity in England; and that prince, styled JAMES I. had proved a great legislator and reformer, not to speak of his personal accomplishments in music and literature, which surpassed those of every contemporary monarch. James did much to reduce the Highlands to an obedience under the Scottish government, and also to break up the enormous power of the nobles. By these proceedings, however, he excited a deep hatred in the bosoms of some of his subjects; and in 1437 he fell a victim to assassination at Perth. He was succeeded by his infant son, JAMES II. who was unfortunately killed, in the flower of his age, by the bursting of a cannon before Roxburgh Castle. His successor, JAMES III. was also a minor, and on reaching man's estate, proved to be a weak, though not ill-meaning prince. He fell a victim, in 1488, to a conspiracy formed by his subjects, and which was led by his eldest son.

HOUSE OF YORK.

Edward, of the House of York, styled EDWARD IV. who commenced his reign in the nineteenth year of his age, was for ten years perpetually disturbed by renewed attempts of the Lancastrian party, of which he mercilessly sacrificed many thousands who fell into his hands. At length, his marriage with the widow of Sir John Grey, a Lancastrian; the honours he showered on her relatives; and the marriage concluded by him between his sister Margaret and the Duke of Burgundy, while the Earl of Warwick was in France—sent there to obtain the hand of a French prince for that princess—offended Warwick, who had been chiefly instrumental in placing him on the throne. That nobleman, aided by Edward's own brother, George, Duke of Clarence, who had married one of his daughters, raised an insurrection against him, and in eleven days was master of the kingdom, while Edward had to take refuge in the dominions of the Duke of Burgundy. Henry VI. was then restored, and Warwick acquired the title of King-maker. Nine months after (1471), Edward landed with a small body of followers, and having called his partisans around him, overthrew and killed Warwick, who had been deserted by Clarence. Margaret of Anjou, who had fought battles for her husband in almost every province of England, gathered a new army, and opposed Edward at Tewkesbury, where she was completely defeated. Her son and husband were taken; the former was murdered in cold blood; and the latter died in the Tower, assassinated, it is said, by Edward's younger brother, Richard, Duke of Gloucester; and she herself spent the remainder of her singular life in France. Edward reigned, a profligate and a tyrant, till 1483, when he died in the forty-second year of his age. He had previously caused his brother, the equally profligate Duke of Clarence, to be drowned, according to the popular story, in a butt of Malmsey wine.

During the reign of Edward IV. the plague frequently broke out in England, and carried off immense numbers of the people. It was particularly fatal in London, and in all other places where many houses were huddled closely together, with imperfect means of cleaning and ventilation. It was calculated that the disease, on one occasion in this reign, destroyed as many lives as the fifteen years' war.

EDWARD V. the eldest son of Edward IV. was a boy of eleven years when he fell heir to the crown, which he never wore. His uncle, Richard, Duke of Gloucester, called 'Crook-back,' and pictured as a blood-thirsty and deformed wretch, soon after contrived to obtain the chief power, and also to cause the murder of the young king and his still younger brother in the Tower, in less than three months after the former had been crowned. He then himself mounted the throne under the title of RICHARD III. and reigned for two years. In 1485, Henry Tudor, Earl of Richmond, who on the father's side was a grandson of Owen Tudor and Katharine, widow of Henry V. and on the mother's, a descendant, through the Beaufort line, of John of Gaunt, resolved to make an attempt upon the English crown, as the representative of the House of Lancaster. Having landed with about 2000 followers at Milford-

Haven, he advanced into the country, and speedily gained such accessions of force as enabled him to meet and overthrow Richard at Bosworth Field, where the tyrant was slain, and the victorious Richmond was immediately proclaimed king, under the title of HENRY VII. The new monarch in 1486 sought to strengthen his title by marrying Elizabeth, the daughter and heir of Edward IV. by which it was said the families of York and Lancaster were united.

It was during the struggles between the rival Houses of York and Lancaster that printing was introduced into England, William Caxton, a native of Kent, who had probably learned the art in the Netherlands, setting up a press in 1474. A large number of Caxton's books were translations from the French, and were in what is styled black-letter type.

HOUSE OF TUDOR—HENRY VII.

The reign of Henry VII. was much disturbed by insurrections, in consequence of his imperfect title. A baker's boy, named Lambert Simnel, and a Jew's son, named Perkin Warbeck, were successively set up by the York party—the one as a son of the late Duke of Clarence, and the other as Richard Plantagenet, Duke of York, younger brother of Edward V.—but were both defeated. Warbeck, who, some even yet maintain, was no impostor, was hanged at Tyburn in 1499; and about the same time, Henry procured, by forms of law, the death of the Earl of Warwick, the real son of the late Duke of Clarence, a poor boy, whom he had kept fifteen years in confinement, and whose title to the throne, being superior to his own, rendered him uneasy.

Henry, though a cruel prince, as were most of the sovereigns of his age, was a sagacious and peaceful ruler. The greatest fault in his character was his excessive love of money, of which he amassed an immense sum by extortions, having for his instruments two lawyers, Empson and Dudley. During his reign, Ireland was made more dependent on the English crown by a statute prohibiting any parliament from being held in it until the king should give his consent.

HENRY VIII.

Henry VII. died in April 1509, in the fifty-third year of his age. His eldest surviving son and successor, Henry VIII. was in his eighteenth year. Young, handsome, and supposed to be amiable, he enjoyed at first a high degree of popularity; and gratified many by beheading Empson and Dudley. Some years before, he had been affianced to Catharine, a Spanish princess, who had previously been the wife of his deceased brother Arthur: he was now married to this lady, the pope having previously granted a dispensation for that purpose. The chief administration of affairs was committed to the celebrated Cardinal Wolsey, son of a burgess of Ipswich. The king became much engaged in continental politics; and during a war which he carried on against France, his brother-in-law James IV. who sided with that state, made an unfortunate irruption into the north of England, and was overthrown and slain, with the flower of his nobility (September 9, 1513), at Flodden.

THE REFORMATION IN ENGLAND.

About this time some changes of great importance to European society took place. Almost ever since the destruction of the Roman Empire, the nations which arose out of it had remained in subjection to the see of Rome. With knowledge, the rise of a commercial and manufacturing class, and ready access to knowledge given through the invention of printing, came a disposition to inquire into the authority of this great religious empire. Meanwhile an important event took place in Germany. At Wittenberg, in Germany, there was an Augustine monk, named Martin Luther, who became incensed at the Roman see, the immediate cause of his anger being the fact of the pope having granted the privilege of selling indulgences to the Dominican order of friars. Being a man of a bold and inquiring mind, he did not rest satisfied till he had convinced himself, and many others around him, that the indulgences were sinful, and that the pope had no right to grant them. This happened about the year 1517. Controversy and persecution gradually extended the views of Luther, till he at length openly disavowed the authority of the pope, and condemned some of the most important peculiarities of the Catholic system of worship.

Henry VIII. as the second son of his father, had been originally educated for the church, and still retained a taste for theological learning. He now distinguished himself by writing a book *On the Seven Sacraments*, against the Lutheran doctrines; and the pope of the day, Leo X. was so much pleased with it as to grant him the title of *Defender of the Faith*. In the year 1527, however, he became enamoured of a young gentlewoman named Anne Boleyn, who was one of his wife's attendants. He immediately conceived the design of annulling his marriage with Catharine, who had only one living child, Mary, born in 1516, and marrying this younger and more attractive person. Finding a pretext for such an act in the previous marriage of Catharine to his brother, he attempted to obtain from the pope a decree declaring his own marriage unlawful, and that the dispensation upon which it had proceeded was beyond the powers of the former pope to grant. The pontiff (Clement VII.) was much perplexed by this request of King Henry, because he could not accede to it without offending Charles V. Emperor of Germany, one of his best supporters, and the nephew of Queen Catharine, and at the same time humbling the professed powers of the papacy, which were now trembling under the attacks of Luther.

Henry desired to employ the influence of his minister, Cardinal Wolsey, who had become in succession archbishop of York, chancellor, a cardinal, and the papal legate. But Wolsey, with all his greatness, could not venture to urge a matter disagreeable to the pope, who was more his master than King Henry. The process went on for several years, and still his passion for Anne Boleyn continued unabated. Wolsey at length fell under the king's displeasure for refusing to serve him in this object, was stripped of all his places of power and wealth, and in November 1530, expired at Leicester Abbey in disgrace. Henry having consulted the universities and scholars both at home and abroad, privately married Anne Boleyn. His chief adviser

in this step, Thomas Cranmer, who had been appointed archbishop of Canterbury, pronounced (1533) the marriage with Catharine to have been void from the beginning. Henry now became, after a fashion, a Reformer. In the same year, 1533, it was declared, by the Statute of Appeals, that there should be no appeals to the pope or to any authority outside the kingdom; the king was declared to be the supreme head of the Church of England, which was thus withdrawn from the authority of the pope.

In 1536, Henry became as anxious to put away Queen Anne as he had ever been to rid himself of Queen Catharine. He had contracted a passion for Jane Seymour, the daughter of a Wiltshire knight. In order to gratify this new passion, he accused Anne, truly or falsely, of infidelity; and within a month from the time when she had been an honoured queen, she was beheaded (May 19) in the Tower, leaving a daughter, Elizabeth. On the very next day, he married Jane Seymour, who soon after died in giving birth to a son (afterwards Edward VI.). His daughters, Mary and Elizabeth, were declared illegitimate by act of parliament, and therefore excluded from the succession.

Hitherto, though professing independence of Rome, Henry still maintained, and even enforced by severe and bloody laws, the most of its doctrines. He now took measures for suppressing the numerous monasteries throughout the country. As many as 645 monasteries, 2374 chantries and chapels, 90 colleges, and 110 hospitals, enjoying altogether a revenue of £161,000, were broken up. Part of the revenues thus acquired he kept to himself; part went to some of his courtiers; while the remainder was used in founding new bishoprics, and fortifying the coast. By this act, which took place in 1539, the Reformation was completed in England, although for many years Henry so vacillated in his opinions that many persons of both religions were burnt as heretics.

After the death of Jane Seymour, Henry married (1540) Anne of Cleves, a German princess, with whose looks, however, he was not pleased; and he therefore divorced her by an act of parliament. He next married Catharine Howard, niece to the Duke of Norfolk; but had not been long united to her when he discovered that she had committed a serious indiscretion before marriage. This was considered a sufficient reason for beheading the unfortunate queen (1542), and attainting all her relations. He succeeded in obtaining for his sixth wife (1543) Catharine Parr, widow of Lord Latimer, who, it is certain, only contrived to escape destruction by her extraordinary prudence. Almost all who ever served Henry VIII. as ministers, either to his authority or to his pleasures, were destroyed by him. Wolsey died of a broken heart; Thomas Cromwell, Earl of Essex, who chiefly aided the king in bringing about the Reformation, being styled for his zeal in suppressing monasteries, 'The Hammer of the Monks'—Sir Thomas More, Lord Chancellor, the ablest, most virtuous, and most consistent man of his time—the Earl of Surrey, who was one of the most accomplished knights of the age, and the first poet who wrote the English language with perfect taste—all suffered the same fate as Anne Boleyn and Catharine Howard.

When James IV. died at Flodden, in 1513, the Scottish crown fell to his infant son, JAMES V. His uncle, Henry VIII. endeavoured to bring him into his views respecting religion; but James, who was much in the power of the Catholic clergy, appears to have wished to become the head of the popish party in England, in the hope of succeeding, by their means, to the throne of that country. A war latterly broke out between the two monarchs; and the Scottish army having refused to fight, from a dislike to the expedition, James died (December 1542) of a broken heart, leaving an only child, MARY, then not above a week old. Henry immediately conceived the idea of marrying his son Edward to this infant queen, by which he calculated that two hostile nations would be united under one sovereignty, and the Protestant Church in England be supported by a similar establishment in Scotland. This project, however, was resisted by the Scots, of whom very few as yet were inclined to the Protestant doctrines. Henry, enraged at their hesitation, sent a fleet and army, in 1544, to inflict vengeance upon them. The Scots endured with great patience the burning of their capital city, by Edward Seymour, Earl of Hertford, brother of Queen Jane Seymour, and many other devastations, but still refused the match. The government of Scotland was now chiefly in the hands of Cardinal Beaton, a man of great energy, although a religious bigot, who zealously applied himself to suppress the Reforming preachers, and regarded the English match as likely to bring about the destruction of the Catholic religion. Henry was also twice at war with France, having mixed himself up with the continental quarrels of Francis I. of France and Charles V. Emperor of Germany; but nothing came of two invasions except the capture in 1544 of Boulogne, which by a subsequent arrangement was given back in eight years on payment of a sum of money.

During this reign, considerable attention was paid to the navy, the Admiralty and Navy Office being constituted. In 1536, Wales was incorporated with England; and in 1542, Ireland, from being a lordship, was made a kingdom.

EDWARD VI.—QUEEN MARY.

Henry died January 28, 1547, leaving the throne to his only son, a boy of ten years of age, who was immediately proclaimed king under the title of EDWARD VI. The Duke of Somerset, maternal uncle to the young king, became supreme ruler under the title of Protector, and continued to maintain the Protestant doctrines. Under this reign, the Church of England assumed its present form, and the Book of Common Prayer was composed nearly as it now exists. Somerset being resolved to effect, if possible, the match between Edward VI. and Mary of Scotland, invaded that country in the autumn of 1547, and was met at Pinkie, near Musselburgh, by a large army under the governor, the Earl of Arran. Somerset gained an easy victory, and wasted a portion of the country, but failed in attaining his original object. Previous to this period, Cardinal Beaton had been assassinated by religious opponents; but the Scotch were encouraged to persevere by the court of France, to which they now sent the young queen (the betrothed of the Dauphin, afterwards Francis II.) for protection.

In the reign of Edward VI. the government was

conducted mildly though wastefully, until the Protector Somerset was degraded from his authority by the rising influence of Dudley, Duke of Northumberland, the son of the extortioner Dudley, who caused the Protector soon after to be tried and executed. Northumberland, who is believed to have had no religious convictions, but who, professing to be a keen Protestant, was much favoured by members of that party, was an unpopular and tyrannical ruler. Edward VI. died on the 6th of July 1553, and the crown now belonged by birthright to MARY, the eldest daughter of Henry VIII. who was a zealous Catholic. Northumberland, however, assuming the illegitimacy of that princess and her sister Elizabeth, set up as queen the Lady Jane Grey, cousin of Edward, and granddaughter of Mary Tudor, whom he had married to his son Guilford, Lord Dudley. Lady Jane, who was firmly attached to the doctrines of the Reformation, was, perhaps, the most beautiful, amiable, and accomplished of all the females who appear prominently in the history of England. Unfortunately, her father-in-law, Northumberland, was so much disliked, that the Catholics were enabled to displace her from the throne in nine days, and to set up in her stead the Princess Mary. Northumberland, Lady Jane, and her husband Guilford, Lord Dudley, were all beheaded by this fanatical princess, who soon after took steps for restoring the Catholic religion, and married Philip II. king of Spain, in order to strengthen herself against the Protestant interest. As soon as she had replaced the Catholic system, and found herself in possession of sufficient power, she began that career of persecution which has rendered her name so infamous. Five out of fourteen Protestant bishops, including the revered names of Cranmer, Hooper, Latimer, and Ridley, were committed to the flames as heretics; and during the ensuing part of her reign, which was closed by her death, November 17, 1558, nearly 300 persons suffered in the same manner. In the latter part of her reign, Mary was drawn by her husband into a war with France, of which the only effect was the loss, in the beginning of 1558, of Calais, the last of the French possessions of the sovereigns of England. The natural sourness of Mary's temper was increased by this event, as well as by her want of children and neglect on the part of her husband; and she died in a state of great unhappiness.

ELIZABETH—MARY, QUEEN OF SCOTS—REFORMATION IN SCOTLAND.

A more auspicious scene opened for England in the accession, in her twenty-sixth year, of ELIZABETH, a princess of great native vigour of mind, and who had been much improved by adversity, having been kept in prison during the whole reign of her sister. The court of France, backed up by English Roman Catholics, professed to consider the Queen of Scots, who was descended from the eldest sister of Henry VIII. and had recently been married to the Dauphin, as the Queen of England. Under these circumstances, Elizabeth found no chance of safety except in restoring and maintaining the Protestant religion in her own country, and in seeking to support it in all others where the people were favourable to it. The supremacy of the crown in the church was restored by act of parliament, though not the title of Head of the Church. The *Oath of Supremacy* declared the queen to be the supreme ruler in things ecclesiastical and spiritual as well as temporal; while the *Act of Uniformity* forbade the use by a clergyman of any other Prayer-book than that of Edward, which was now, with some alterations, restored; and punished with a fine those who absented themselves from church. The Scottish nation being now engaged in a struggle with their Regent, Mary of Guise, in behalf of Protestantism, Elizabeth gladly acceded to a proposal made by the nobles of that country, and sent a body of troops, by whose assistance the Reformed religion was established (1560). In bringing about this change, the chief native leaders were James Stewart—a natural son of King James V.—and John Knox, who had once been a friar, but was now a Protestant preacher. About this time, Mary of Guise breathed her last. The young queen, reckoned the most beautiful woman of her time, and who had married Francis II. of France, returned to Scotland on his death, in 1561.

The change of religion in Scotland was of a more decisive kind than it had been in England. The clergy were placed on a footing of perfect equality; they were all of them engaged in parochial duties, and only a small part of the ancient ecclesiastical revenues was allowed to them. In imitation of the system established at Geneva, their general affairs, instead of being intrusted to the hands of bishops, were confided to courts composed of themselves and lay elders. What was of perhaps still greater importance—while a large part of the ancient revenues was absorbed by the nobles, a very considerable portion was devoted to the maintenance of parish schools, under the express control of the clergy. These institutions disseminated the elements of learning more extensively over this small and remote country than it had ever been over any other part of the world.

Queen Mary, having little power in her own country, was obliged to govern by means of her natural brother, James Stewart, whom she created Earl of Moray, and who was the leader of the Protestant interest in Scotland. Personally, however, she was intimately connected with the great Catholic powers of the continent; and became a party, in 1564, to a coalition formed by them for the suppression of Protestantism all over Europe. She had never yet resigned her pretensions to the English throne, but lived in the hope that, when the Catholics succeeded in everywhere subduing the Protestants, she would attain that object.

A succession of unfortunate events threw Mary into the hands of Elizabeth. In 1565, she married her cousin, Lord Darnley, and by that means alienated the affections of her brother and chief minister, the Earl of Moray, as well as of other Protestant lords, who raised a rebellion against her, and were obliged to flee into England. Soon after, the jealousy of Darnley respecting an Italian musician named Rizzio, who acted as French secretary to the queen, united him in a conspiracy with the banished Protestant noblemen for the murder of that humble foreigner, which was effected under very barbarous circumstances, March 9, 1566. Mary, who was delivered, in the succeeding June, of a son, James, afterwards James VI. of Scotland and I. of England, withdrew her affections entirely from her husband.

She subsequently, however, attended him as he was recovering from an attack of small-pox at Glasgow, and on his convalescence, placed him, not in Holyrood, but in a solitary house near Edinburgh, called Kirk-of-Field. He had not been there many days, when the house was blown up, and his body found a short distance off. A licentious nobleman, named Bothwell, afterwards Duke of Orkney, who had become a favourite of the queen, was considered the instigator of the crime, and yet in a few months after Darnley's death she married Bothwell according to the rites of the Protestant Church. This excited so much indignation among her subjects, that the same Protestant lords who had effected the Reformation, and were the friends of Elizabeth, easily obtained the possession of her person, and having deposed her, crowned her infant son as king, under the title of JAMES VI. while the regency was vested in the Earl of Moray. In May 1568, Mary escaped from her prison in Lochleven, and put herself at the head of a body of her partisans; but was defeated by the Regent at the battle of Langside, near Glasgow, and was then compelled to seek refuge in England. By placing her rival under strict confinement, and extending an effectual protection to the Regents Moray, Lennox, Mar, and Morton, who successively governed Scotland, Elizabeth fortified herself in a great degree against the Catholic confederacy.

GOVERNMENT OF ELIZABETH.

At this time parliament was much more under the control of the sovereign than it had formerly been. An idea was now beginning to arise, very much through the supremacy which the sovereigns had acquired over the church, that the right of the crown was one derived from God, and that the people had nothing to do with it, except to obey what it dictated to them. Of this notion, no one took so much advantage, or was at so much pains to impress it, as Elizabeth. Her government consisted entirely of herself and her ministers. All her ministers, the chief of whom were Lord Burghley, his second son, Lord Robert Cecil, and Sir Francis Walsingham, were of one complexion—circumspect and penetrating men, ardently devoted to their country, their mistress, and to the Protestant religion. That religion Elizabeth continued to support by the most rigorous means. She established a High Commission Court to carry into effect the Act of Supremacy, which was directed fully more against the extreme Protestants or Puritans, who obtained their views of ecclesiastical polity from Geneva, than against the Roman Catholics. Yet, of the latter, one hundred and eighty suffered death for violation of the law during this reign.

The Catholic powers of the continent formed many schemes for annoying or dethroning Elizabeth; and the imprisoned Scottish queen or her adherents were generally concerned in them. Philip II. of Spain, whose offer of marriage she had refused, determined at length to make a decisive effort, and commenced the preparation of a vast fleet, which he termed the Invincible Armada, with which he designed to invade the English shores. Elizabeth, her ministers, and people, beheld the preparations with much concern; and with a view to guard against plots by Catholics at home, an act was passed in 1585 declaring that any person, by or *for* whom any plot should be made against the Queen of England, should be guilty of treason. When, soon after, a young gentleman named Babington formed a conspiracy for assassinating Elizabeth, and placing Mary on the throne, the latter queen became of course liable to the punishment for treason, although herself innocent. She was subjected to a formal trial in her prison of Fotheringhay Castle, and found guilty. Elizabeth hesitated for some time to strike an unoffending and unfortunate person, related to her by blood, and her equal in rank. But at length fears for herself got the better of her sense of justice, and, it may be added, of her good sense, and she gave her sanction to an act which leaves an ineffaceable stain upon her memory. On the 8th of February 1587, Mary, Queen of Scots, was beheaded in the hall of the castle, after a confinement of more than eighteen years.

James VI. was now, after a turbulent minority, in possession of the reins of government in Scotland, but with little real power, being very dependent on Elizabeth, who, besides, had no personal liking for him, while he was much controlled by the Presbyterian clergy, who asserted a total independence of all temporal authority, and considered themselves as the subjects alone of the Divine founder of the Christian faith.

SPANISH ARMADA—REBELLIONS IN IRELAND.

In 1588, the Spanish Armada, consisting of 130 great vessels, with 20,000 land-forces and 8000 sailors on board, and commanded by the Duke of Medina Sidonia, set sail against England, while 34,000 more land-forces prepared to join from the Netherlands. Active measures were taken to defend the country; thirty vessels prepared to meet the Armada, and another fleet endeavoured to block up the Netherlands forces in port. The command was taken by Lord Howard of Effingham, with whom were Drake, Hawkins, Frobisher, and other celebrated naval captains of the day. Troops were also mustered on land to repel the invaders, and disposed in three armies. The English Roman Catholics came patriotically forward to defend their country. The English fleet attacked the Armada in the Channel, and was found to have a considerable advantage in the lightness and manageableness of the vessels. As the Armada sailed along, it was infested by the English in the rear. On the 27th of July, the Armada anchored off Calais, where the Duke of Parma with his army was to go on board. At midnight, however, eight ships were set on fire, and sent drifting among the Spanish vessels, which put to sea in a panic. At daybreak they were attacked by Howard and his captains. The unwieldy Spanish ships proved no match for their smaller and more active adversaries, and at length fled. They proceeded northward, and were followed by the English fleet as far as Flamborough Head, where they were terribly shattered by a storm. Seventeen of the ships, having 5000 men on board, were cast away on the Western Isles and the coast of Ireland. Of the whole Armada, fifty-four ships only returned to Spain, and these in a wretched condition.

Though the Protestant Church had meanwhile

been established in Ireland, the great bulk of the people continued to be Roman Catholics. Sir John Perrot, the deputy, proposed to improve the country by public works and English laws. A series of rebellions under chiefs named O'Neill was the consequence, and the English government was maintained with great difficulty, and at an enormous expense. The rebellion of Hugh O'Neill, whom Elizabeth had tried to conciliate by making Earl of Tyrone, was particularly formidable. The English officers were at first unsuccessful, and met with some serious defeats. In 1598, Tyrone gained so great a victory, that the whole province of Munster declared for him. He then invited the Spaniards to make a descent on Ireland, and join him. The queen sent over her favourite, the Earl of Essex, with 20,000 men; but he did not proceed with vigour, and soon after found it necessary to return to England to justify himself. Next year, Tyrone broke a truce he had formed with Essex, overran the whole country, and acted as sovereign of Ireland.

Elizabeth now selected as her deputy for Ireland, Blount, Lord Mountjoy, who was in every respect better fitted than Essex to conduct such a warfare. In 1601, 6000 Spaniards landed in Kinsale harbour, for the purpose of supporting the Irish. Mountjoy immediately invested the place, and prevented them from acting. Tyrone marched from the south of Ireland to their relief, and was met and overthrown by a much inferior English force, after which Kinsale was surrendered. About the time when Elizabeth died (1603), Tyrone submitted, on condition of his life being spared, and Ireland was once more reduced under the authority of the English crown.

CONCLUSION OF THE REIGN OF ELIZABETH.

It is remarkable, that while Elizabeth increased in power and resources, she became more noted for feminine weaknesses, and it even seemed likely that she would bestow her hand upon some mere court-minion of handsome exterior—her favourites were Robert Dudley, Earl of Leicester, and Robert Devereux, Earl of Essex. The latter acquired popularity by acquitting himself brilliantly as the leader of an expedition which took Cadiz. After his failure in Ireland, however, and the humiliations which were in consequence inflicted upon him, he made a desperate attempt at an insurrection in London, with the view of seizing the queen's person, failed, was captured, found guilty of treason, and beheaded (1601), at the age of thirty-three.

About the close of 1601, Elizabeth fell into a deep hypochondria or melancholy. On the 24th of March 1603, she expired, after a reign of nearly forty-five years, during which England advanced—politically and commercially—from the condition of a second-rate to that of a first-rate power, and the Protestant religion was established on a basis from which it could never afterwards be shaken.

The reign of Elizabeth saw the commencement of the naval glory of England. The rise of a commercial spirit in Europe, which in 1492 had caused the discovery of America, and was again acted upon by the scope for adventure which that discovery opened up, had latterly caused great attention to be paid to nautical affairs in England. Englishmen of all ranks supported and entered into enterprises for discovering unknown territories; and under Drake, Cavendish, Raleigh, and Frobisher, various expeditions of less or more magnitude were sent out, Drake being the first man to sail round the world in one voyage, and Raleigh introducing the potato-plant and the practice of tobacco-smoking. The colonies of North America were now founded. On the last day of the year 1600, a charter of privilege was granted to a Company of London merchants trading to the East Indies, which developed into the celebrated East India Company.

The chief articles exported from England to the continent were wool, cloth, lead, and tin; formerly, these had been sent in vessels belonging to the Hanse Towns—certain ports of the north of Europe, possessing great privileges—but now English vessels were substituted for this trade. Stocking-weaving and the making of sailcloth, serge, and baize, took their rise in this reign. The progress of other arts was much favoured by the bloody persecution of Protestants in the Netherlands, which drove into England great numbers of weavers, dyers, cloth-dressers, and silk-throwers. Theatrical amusements became popular in this reign, although, of course, only in London. At the end of Elizabeth's reign, the population of London was about 160,000; and the whole kingdom probably contained about 5,000,000 inhabitants.

THE STUARTS—JAMES I.

The successor of Elizabeth, by birthright, was JAMES VI. OF SCOTLAND (styled JAMES I. OF ENGLAND), although by the will of Henry VIII. the crown should have been given to the descendants of Mary, Duchess of Suffolk. This prince had now arrived at the prime of life, and had been married for some years to the Princess Anne of Denmark, by whom he had two sons, Henry and Charles, and one daughter, named Elizabeth. He immediately removed to London, and assumed the government of England; while his native kingdom, though thus united under the same sovereignty, still retained its own peculiar institutions. At the suggestion of the king, who wished to obliterate the distinction of the two countries, the common name of *Great Britain* was now conferred upon them. King James was an oddity in human character. His person was naturally feeble, particularly in the limbs, and he had no physical courage. He had, however, considerable capacity for learning, some acuteness, and even wit; but was pedantic, vain, and weak. He believed kings to be the deputies of God, and accountable to God alone for their actions.

Notwithstanding the energy of Elizabeth, the popular spirit had gradually been acquiring force in her reign. It was chiefly seen in the acts of the Puritans, who, from the fervour of their devotions and the strictness of their manners, were not unlike the Scotch Presbyterians. King James found considerable difficulty at the very first in controlling this party, and evading their demands.

The disappointment of the Catholics, on the other hand, who looked for kindness, if not patronage at the hands of the son of Queen Mary, on finding that the severe laws against them were not to be relaxed, led to a conspiracy on the part of thirteen gentlemen of that persuasion, of whom the chief was Robert Catesby. It was arranged

that, on the day of the meeting of parliament, November 5, 1605, the House of Lords should be blown up by gunpowder, at the moment when the King, Lords, and Commons were all assembled in it; thus destroying, as they thought, all their chief enemies at one blow, and making way for a new government, probably under one of the king's younger children, which should be more favourable to them. Accordingly, thirty-four barrels of powder were deposited in the cellars beneath the House, and a soldier of fortune, named Guido or Guy Fawkes, was prepared to kindle it at the proper time. The plot was discovered, in consequence of the receipt of a letter by Lord Mounteagle, a Romanist, warning him not to attend the meeting of parliament. He shewed the letter to the king's chief adviser, Robert Cecil, Earl of Salisbury, and, in consequence, an investigation took place during the night between the 4th and 5th of November, when the gunpowder was discovered, and Fawkes taken into custody. He confessed his intentions; and the rest of the conspirators fled to the country, where most of them were cut to pieces in endeavouring to defend themselves.

PLANTATIONS IN IRELAND.

James was the first king who extended the English law over the whole of Ireland, by making judicial appointments suited to the extent of the country. He passed an act of oblivion and indemnity, by which all persons who had committed offences, coming to the judges of assize within a certain day, might claim a full pardon. At the same time, toleration was virtually refused to the Catholic persuasion, and much discontent therefore still existed. Some of the chieftains, particularly Tyrone, O'Donnel, Earl of Tyrconnel, and O'Dogherty, having conspired against the crown, were attainted in 1608, and their lands, which were in Ulster and Leinster, were given to English and Scotch settlers, with a view to improving the population of the country by an infusion of civilised persons. But this experiment, though well meant, was managed in a partial spirit, and gave rise to much injustice. In 1613, the first Irish parliament was held in which there were any representatives of places beyond the 'Pale.'

Apart from this pacification of Ireland, which, however, only caused the Irish to sigh for their old landlords and laws, the reign of James was not marked by what are called great events. This was greatly owing to his timid character, which induced him to maintain peace, at whatever sacrifice, throughout the greater part of his reign. The prime leaders of his government were youthful favourites, who possessed no merit but personal elegance, and of whom the chief were Robert Carr, a Scotchman, who was made Earl of Somerset, and George Villiers, who became Duke of Buckingham. Nevertheless, although no great event occurred at this period, there was gradually growing up a spirit of constitutional freedom. The Commons began to combat the prerogative of the king, and to remonstrate on the score of public grievances. In 1621, a parliament met which attacked various corruptions and abuses; Bacon, then Lord Chancellor, being charged with taking bribes, and being dismissed from his office in consequence. These and many other instances of bold resistance were the shadows of coming events.

English literature, which first made a decisive advance in the reign of Elizabeth, continued to be cultivated with great success in the reign of King James. The excellence of the language at this time as a medium for literature, is strikingly shewn in the translation of the Bible now executed; it is also shewn in the unequalled dramatic writings of Shakspeare, in the poetry of Edmund Spenser, and in the valuable philosophic works of Bacon. Very great praise is also due to Napier of Merchiston, in Scotland, for the invention of *logarithms*, a mode of calculating intricate numbers, essential to the progress of mathematical science.

It was in this reign that a great number of the most important British colonies took their rise. In 1607, James Town, in Virginia, was founded by some emissaries of a London Company of merchants. In 1610, Newfoundland was colonised; and in 1620, a number of Puritan Nonconformists, known as the 'Pilgrim Fathers,' founded the New England States.

THE KING'S CHILDREN.

In 1612, the king had the misfortune to lose his eldest son, Henry, a youth of nineteen, who was considered as one of the most promising and accomplished men of the age. The second son, Charles, then became the heir-apparent. Elizabeth, the king's other child, was married, in 1613, to Frederick, Prince Palatine of the Rhine, who subsequently lost his dominions, in consequence of his placing himself at the head of the Bohemians, in what was considered as a rebellion against his superior, the Emperor of Germany. This discrowned pair, by their youngest daughter Sophia, who married the Duke of Brunswick, were the ancestors of the family which now reigns in Britain.

CHARLES I.—HIS CONTENTIONS WITH THE HOUSE OF COMMONS.

King James died in March 1625, in the fifty-ninth year of his age, and was succeeded by his son CHARLES, now twenty-five years of age. One of the first acts of the young king was to marry the Princess Henrietta Maria, daughter of Henry IV. of France, and a Catholic. The alliance was highly unpopular.

Britain at this time became involved in a war with Spain, chiefly on account of the breaking off in the last reign of a match between Charles and the Princess Mary of that country. To supply the expenses of this contest, and of a still more unnecessary one into which he was driven with France, the king applied to parliament, but was met there with so many complaints as to his government, and such a keen spirit of popular liberty, that he deemed it necessary to revive a practice followed by other sovereigns, and particularly Elizabeth, of compelling his subjects to grant him gifts, or, as they were called, *benevolences*, and also to furnish ships at their own charge, for carrying on the war. Such expedients could not be endured in this age, when the people and the parliament were so much more alive to their rights. A general discontent spread over the nation, and the Commons resolved to take every measure in their power to check the king's proceedings. Having made an inquiry into the

ancient powers of the crown, before these powers had been vitiated by the tyrannical Tudors, they embodied the result in what was called a PETITION OF RIGHT, which they presented to him as an ordinary bill, or rather as a second Magna Charta, for replacing the privileges of the people, and which consisted of four articles: 1. That no man should be compelled to pay any money to the state unless ordered by an act of parliament. 2. That no man should be imprisoned for refusing to pay such money, and that no free man should be imprisoned without cause being shewn. 3. That soldiers and marines should not be billeted on private persons. 4. That no more commissions should be issued for punishing persons by martial law. With great difficulty, Charles was prevailed upon to give his sanction to this bill (1628); but his disputes with parliament soon after ran to such a height, that he dissolved it in a fit of indignation, resolving never more to call it together. About the same time, his favourite minister, the Duke of Buckingham, was assassinated at Portsmouth by a fanatic named John Felton. Charles's chief counsellors now were Laud, archbishop of Canterbury, a man of narrow and bigoted spirit, and Thomas Wentworth, afterwards Earl of Strafford, who endeavoured to make the king absolute by a scheme which was called 'thorough.' For some years, Charles governed the country entirely as an irresponsible despot, levying taxes by his own orders, and imprisoning such persons as were obnoxious to him, in utter defiance of the Petition of Right. The Puritans, or church-reformers, suffered most severely under this system of things. They were dragged in great numbers before arbitrary courts, called the High Commission and the Star Chamber, which latter professed to take cognisance of offences against the king's prerogative and against religion.

Among the devices which were ultimately resorted to, to raise money, was a levy of 'ship-money,' which had formerly been levied in times of war on the maritime counties, and which it was now proposed to levy on every shire. At length, John Hampden, a gentleman of Buckinghamshire, resolved to undergo any personal inconvenience rather than pay his twenty shillings of ship-money. The case was tried in the Exchequer (1637); and as the judges could then be dismissed at the royal pleasure, and were the humble servants of the king in everything, Hampden lost his cause. He roused, however, more effectually than ever, the attention of the people to this question, and means were not long wanting to check the king in his unfortunate career.

TROUBLES IN SCOTLAND—THE NATIONAL COVENANT.

An attempt had been made by King James to introduce Episcopacy into Scotland, because it was thought dangerous to the English Church that a form of worship resembling that of the Puritans should be permitted to exist in any part of the king's dominions; and Charles settled 13 bishops over the Scottish Church, by whom he hoped to govern its clergy as he did those of England. But when he attempted, in 1637, to introduce a new Book of Common Prayer into the Scotch churches, the spirit of the people could no longer be kept within bounds. On the Liturgy being opened in the principal church at Edinburgh, the congregation rose in a violent tumult, and threw their clasped Bibles, and the very stools they sat on, at the minister's head; and it was not till the whole were expelled by force, that the worship was permitted to proceed. Similar scenes occurring elsewhere, it was found necessary, by the Scottish state-officers, to withdraw the obnoxious Liturgy, till they should consult the king, who, not dreading any mischief, gave orders that it should be used as he had formerly directed, and that the civil force should be employed in protecting the clergymen. It was found quite impossible to obey such an order in the face of a united people, who, by committees assembled at Edinburgh, representing the nobles, ministers, gentry, and burghers, endeavoured to awe the king into an abandonment of the late innovations. Finally, the Scotch bound themselves (March 1638), under a bond called the *National Covenant*, which was signed by nineteen-twentieths of the adult population, to resist their sovereign in every attempt he might make to bring in upon them the errors of Popery—for such they held to be the forms of worship and ecclesiastical government which Charles had lately imposed upon their church. This was followed by the calling together of a General Assembly of the church. This body formally purified the church from all the late innovations, excommunicating the bishops, and declaring the government of the clergy to rest, as formerly, in the General Assembly, which consisted of a selection of two clergymen from each presbytery, with a mixture of lay elders, and nothing to control its proceedings but their interpretation of the will of the Divine founder of the Christian religion. Early in the succeeding year, the king, with great difficulty, collected an army of 20,000 men, whom he led to the border of Scotland, for the purpose of reducing these despisers of his authority. The Scotch, however, strengthened by devotional feeling, formed an army equal in number, which was placed under the command of General Alexander Leslie, an officer who had served with distinction in the long Protestant war carried on against the Emperor of Germany. The Scottish army was encamped on Dunse Law, a hill overlooking the Border, where the duties of military parade were mingled with prayers and preachings, such as were never before witnessed in a camp. The king, seeing the wavering of his own men, and the steadfastness of the Scotch, was obliged to open a negotiation, in which it was agreed to disband both armies, and to refer the disputes once more to a General Assembly and a Scottish parliament.

The king now adopted a new policy with the turbulent people of Scotland. Having formerly gained over some of the English patriots, he thought he might be equally successful with the lords of the Covenant, whom he therefore invited to attend him at Berwick. A few obeyed the summons; but he failed with all except the Earl (afterwards Marquis) of Montrose, a nobleman of vigorous genius, whose ambition had been wounded by his not having so high a place in the councils of his countrymen as he thought he deserved. In the new General Assembly and parliament (1640), the votes were equally decisive against Episcopacy. The king collected a second

army, and in order to raise money for a second expedition against the Scots, was reduced to the necessity of calling an English parliament—the first that had met for eleven years. It met (April 13), but, without listening for a moment to a request for subsidies, began to discuss the national grievances. Finding parliament quite intractable, the king dissolved it (May 5), and endeavoured to obtain supplies in other quarters. A convocation of the clergy granted him £20,000 per annum for the next six years. The nobility and gentry advanced £300,000; but when the city of London was asked for a loan of £200,000, it absolutely refused.

The Scots did not, on this occasion, wait to be attacked by the king, but in August 1640 marched into the north of England, in the expectation of being supported in their claims by the English people in general. A victory gained by them at Newburnford over Lord Conway, and their taking possession of Newcastle, together with the manifest disaffection of his own troops, made it necessary that Charles should once more resort to negotiation. It was agreed at a council of peers that all the present dissensions should be referred to the parliaments of the two countries, the Scottish army being in the meantime kept up on an English weekly subsidy of £5600 till such time as they were satisfied with the state of their affairs.

THE LONG PARLIAMENT—REBELLION IN IRELAND.

The English parliament met in November 1640, and immediately commenced a series of measures for effectually and permanently re-establishing constitutional liberty. The first acts of the parliament had little or no immediate reference to Scotland. The Earl of Strafford was impeached of treason against the liberties of the people, and executed (May 12, 1641), notwithstanding a solemn promise made to him by the king that he should never suffer in person or estate. Archbishop Laud was impeached and imprisoned, but reserved for future vengeance. The Star Chamber, the High Commission, and another court called the Council of the North, were abolished, and the levies of ship-money were declared to be illegal. The remaining ministers of the king only saved themselves by flight. Some of the judges were imprisoned and fined. The abolition of Episcopacy was taken into consideration. The Catholics fell under a severe persecution; and even the person of the queen, who belonged to this faith, was not considered safe.

It was not till August 1641, when the English parliament had gained many of its objects, that they permitted the treaty of peace with Scotland to be fully ratified. They then gratified the troops not only with their full pay, but with a vote of no less a sum than £300,000 besides, of which £80,000 was paid down, as an indirect way of furnishing their party with the means of future resistance. The king, on his part, also took measures for gaining the attachment of this formidable body of soldiery, and of the Scottish nation in general. In Edinburgh, which he visited in August, he squared his conduct carefully with the rigour of Presbyterian manners, and in parliament he was exceedingly complaisant, ratifying all the acts of the preceding irregular session; and yielding up the right of appointing the state-officers of Scotland. The men who had acted most conspicuously against him in the late insurrections now became his chief counsellors. He created General Leslie Earl of Leven; while the Earl of Argyll, who had been the chief political leader of the Covenanters, was made a marquis. At the same time, however, he kept up a correspondence with a royalist party which had been embodied by the Earl of Montrose, who was now suffering confinement in Edinburgh Castle for his exertions in favour of the king.

The policy already mentioned, by which large portions of Ireland were depopulated, and then planted with colonies of English and Scotch settlers, had been continued during the reign of Charles by Strafford, appointed Viceroy in 1633, who, besides, had imposed arbitrary taxes, and levied them by military force; had established monopolies for his own benefit; and had forbidden any person to leave the island without his permission. Penal laws were established against the profession of Catholicism, and a court of Star Chamber was instituted to carry these into execution.

The Irish Catholics, who formed a large majority of the nation, only waited an opportunity to rebel, and were stimulated thereto by the example of the Scotch Covenanters. On Strafford's departure, in 1640, to attend the king in England, a conspiracy, involving most of the country without the Pale, and including many persons within it, was formed, chiefly under the direction of a gentleman named Roger Moore, who possessed many qualities calculated to endear him to the people. The 23d of October 1641, being a market-day, was fixed on for the capture of Dublin Castle. During the previous day, nothing had occurred to alarm the authorities. In the evening of the 22d, the conspiracy was accidentally discovered, and measures were taken to save Dublin; but a civil war broke out next morning in Ulster, and speedily spread over the country.

The design of Sir Phelim O'Neill and the other leaders of this insurrection is believed to have been simply political. They could not, however, allay the hatred with which the Catholics looked upon their adversaries; and a spirit of revenge broke out among their followers, which was aggravated to cruel outrage when they heard that the conspiracy was discovered in Dublin. The spirit of retaliation was let loose, and political wrongs, unfeelingly inflicted, were, as is often the case, ferociously avenged. The massacre, sometimes with frightful tortures, of between forty and fifty thousand Protestants, of all ages and sexes, held forth an awful lesson of the effects which oppressive laws produce on the human passions. This rebellion, which Charles was blamed with secretly fostering, continued for many years; and it is worthy of note that the Scottish Covenanters, themselves so recently emancipated from a restraint upon their consciences, contributed 10,000 troops to assist in restoring a similar restraint upon the Irish!

THE CIVIL WAR.

It was generally allowed by moderate people that, in the autumn of 1641, if the king could have

given a guarantee that he never would seek to restore any abuses, or attempt to revenge himself upon the men who had been chiefly concerned in causing him to give them up, there would have been no further contention; and, indeed, when he returned from Scotland, he was welcomed heartily by the people of London. Unfortunately, the character of the king for fidelity to his engagements was not sufficiently high to induce the leaders of the House of Commons to depend upon him, and they prepared a paper called *The Remonstrance*, containing an elaborate view of all the grievances that had ever existed, or could now be supposed to exist. This they not only presented to the king, but disseminated widely among the people, with whom it served to increase the prevailing disaffection.

From this time it was seen that the sword could alone decide the quarrel between the king and the parliament. Charles made an unsuccessful attempt (January 4, 1642) to seize five of the most distinguished leaders of the parliamentary party, including Hampden and Pym, for the purpose of striking terror into the rest. This served to widen still further the breach, and at last, upon a demand of the parliament for the command of the army —a privilege, it should be remembered, always before and since resting with the crown—the king broke off all amicable intercourse, retiring with his family to York.

The parliament found its chief support in the mercantile classes of London and of the eastern coast of England, which was then more devoted to trade than the west, and in the Puritan party generally, who were allied intimately with the Presbyterians of Scotland. Charles, on the other hand, looked for aid to the nobility and gentry, who were able to bring a considerable number of dependents into the field. The parliamentary party was by the other styled *Roundheads*, in consequence of their wearing short hair; while the friends of the parliament bestowed upon their opponents the epithet of *Malignants*. The royalists were also, in the field, termed Cavaliers, from so many of them being horsemen. On the 25th of August 1642, the king erected his standard at Nottingham, and soon found himself at the head of an army of about 10,000 men. The parliament had superior forces and a better supply of arms; but both parties were very ignorant of the art of war. The king commanded his own army in person; while the parliamentary forces were put under the charge of Robert, Earl of Essex, son of the favourite of Queen Elizabeth.

The first battle took place, October 23, at Edgehill, in Warwickshire, where the king had rather the advantage, though at the expense of a great number of men. He gained some further triumphs chiefly by means of his cavalry, which were under the command of Prince Rupert, son of the queen of Bohemia, before the end of the campaign, but still could not muster so large an army as the parliament. During the winter, the parties opened a negotiation at Oxford; but the demands of the parliament being still deemed too great by the king, it came to no successful issue.

Early in the ensuing season, the king gained some considerable advantages; he defeated a parliamentary army, under Sir William Waller, at Stratton, and soon after took the city of Bristol; while Hampden, who had become a parliamentary officer, fell in a skirmish with Rupert. It only remained for Charles to take Gloucester, in order to confine the insurrection entirely to the eastern provinces. It was even thought at this time that he might have easily obtained possession of London, and thereby put an end to the war. Instead of making such an attempt, he caused siege to be laid to Gloucester, which the army of Essex relieved when it was just on the point of capitulating. As the parliamentary army was returning to London, it was attacked by the royal forces at Newbury, and all but defeated. Another section of the royal army in the north, under the Marquis of Newcastle, gained some advantages; and, upon the whole, at the close of the campaign of 1643, the parliamentary cause was by no means in a flourishing condition.

In this war there was hardly any respectable military quality exhibited besides courage. The first appearance of a superior kind of discipline was exhibited in a regiment of horse commanded by Oliver Cromwell, a Huntingdonshire gentleman of small fortune, who had been a brewer. Cromwell, though himself inexperienced in military affairs, shewed from the very first a power of drilling and managing troops which no other man in either army seemed to possess. Hence his regiment, called the 'Ironsides,' and belonging mostly to the sect of the Independents, soon became famous for its exploits.

SOLEMN LEAGUE AND COVENANT.

The royal successes of 1643 distressed alike the English parliament and the Scottish nation. The two parliaments therefore agreed to prosecute the war in concert, both Houses signing the Solemn League and Covenant for the extirpation of popery and prelacy. A good deal of persecution followed this, and the aged Archbishop Laud, who had long lain in the Tower, was condemned for high treason, and beheaded in 1645. In terms of this bond, the Scots raised an army of 20,000 men, who entered England in January 1644; and on the 2d of July, in company with a large body of English forces, overthrew the king's northern army on Long Marston Moor, Cromwell's Ironsides being admittedly the main cause of victory.

The Episcopal Church being now abolished, the Presbyterian form of government was adopted, though in England it was provided that the new church should not have any connection with or influence over the state.

The defeat at Long Marston was severely felt by the king. He gained a victory over Waller at Cropredy Bridge, and caused Essex's army to capitulate in Cornwall (September 1); but in consequence of a second fight at Newbury (October 27), in which he suffered a defeat, he was left at the end of the campaign with greatly diminished resources. A new negotiation was commenced at Uxbridge; but the terms asked by the parliament were such that the king did not accept them.

The English parliament, fearing that some of its military leaders were becoming lukewarm, passed a self-denying ordinance that no member of parliament should in future hold any command either civil or military. Essex resigned in consequence of this, and the chief command of the army was given to Sir Thomas Fairfax, who

had led the parliamentary forces at Marston Moor. The real guiding spirit in the army, however, was Cromwell, now commander of the cavalry, and he shewed his genius in introducing proper discipline into the army. In June 1645, the reorganised army inflicted a crushing defeat on the royalists at Naseby; and although the king still held out, it was plain that his cause was hopeless.

MONTROSE'S CAREER IN SCOTLAND.

Meanwhile the Marquis (formerly Earl) of Montrose produced a diversion in Scotland in favour of the king. Having got 1500 foot from Ireland, to which he added a few Perthshire Highlanders, he descended upon the Lowlands, and on the 1st of September (1644) gained a complete victory over a larger and better-armed force at Tippermuir. At Aberdeen, whither he went for the purpose of increasing his army, he gained another victory over a superior body of Covenanters. The following winter Montrose burst into the country of his rival Argyll, and falling upon him at Inverlochy (February 2, 1645), gained a complete victory. He then moved along the eastern frontier of the Highlands, where he found himself opposed by a fourth army under General Baillie. After sacking the town of Dundee, and eluding Baillie's troops, he encountered at Auldearn, in Nairnshire (May 4), a greatly superior force, which he also overthrew. Then turning upon Baillie, whom he met at Alford, in Aberdeenshire (July 2), he gained a fifth victory, almost as complete as any of the rest.

Montrose now descended to the Lowlands; and at Kilsyth, near Glasgow, was opposed by an army of 6000 men, whom the Scotch government at Edinburgh had hastily assembled from Fife and Perthshire. These, with a much smaller force, he also defeated (August 15), killing great numbers in the pursuit. The committees of church and state then broke up, and left the kingdom, leaving him in appearance its sole master. Montrose had, however, in reality gained no real advantages. Besides his small army of mingled Irish and Highlanders, there was hardly any portion of the nation who did not regard him as only a great public enemy. While lying with a diminished force at Philiphaugh, near Selkirk, he was surprised (September 13) by a detachment of the regular Scottish army, under General David Leslie, who completely defeated his troops, and obliged him to leave the kingdom.

CONCLUSION OF THE CIVIL WAR.

The king, who had retired first to Wales, and thence to Oxford, now put himself under the protection of the Scottish army, which had advanced south as far as Newark. The English parliament thereupon made repeated and strenuous demands for the surrender of his person by the Scots into their hands. The Scots, however, though acting partly as a mercenary army, asserted their right, as an independent nation under the authority of the king, to retain and protect him. At length, despairing of inducing him to establish Presbyterianism throughout his dominions, and tempted by the sum of £400,000, which was given to them as remuneration for past military services, they consented to deliver up their monarch, but certainly without any apprehension of his life being in danger, and, indeed, to a party different from that by which he afterwards suffered. The Scottish army then retired (January 1647) to their native country, and were there disbanded.

The king was now placed in Holmly House, near Northampton, and negotiations were opened for restoring him to power, under certain restrictions. Meanwhile the troops, who were composed mainly of Independents, began to hold something like a parliament in their own camp; and a party of them, under Cornet Joyce, seized the king's person, and brought him to Hampton Court. They at last made a demand for the dismissal of the leaders of the Presbyterian party, and a general right of new-modelling the government and settling the nation. The House of Commons, supported by the city of London, made a bold opposition to these demands, but was ultimately obliged to yield to a force which it had no means of resisting.

TRIAL AND EXECUTION OF THE KING.

The leaders of the army, being anxious to fortify themselves by all possible means against the Presbyterians, opened a negotiation with the king, whose influence, such as it now was, they proposed to purchase, by allowing Episcopacy to be the state religion, and leaving him in command of the militia. Charles carried on at the same time a negotiation with the Presbyterians, and even with the Scots, which, being discovered by the military chiefs, caused them to break off all terms with him. Under dread of their resentment, he made his escape from Hampton Court (November 11, 1647); and after an unsuccessful attempt to leave the kingdom, was obliged to put himself under the charge of the governor of Carisbrooke Castle, in the Isle of Wight. Here he entered upon a new negotiation with the House of Commons, to whom he made proposals, and from whom he received certain proposals in return; all of which were, however, rendered of non-avail by a secret treaty which he at the same time carried on with a moderate party of the Scottish Presbyterians.

He finally agreed with the latter party, but under strict secrecy, to give their form of church-government a trial of three years, and yield to them in several other points; they, in return, binding themselves to unite their strength with the English royalists, for the purpose of putting down the Independent party, now predominant in the English parliament. With some difficulty, the Duke of Hamilton and others, who conducted this negotiation, succeeded, by a vote of the Scottish parliament, in raising an army of 12,000 men, with which they invaded England in the summer of 1648. The more zealous of the clergy and people of Scotland protested against the enterprise, which appeared to them as neither deserving of success, nor likely to command it. Before this army gained any accession of strength in England, Cromwell, with 8000 veteran troops, attacked and overthrew it at Preston, while Fairfax put down other insurgents in Kent and Essex. Hamilton was himself taken prisoner, and very few of his troops ever returned to their native country.

During the absence of Cromwell and his army, the Presbyterian party in the House of Commons regained its ascendency, and it was coming to a

good understanding with the king, when the troops returned to London breathing vengeance against him for this last war, of which they considered him as the author. Cromwell sent to the House three regiments, under Colonel Pride, who forcibly excluded from it about 200 members of the Presbyterian party; a transaction remembered as *Pride's Purge*. The remainder, being chiefly Independents, were ready to give a colour of law to whatever further measure might be dictated by the military leaders, and it was now resolved to bring the king to trial. The House of Lords disapproving of the step, the Commons passed a resolution that the chief power resided with themselves, and closed the Upper Chamber. A High Court of Justice, as it was called, was appointed by ordinance, consisting of 133 persons, named indifferently from the parliament, the army, and such of the citizens as were known to be well affected to the Independent party. This body sat down in Westminster Hall (January 20, 1649), under the presidency of a barrister named Bradshaw, while another named Coke acted as solicitor for the people of England. The best known of its members are Cromwell and his son-in-law, Henry Ireton. Charles, who had been removed to St James's Palace, was brought before this court, and accused of having waged and renewed war upon his people, and of having attempted to establish tyranny in place of the limited regal power with which he had been intrusted. He conducted himself with great firmness and dignity: denied the authority of the court, and protested against the whole of the proceedings, but was nevertheless found guilty, and the commissioners pronounced the verdict, 'that Charles Stuart, as a tyrant, traitor, murderer, and public enemy to the good people of this nation, be put to death by having his head severed from his body.' On the 30th of January, he was accordingly beheaded in front of his palace of Whitehall. The people were in general horror-struck at this event; but they were too effectually kept in check by the army to have any influence in preventing or resenting it. The Church of England publicly styled him *martyr*.

Charles I. was a man of slender person, of the middle size, and of a grave and somewhat melancholy cast of countenance. He had not a gracious manner, but possessed considerable dignity. The general opinion of modern times respecting his political conduct is unfavourable; though few deny that his death was an unjustifiable as well as imprudent act on the part of those who brought it about. The worst point of his character was his insincerity. In private life he was a virtuous man, and he is entitled to much credit for the taste which he displayed in the encouragement of the fine arts. He left three sons—Charles, Prince of Wales, born 1630; James, Duke of York, afterwards James II.; and Henry, Duke of Gloucester, who died in early life. He also left several daughters, one of whom, named Elizabeth, was treated with much harshness by the new government, and died not long after him in prison; while another, Mary, married Prince William of Nassau, Stadtholder of Holland; her son afterwards became William III. of England.

In the reign of Charles I. the chief literary men were Ben Jonson and Philip Massinger, dramatists; and Samuel Daniel, Michael Drayton, and William Drummond, poets. The most eminent man of science was Dr William Harvey, who discovered the circulation of the blood. The king patronised the Dutch artists, Rubens and Van Dyck, and collected many fine pictures, which were afterwards sold by his enemies. The excise and the tax upon landed property were introduced by the parliament, in order to support the war against the king. When the parliamentary party became triumphant, it suppressed the theatre, which was not again set up till the restoration of monarchy.

THE COMMONWEALTH—SUBJUGATION OF IRELAND AND SCOTLAND.

Though the execution of the king produced some reaction in favour of royalty, the small remaining part of the House of Commons, known by the nickname of the *Rump*, was able to establish a republic, under the title of the COMMONWEALTH, the executive being trusted, under great limitations, to a Council of State, containing forty-one members. Of this council, Bradshaw was the President, and Milton the Foreign Secretary; but all real power was in the hands of Cromwell. The House of Peers was voted a grievance, and abolished, and the people were declared to be the legitimate source of all power. Soon after the king's death, the Duke of Hamilton and a few other of his chief adherents were executed.

During the progress of the civil war, Ireland had been the scene of almost ceaseless contention among the various parties of the king, the English House of Commons, and the Catholics, none of which could effectually master the rest. At the time of Charles's execution, the royalists were in considerable force under James Butler, Marquis of Ormond, the royalist Lord-lieutenant, who proclaimed Charles's eldest son king, under the title of Charles II. Cromwell, appointed Lord-lieutenant by parliament, landed (August 1649) with 12,000 horse and foot, and although at the time only Dublin, Belfast, and Londonderry were held by the parliamentary party, he easily gained a series of victories over his opponents, and succeeded in asserting the sway of the Commonwealth. One of his most important actions was the capture of Drogheda, where he put the garrison and a number of Catholic priests to the sword, in order to strike terror into the nation.

The people of Scotland, who had had scarcely any other object in the civil war than the establishment of their favourite form of worship, heard of the death of the king with the greatest indignation, and immediately proclaimed his eldest son Charles. Early in 1650, the young monarch, who had taken refuge in Holland, sent Montrose with a small force to attempt a Cavalier insurrection in Scotland; but this nobleman being taken and put to death, Charles found it necessary to accede to the views of the Scotch respecting the Presbyterian religion, and he was accordingly brought over, and having signed the Solemn League and Covenant, was put at the head of a considerable army, though under great restrictions. Cromwell, who had now nearly completed the conquest of Ireland, lost no time in returning to London, and organising an army for the suppression of this new attempt against the Commonwealth, leaving Ireland to his son-in-law, Ireton.

Crossing the Tweed with a force of 16,000 men,

he advanced through a deserted country to Edinburgh, and found the Scottish army under General Leslie in a fortified camp. His army suffering from sickness and want of provisions, he retreated, followed by Leslie, to Dunbar, when it seemed likely he would be compelled to surrender. In the midst of his perplexities (September 3), he beheld the Scots, who had been stimulated to move by the Presbyterian clergy in the camp, advancing from the neighbouring heights to give him battle, and, in a transport of joy, exclaimed: 'The Lord hath delivered them into our hands!' In the fight which ensued, the veteran troops of Cromwell proved victorious. The Scots fled in consternation and confusion, leaving 3000 dead and 10,000 prisoners. This gained for Cromwell the possession of the capital and of all the south-east provinces.

Cromwell spent a whole year in the country, vainly endeavouring to bring on another action. During the interval (January 1, 1651), the Scots crowned the young king at Scone. In the ensuing summer, Charles marched suddenly with a body of troops he had collected into England, and made a very threatening advance upon the capital. Ere the royalists had time to rally around him, Cromwell overtook Charles at Worcester, where, after a stoutly contested fight (September 3, 1651), he proved completely victorious. Charles, after many wanderings and numerous hairbreadth escapes, reached Fécamp in Normandy, and Scotland submitted to the conqueror. The country was finally reduced by an army under General Monk, and in a short time was declared by proclamation to be united with England. Thus was Cromwell, who, after Worcester, proclaimed an amnesty, left without a single armed enemy.

THE PROTECTORATE.

The republican leaders now resolved upon commencing hostilities against Holland, which had offended them on various grounds. In the summer of 1652, the Dutch fleet, under its famous commanders, Van Tromp, De Ruyter, and De Witt, had several encounters with the English ships, under Admirals Blake and Ayscue, without any decided success on either side. But in the ensuing spring, an action was fought between Blake and Van Tromp, in which the latter lost eleven ships. The Dutch then sued for peace, which the Rump Parliament did not wish to grant, from a conviction that the war tended to restrict the power of the army and Cromwell. Cromwell, perceiving their design, proceeded with 300 soldiers to the House (April 20, 1653), and entering with marks of the most violent indignation, loaded the members with reproaches for their robbery and oppression of the public; then stamping with his foot, he gave signal for the soldiers to enter, and addressing himself to the members, 'For shame!' said he; 'get you gone! Give place to honester men! I tell you, you are no longer a parliament: the Lord has done with you!' He then commanded 'that bauble'—meaning the mace—to be taken away, turned out the members, and, locking the door, returned to Whitehall with the key in his pocket.

Being still willing to keep up the appearance of a representative government, Cromwell summoned 144 persons in England, Ireland, and Scotland, to assemble as a parliament. These individuals, chiefly remarkable for fanaticism and ignorance, were denominated the *Barebones Parliament*, from the name of one of the members, a leather-seller, whose assumed name, by a ridiculous usage of the age, was Praise-God Barebones. As the assembly obtained no public respect, Cromwell took an early opportunity of dismissing it. His officers then constituted him (December 16, 1653) PROTECTOR of the Commonwealth of Great Britain and Ireland, with most of the prerogatives of the late king.

The war against Holland was still carried on with great spirit. It resulted ultimately in the triumph of the English, and the complete humiliation of the Dutch, who obtained peace on the condition of paying homage to the English flag, expelling the young king from their dominions, and paying a compensation for certain losses to the East India Company. In a war which was subsequently made against Spain, the fleets of the Protector, under Blake, performed some exploits of not less importance, among other things, capturing the island of Jamaica. But while generally successful abroad, he experienced unceasing difficulties in the management of affairs at home. The pure Republicans detested him, and his own officers could scarcely be kept in subordination; while the royalists, on the other hand, never ceased to conspire for his destruction.

The last parliament called by Cromwell met in January 1658; when, besides the Commons, he summoned the few remaining peers, and endeavoured, by ennobling some of his officers, to make up a kind of Upper House. This assembly proved as intractable as its predecessors, and he dissolved it with the words: 'Let God judge between you and me.' His health sank under the various worries and labours of his life. Finally he succumbed to an attack of ague, on the 3d September 1658, the anniversary of two of his greatest victories, Dunbar and Worcester. His eldest son, Richard, a docile young man of little or no ability, quietly succeeded him as Protector, and was at first treated with respect; but he could not long maintain his authority, being despised by the army. He quietly slunk out of public view, leaving the supreme authority to be bandied about for some time between the Rump and the officers of the army, of whom General John Lambert was the chief. Richard Cromwell lived partly abroad and partly at Cheshunt, dying there in 1712.

RESTORATION—DUTCH WAR.

The bulk of the people of England had been by this time thoroughly disgusted with irregular governments by adventurers, and longed for the restoration of the old monarchy. Aware of this sentiment, General Monk left Scotland with his troops, and, reaching London (February 3, 1660), caused a free parliament to be assembled. By this body, notwithstanding some opposition from the Cromwellian officers, the king was invited to return. On the 29th of May, being his thirtieth birthday, Charles II. entered London amidst such frantic demonstrations of public joy, that he could not help thinking it his own fault, as he said, that he had been so long separated from his people.

One of the first measures of the new monarch

was the passing of a bill of indemnity, by which all persons concerned in the late popular movements were pardoned, excepting a few who had been prominently concerned in bringing the king to the block. Harrison, Scrope, and a few other regicides, were tried and executed; and the bodies of Cromwell, Ireton, and Bradshaw were raised from the grave, and exhibited upon gibbets. In Scotland, only three persons suffered — the Marquis of Argyll, Johnston of Warriston, and Mr Guthrie, a clergyman: it was considered remarkable, that the marquis had placed the crown upon the king's head at Scone in the year 1651. The parliament which called the king home was constituted a legal one by his own ratification of an act for that purpose. The Episcopal Church was established both in England and Scotland, though not without about a third of the clergy in both countries resigning their charges. The stern and enthusiastic piety which prevailed during the civil war, was now treated with ridicule, and most of the people vied with each other in profligacy of every description.

Ireland, which, during the Protectorate, had been managed by Henry, a younger son of Cromwell, acceded to the Restoration with as much readiness as any other part of the British dominions. An act was passed for settling property, by which the Catholics obtained some slight benefits.

Though Charles had been restored with the approbation of a very large portion of his subjects, his most zealous friends were the royalists and Episcopalians; hence he almost immediately subsided into the character of a party ruler. He caused several horse-regiments to be embodied under the name of Life Guards, being chiefly composed of royalist gentlemen upon whom a perfect dependence could be placed; and he afterwards added two or three foot regiments, the whole amounting to about five thousand men. The king paid these troops chiefly out of the money allowed for his own support, for parliament did not sanction his keeping up such a force. This was the commencement of a *standing army* in England.

A mere man of pleasure, Charles was not qualified to retain the sincere respect of a people whose habitual character is grave and virtuous. His extravagant expenditure soon cooled the affections of his parliament, and he began to find difficulties in obtaining money. To relieve himself, he accepted £40,000 from the French king for Dunkirk, a French port which had been acquired by Cromwell. For the same purpose, he married a Portuguese princess of the Catholic religion, who possessed a dowry of half a million, besides the fortress of Tangier in Africa, and the island of Bombay in India. The former was abandoned before the end of the year as worthless; while Bombay was, in a short time, made over to the East India Company. He also commenced (1664) a war against Holland, for apparently no better reason than that, in applying the parliamentary subsidies necessary for keeping up hostilities, he might have an opportunity of converting part of the money to his own personal use.

This Dutch war was chiefly conducted by sea. On the 3d of June 1665, an English fleet of 114 sail, under the command of the king's younger brother, James, Duke of York, met and defeated a Dutch one near Lowestoft; and in subsequent engagements the English were on the whole successful. Owing, however, to a failure of the supplies, the king was obliged to lay up his best vessels, and to send only an inferior force to sea. The Dutch took advantage of this occurrence to sail up the Medway (June 11, 1667), burn twenty English vessels, and blockade the Thames. This disgrace was much felt by the people, and the king soon after concluded a peace.

PLAGUE AND FIRE OF LONDON—PERSECUTION IN SCOTLAND.

In the meantime, two extraordinary calamities had befallen the metropolis. In the summer of 1665, London was visited by the Plague, which swept off about 100,000 people, and did not experience any abatement till the approach of cold weather. On this occasion, the city presented a wide and heart-rending scene of misery and desolation. Rows of houses stood tenantless, and open to the winds; and the chief thoroughfares were overgrown with grass. Since 1665, the Plague has not again occurred in London, or in any other part of the kingdom. The second calamity was a conflagration, which commenced on the night of Sunday, the 2d of September 1666, in Pudding Lane, near Fish Street, in the eastern and more crowded part of the city. Favoured by various circumstances, the fire raged for three days, and burnt all that part of the city which stretches from the Tower to the Temple and Smithfield. By this calamity, 13,200 houses and 89 churches, covering in all 430 acres of ground, were destroyed. It had one good effect in causing the streets to be formed much wider than before, by which the city was rendered more healthy. The column known as the 'Monument' marks the spot near which the fire originated. Among the buildings burnt was Old St Paul's, which was replaced by the existing structure, designed by Sir Christopher Wren.

In Scotland, the re-introduction of Episcopacy, and the harshness of the measures required to support it amongst an unwilling people, created great dissatisfaction. Tired of suffering, a few of the peasantry of Galloway rose in rebellion (November 1666), and advancing through the disaffected districts of Ayrshire and Lanarkshire, gradually assumed a threatening appearance. An unfortunate movement towards Edinburgh, where they expected accessions, thinned their numbers, and they were overpowered by General Dalyell at the Pentland Hills. Thirty-four of the prisoners were executed as rebels, chiefly at the instigation of Sharp, archbishop of St Andrews, who, with the other prelates, was peculiarly zealous in behalf of the government. Besides these sufferers, fifty persons, including fifteen clergymen, forfeited lands and goods.

Some attempts were now made, at the desire of the king, to induce the ejected clergy to connect themselves with the church; but very few took advantage of a leniency which they believed would have been extended also to Catholics, and which involved their acknowledgment of the king's supremacy in spiritual affairs. About the year 1670, some divines began to hold conventicles in secluded parts of the country, to which the country people used to come with arms. At

these places, a far warmer kind of devotion was felt than could be experienced under tamer circumstances; and, as may be supposed, such meetings were not calculated to diffuse or foster a sentiment of loyalty. Sensible of this, the government obtained an act imposing very severe fines on all who should preach or listen at conventicles; but without producing any effect. The penalties with which they were threatened seemed only to make the people more attached to their peculiar modes of worship and church-government.

THE TRIPLE ALLIANCE—THE FRENCH ALLIANCE.

The kingdom of France was at this period under Louis XIV. rising into a degree of power and wealth which it had never before known. Louis had some claims through his wife upon the Netherlands (since called Belgium), which were then part of the Spanish dominions. He accordingly endeavoured to possess himself of that country by force of arms. A jealousy of his increasing power, and of the Catholic religion, professed by his people, induced the English to wish that his aggressions should be restrained. To gratify them, Charles entered into an alliance with Holland and Sweden, for the purpose of checking the progress of the French king. In this object he was completely successful, and consequently he became very popular. The parliament, however, having disappointed him of supplies, he soon after entirely changed his policy, and, with the assistance of five corrupt ministers—Clifford, Ashley, Buckingham, Arlington, and Lauderdale, who were called the CABAL, from the initials of their names forming that word—resolved to render himself, if possible, independent of parliament; in other words, an absolute prince. Charles now sold himself by the Treaty of Dover, concluded secretly, May 22, 1670, to Louis, engaging, on the receipt of an annual subsidy of £120,000, to join in a war against Holland, and also, as soon as was considered prudent, to declare himself a Roman Catholic.

War was accordingly declared in May 1672, and the naval force of England was employed in meeting that of the Dutch by sea; while Louis led a powerful army across the Rhine, and in a very short time had nearly reduced the whole of the Seven Provinces. The English people, however, who had not entered heartily into this war, soon began to be alarmed for the fate of Holland, which was almost their only support against the dread of popery; and though forbidden, under severe penalties, to censure the government measures, they soon contrived to exhibit so much dissatisfaction, as to render a change of policy unavoidable.

The king found it necessary to assemble his parliament (February 1673), and it was no sooner met than it passed some acts highly unfavourable to his designs. Among these was the famous Test Act, so called because it enacted the imposition of a religious oath upon all persons about to enter the public service—the design being to exclude the Catholics from office. Above all things, the House of Commons declared that it would grant no more supplies for the Dutch war. The king resolved to prorogue the assembly; but before he could do so, they voted the alliance with France, and several of his ministers, to be *grievances*. Charles, who, in wishing to be absolute, had been inspired by no other motive than a desire of ease, now saw that there was a better chance of his favourite indulgence in giving way to his subjects than in any other course; and he at once abandoned all his former measures, and concluded, in 1678, a separate peace with Holland, which, under its stadtholder, William, Prince of Orange, had made a gallant defence against the French. The Prince of Orange, in the previous year, had married the Princess Mary, eldest daughter of the Duke of York, and educated in the Reformed faith—an alliance which greatly pleased the English, from its strengthening the Protestant interest.

THE POPISH PLOT.

For a century past, one of the grand moving-springs of the public conduct had been a strong detestation and dread of the adherents of the Roman Catholic Church. This feeling was now intensified by the fact that the Duke of York, heir to the throne, had avowed himself a Roman Catholic. In 1678, a wild account of a plot supposed to have been formed by the Papists, for burning London, massacring the Protestants, and destroying the king and the Protestant religion, was circulated by various persons, of whom the chief was Titus Oates, a Protestant clergyman, but a man of the most infamous character. The circumstances attending this pretended discovery were so unlike reality, that if the nation had not been in a state of hallucination at the time, they never could have been for a moment listened to. Nevertheless, the Popish Plot, as it was called, was not only generally believed by the people, but also by the parliament and the court; and such was the extent of the excitement, that a general massacre of the Catholics was apprehended. Even as things were, many innocent Catholics were condemned to death, their lives being sworn away by Oates and others, who made a business of perjury. An act was also passed shutting out all Papists, with the exception of the Duke of York, from either House of Parliament, and from the royal presence.

THE HABEAS CORPUS ACT—THE EXCLUSION BILL.

In the year 1679, the House of Commons appears for the first time formally separated into the two parties who have ever since been recognised in it. The appellation *Tory*, said to be derived from the Irish *tora, tora*, 'give, give,' was first used of certain Romanist outlaws and banditti, and was afterwards extended to the whole of the Cavalier or royalist party. The term *Whig*, which fell to the lot of the opposition, is said to have originated in Scotland, being first generally applied to the sterner portion of the Presbyterian party, although formerly it had been a nickname of the Lowland peasantry in the west.

The parliament having impeached Danby, the king's minister, he dissolved it, and called another. The new assembly proved equally uncontrollable as the last. It passed in 1679, by a majority of seventy-nine, a bill excluding the Duke of York

from the succession; declared the king's Guards and standing army illegal; and passed the *Habeas Corpus* Act, which, limiting the time between the apprehension of a supposed criminal and his trial, rendered it impossible for this or any future sovereign to keep individuals in prison at his pleasure, as had formerly been done. The last measure is still justly looked upon as the great bulwark of personal liberty in Britain. Though the bill for excluding the Duke of York was thrown out by the Upper House, that prince found it necessary to evade the popular odium, first by retiring to Brussels, and afterwards to Scotland. At the same time, the Duke of Monmouth, eldest natural son of the king, and believed by many to be legitimate, began to be regarded by the Whig party in general as a preferable heir to the crown.

PERSECUTION IN SCOTLAND.

The persecution in Scotland for field-meetings was so severe, that before the year 1678 it was supposed that 17,000 persons had suffered by it in fine, imprisonment, and death. As was natural, this persecution inspired a strong feeling of resentment against the government and the prelates. On the 2d of May 1679, as Archbishop Sharp, the most obnoxious of these, was going in his coach to St Andrews, he was beset by a body of desperate men, among whom were Balfour of Burleigh and Hackston of Rathillet, who cruelly slew him. An insurrection of the west-country conventiclers immediately followed; and a party of dragoons sent against them, under Captain Graham of Claverhouse, was gallantly repulsed at Loudon Hill. The insurrection proving formidable, the Duke of Monmouth was sent down to head the troops for its suppression. He found the insurgents posted advantageously at Bothwell Bridge (June 22); but divisions on certain religious and political points unfitted them for making a good resistance. After defending the bridge for a while, they turned in a panic, and fled; 300 were killed in the pursuit, and 1200 taken prisoners.

Notwithstanding this overthrow, the more enthusiastic Presbyterians refused to be at rest, and many publicly renounced their allegiance to the king.

REACTION IN FAVOUR OF THE KING.

In the meantime, an extraordinary revolution took place in England. About the time that popular feeling was recovering from the mania respecting the Popish Plot, the House of Commons had shewn an ardent determination to seek the exclusion of the Duke of York from the throne. The time was unfortunate, for men were beginning to suspect that they had been deceived in many of their surmises about danger from the Catholics.

The king called a new parliament to meet at Oxford, resolved, in the event of its not proving more tractable, to take advantage of the popular feeling, dissolve the assembly, and never call another. It met on the 21st of March 1681, and the Whigs soon shewed that the Exclusion Bill was still uppermost in their minds. Charles, after various attempts at compromise had been made, dissolved the parliament as utterly intractable, and, as he expected, he was generally applauded for the act. Popular feeling had now taken a turn in favour of royalty, and Charles henceforth ruled entirely without control.

THE RYE-HOUSE PLOT—DEATH OF CHARLES II.

Taking advantage of the popular feeling in his favour, Charles caused all the corporations in the kingdom to give up their old charters, and accept of new ones, by which he became all-powerful over the elections of magistrates, and, consequently, over those of parliamentary representatives, should ever another election of that kind take place. The leaders of the late majority in parliament, comprising the Duke of Monmouth, Lord William Russell (son of the Earl of Bedford), the Earl of Essex, Lord Howard, the ardent Republican Algernon Sydney, and John Hampden, grandson of the patriot who first resisted Charles I. being reduced to absolute despair, formed a project for raising an insurrection in London, to be supported by one in the west of England, and another under the Earl of Argyll in Scotland, and the object of which should be confined to a melioration of the government. They were betrayed by an associate named Rumsay, and implicated, by certain unfortunate circumstances, in a plot of some of the more desperate opponents of the king, for assassinating the king (styled the Rye-house Plot), of which they were perfectly innocent. By the execution of Russell and Sydney, and some other severities, the triumph of the king might be considered as completed. Monmouth fled to the continent, and the Duke of York was allowed to resume his former important office of Lord High Admiral. After having been an absolute sovereign for nearly four years, Charles died of apoplexy (February 6, 1685), professing himself at the last to be a Catholic, and was succeeded by the Duke of York.

During the reign of Charles II. the nation advanced considerably in the arts of navigation and commerce. The post-office, set up during the Commonwealth as a means of raising money, was advanced in this reign. Roads were greatly improved, and stage-coach travelling was commenced, though not carried to any great extent. During this reign, tea, coffee, and chocolate were first introduced. In 1660, the Royal Society was established in London, for the cultivation of natural science, mathematics, and all useful knowledge. The science of astronomy was greatly advanced by the investigations of Flamsteed and Halley. But the greatest contribution to science was made by Sir Isaac Newton, whose *Principles of Natural Philosophy* were published in 1687: in this work, the true theory of planetary motions was first explained, in reference to the principle of gravitation. Amongst the literary men of the period, the first place is to be assigned to John Milton, author of the *Paradise Lost* and other poems: Samuel Butler, author of *Hudibras*, shines as a humorous and satirical poet, and Edmund Waller as a lyrist. Amongst divines, the highest names connected with the church are those of Jeremy Taylor and Isaac Barrow; while the highest among the Nonconformists are those of Richard Baxter and John Bunyan. The theatre, which had been suppressed during the Commonwealth, was revived in this reign; but the drama exhibited less talent and more licentiousness than it did in the previous reigns.

JAMES II.—EXPEDITION OF MONMOUTH.

JAMES II. was sixty-eight years of age when he ascended the throne. He was a much more respectable and industrious man than his brother, but utterly deficient in the tact and easy carriage which made Charles so popular. He began his reign by declaring before the privy-council his intention to govern solely by the laws, and to maintain the existing church; and such was the confidence in his sincerity, that he soon became very popular. Addresses poured in upon him from all quarters, professing the most abject devotion to his person. The parliament called by him voted an ample revenue, and expressed the greatest servility towards him in all things.

The remains of the Whig party still existed, though in exile in Holland, and there were some districts of the country where they were supposed to have considerable influence. The Duke of Monmouth and the Earl of Argyll met in Holland, and projected two separate invasions, for the purpose of expelling King James. Argyll landed in Scotland in May, but finding he could make little impression among the people, he gave up the enterprise, and tried to escape—he was captured, however, and executed at Edinburgh. A few days before Argyll's capture Monmouth landed in Dorsetshire, and the peasantry flocked to his standard. At Taunton, June 20, he caused himself to be proclaimed king. Having attacked the king's troops at Sedgemoor, near Bridgewater, July 6, his infantry fought with some spirit, but being deserted by the cavalry and by the duke himself, were obliged to give way. Monmouth was taken and executed. Many of his followers were hanged without form of trial by the royal troops, under the Earl of Feversham, and a brutal officer, Colonel Percy Kirke; and others were afterwards put to death, with hardly any more formality, by the celebrated Chief-justice Jeffreys, whom the king sent down with a commission to try the offenders. The butchery of several hundred men of low condition, who were unable of themselves to do any harm to the government, was looked upon as a most unjustifiable piece of cruelty, even if it had been legally done; and the principal blame was properly ascribed to the king.

ARBITRARY MEASURES OF THE KING.

Encouraged by his successes, James conceived that he might safely begin the process of getting rid of those portions of the constitution which were obstacles in his way towards absolute power. On the plea of his supremacy over the church, he took the liberty of dispensing with the test-oath in favour of some Catholic officers, and thus broke an act which was looked upon, under existing circumstances, as the chief safeguard of the Protestant faith. His parliament, servile as it was in temporal matters, took the alarm at this spiritual danger, and gave the king so effectual a resistance that he resorted to a dissolution.

Heedless of these symptoms, he proclaimed, April 4, 1687, a Declaration of Indulgence, suspending all penal laws against Nonconformists, for the purpose of relieving the Catholics, and thus assumed the unconstitutional right of dispensing with acts of parliament. The nation was thrown by this measure into a state of great alarm; even the clergy, who had been so eager to preach an implicit obedience to the royal will, began to see that it might be productive of much danger. When James commanded that his proclamation of toleration should be read in every pulpit in the country, only 200 of the clergy obeyed. Six of the bishops, with William Sancroft, archbishop of Canterbury, joined in a respectful petition against the order; but the king declared that document to be a seditious libel, and threw the seven petitioners into the Tower. In June 1688, they were tried in Westminster Hall, and not one of the judges venturing to say that the Declaration of Indulgence was legal, to the infinite joy of the nation they were acquitted.

Blinded by religious zeal, the king proceeded on his fatal course. In defiance of the law, he held open intercourse with the pope, for the restoration of Britain to the bosom of the Romish Church. A court of High Commission—a cruel instrument of power under Charles I.—was erected, and before this every clergyman who gave any offence to the king was summoned. He also excited great indignation by violently thrusting a Catholic upon Magdalen College, at Oxford, as its head, and expelling the members for their resistance to his will. He intrusted the government of Ireland to a Romanist, Richard Talbot, Earl of Tyrconnel, who hated the Protestant settlers. Public feeling was wound to the highest pitch of excitement by the queen, James's second wife, Mary of Modena, being delivered (June 10, 1688) of a son, who might be expected to perpetuate the Catholic religion in the country, and whom many believed to be a supposititious child, brought forward solely for that purpose.

The disaffection produced by these circumstances extended to every class of the king's subjects, except the small body of Roman Catholics, many of whom could not help regarding the royal measures as imprudent. The Tories were enraged at the ruin threatened to the Church of England, which they regarded as the grand support of conservative principles in the empire. The Whigs, who had already made many strenuous efforts to exclude or expel the king, were now more inflamed against him than ever. The clergy, a popular and influential body, were indignant at the injuries inflicted upon their church; and even the Dissenters, though comprehended in the general toleration, saw too clearly through its motive, and were too well convinced of the illegality of its manner, and of the danger of its object, as affecting the Protestant faith, to be exempted from the general sentiment. But for the birth of the Prince of Wales, the people at large might have been contented to wait for the relief which was to be expected, after the death of the king, from the succession of the Princess of Orange, who was a Protestant, and united to the chief military defender of that interest in Europe. But this hope was now shut out, and it was necessary to resolve upon some decisive measures for the safety of the national religion.

THE REVOLUTION.

In this crisis, some of the principal nobility and gentry, with a few clergymen, united in a secret

address to William, Prince of Orange, calling upon him to come over with an armed force, and aid them in protecting their faith and liberties. This prince, who feared that England would soon be joined to France against the few remaining Protestant powers, and also that his prospects of the succession in that country, as nephew and son-in-law of the king, were endangered, listened readily to this call, and immediately collected a large fleet and army, comprising many persons, natives of both Scotland and England, who had fled from the severe government of the Stuart princes. The preparations for the expedition were conducted with great secrecy. When James, who had at first disbelieved the reports regarding the expedition, was assured of their truth, he ordered a fleet and large army to be collected, and, that he might regain the affections of his subjects, he abolished the Ecclesiastical Commission, called a parliament, and undid many of his late measures. It was now too late, however, for such concessions to be of any avail.

On the 19th of October, the Prince of Orange set sail with 50 ships-of-war, 25 frigates, 25 fireships, and 500 transports, containing 15,000 landtroops. A storm occasioned some damage and delay; but he soon put to sea again, and proceeded with a fair wind along the British Channel, exhibiting from his own vessel a flag, on which were inscribed the words, 'THE PROTESTANT RELIGION AND THE LIBERTIES OF ENGLAND,' with the apposite motto of his family, *Je maintiendrai*—'I will maintain.' The English fleet being detained at Harwich by the same wind which was so favourable to the prince, he landed (November 5) without opposition at Torbay, and immediately proceeded to circulate a Declaration stating that he had come to protect the liberties of England, and to secure the calling of a free parliament to redress grievances and inquire into the truth of the Prince of Wales.

Being almost immediately joined by many persons of consequence, the prince marched towards London. The king saw himself deserted by his nobility, his chief military officers, and even his daughter Anne, who, with her favourite, Lady Churchill, joined the insurgents. In great perplexity, he summoned a council of peers, by whose advice writs were issued for a new parliament, and commissioners despatched to treat with the prince. A kind of infatuation now took possession of the king; and, after one unsuccessful attempt, he got, with the connivance of the supporters of William, whom his presence in the country would have embarrassed, on board a ship, which conveyed him to France, having previously sent his queen and her infant to the same country. He was most kindly received by Louis XIV.

The same day that the king left Whitehall for the last time, his nephew and son-in-law arrived at St James's. The public bodies immediately waited on him, to express their zeal for his cause; and such of the members of the late parliaments as happened to be in town, having met by his invitation, requested him to issue writs for a convention, in order to settle the nation. He was in the same manner, and for the same purpose, requested to call a convention in Scotland. The English convention met on the 22d of January 1689, and during its debates the prince maintained a magnanimous silence and neutrality. The Tory party, though it had joined in calling him over, displayed some scruples respecting the alteration of the succession, and seemed at first inclined to settle the crown on the princess, while William should have only the office of regent; but when this was mentioned to the prince, he calmly replied, that in that event he should immediately return to Holland. A bill was then passed, declaring James, by breaking the *original contract* between the king and people, to have abdicated the throne. To the bill was added what was called a *Declaration of Rights*—namely, an enumeration of the various laws by which the royal prerogative and the popular liberties had formerly been settled, but which had been violated and evaded by the Stuart sovereigns. WILLIAM and MARY, having expressed their willingness to ratify this Declaration, were proclaimed king and queen jointly—the administration to rest in William; and the convention was then converted into a parliament.

In Scotland, where the Presbyterians had resumed an ascendency, the convention declared that James, by the abuse of his power, had *forfeited* all right to the crown—a decision also affecting his posterity; and William and Mary were immediately after proclaimed. By a bill passed in the English parliament, the succession was settled upon the survivor of the existing royal pair; next, upon the Princess Anne and her children; and finally, upon the children of William by any other consort—an arrangement in which no hereditary principle was overlooked, except that which would have given a preference to James and his infant son. The sovereignty of Ireland went with that of England.

By the Revolution, as this great event was styled, it might be considered as finally decided that the monarchy was a human institution dependent on the people, and established and maintained for their benefit. Many advantages, of smaller importance, though of more direct and practical utility, resulted from the change. The Episcopal Church, which in Scotland had occasioned incessant discontent and disturbance for the last twenty-eight years, was abolished in that kingdom as an establishment, and the favourite Presbyterian forms were established. Dissenters from the church in England were freed from the severities to which they had been exposed during the last two reigns. The royal revenue, which had formerly been fixed at the beginning of each reign, was now settled annually by the House of Commons, so that the king was more under the control of his people than formerly. The independence and impartiality of the judges were now secured by their being appointed for life, or during good behaviour, instead of being removable at the royal pleasure as heretofore.

RESISTANCE IN SCOTLAND AND IRELAND.

The new government was at first extremely popular in Scotland; but one portion of the people was much opposed to it. This consisted of the Highland clans—a primitive race, unable to appreciate the rights which had been gained, prepossessed in favour of direct hereditary succession, and of such warlike habits, that though a minority, they were able to give no small trouble to the

peaceful Lowlanders. When the Scottish convention was about to settle the crown on William and Mary, Viscount Dundee, formerly Graham of Claverhouse, and celebrated for his severity upon the recusant Presbyterians, raised an insurrection in the Highlands in favour of King James, which threatened at first to be successful. General Mackay, who was sent with a body of troops to suppress it, encountered Dundee at Killiecrankie (July 27, 1689), and, though his troops were greatly superior in number and discipline, experienced a complete defeat. Dundee, however, fell by a musket-shot in the moment of victory, and his army was unable to follow up its advantage. In a short time the Highland clans were induced to yield a nominal obedience to William and Mary.

In Ireland, where, since the accession of James, Catholicism had been virtually predominant, a much more formidable resistance was offered to the Revolution Settlement. In March 1689, James proceeded in person from France to Ireland, where he found himself at the head of a large though ill-disciplined army, which had been assembled by the Earl of Tyrconnel, who had been viceroy in the previous reign. He immediately ratified an act of the Irish parliament for annulling that settlement of the Protestants upon the lands of Catholics which had taken place in the time of Cromwell, and another for attainting between two and three thousand Protestants. The Protestants or Englishry, finding themselves thus dispossessed of what they considered their property, and exposed to the vengeance of a majority over whom they had long ruled, fled to Londonderry, Enniskillen, and other fortified towns, where they made a desperate resistance, in the hope of being speedily succoured by King William. That sovereign now led over a large army to Ireland, and (July 1, 1690) attacked the native forces under his father-in-law at the fords of the river Boyne, near the village of Dunore, where he gained a complete victory.

James was completely dispirited by this disaster, and lost no time in sailing again to France. The Duke of Berwick, a natural son of James, and the Earl of Tyrconnel, still kept the field with a large body of cavalry, and the infantry were in the meantime effectually protected in the town of Limerick. The Irish army next year, on 12th July, fought a regular battle at Aghrim, when, partly owing to the loss of their brave French leader, St Ruth, they were totally routed by the Dutch general Ginkell, who was afterwards created Earl of Athlone. The remains of the Catholic forces took refuge in Limerick, where, with their gallant commander, Sarsfield, they finally submitted.

The supremacy of the colonists was now secured beyond the possibility of a doubt, and an act was passed in England making it necessary for all members of the Irish parliament, and all persons filling civil, military, and ecclesiastical offices in Ireland, to take an oath abjuring the most important doctrines of the Catholic faith.

REIGN OF WILLIAM III.

Though all military opposition was thus overcome, William soon found difficulties of another kind in the management of the state. The Tories, though glad to save the established church by calling in his interference, had submitted with no good grace to the necessity of making him king; and no sooner was the danger past, than they reasserted their doctrine of hereditary right. From the name of the exiled monarch, they now began to be known by the appellation of *Jacobites*. James's hopes of a restoration were thus for a long time kept alive, and the peace of William's mind was so much imbittered, as to make his sovereignty appear a dear purchase. Perhaps the only circumstance which reconciled the king to his situation, was the great additional force he could now bring against the ambitious designs of Louis XIV. Almost from his accession he entered heartily into the combination of European powers for checking this warlike prince, and conducted military operations against him every summer in person. The necessity of having supplies for that purpose rendered him unfit, even if he had been willing, to resist any liberal measures proposed to him in parliament, and hence his passing of the famous Triennial Act in 1694, by which it was appointed that a new parliament should be called every third year. In this year died Queen Mary, without offspring; after which William reigned as sole monarch.

While William was treated in England with less than justice, he lost all his popularity in Scotland, in consequence of two separate acts, characterised by great cruelty and injustice. An order had been issued, commanding all the Highland chiefs, under pain of fire and sword, to give in their submission before the last day of the year 1691. One chief, M'Ian—the head of the Macdonalds of Glencoe—was prevented by accident from observing the day; and Dalrymple, the secretary for Scotland, made his delay a pretext for obtaining from William letters of fire and sword, decreeing the destruction of the whole clan. The military party intrusted with this duty, instead of boldly advancing to the task, came among the clan as friends, partook of their hospitality and amusements, and never indicated their intentions till the morning of the 13th of February (1692), when they attacked the unsuspecting people in their beds, and mercilessly slew all that came in their way. Thirty-eight persons, including the chief and his wife, were slaughtered, and many others died in the snow, as they vainly tried to escape. A more atrocious action does not stain modern history, though the barbarous circumstances of the slaughter were more owing to feelings of private revenge on the part of some of the officials of government in Scotland, than to the intentions of William. As, however, he did nothing more than dismiss Dalrymple, when the circumstances of the massacre were made known to him, his name was unfortunately associated with it in the minds of the Scotch people.

Two or three years after, the Scottish people began to turn their attention to commerce, by which they saw great advantages gained by neighbouring states, and they subscribed among themselves £400,000 for the founding of a colony on the Isthmus of Darien, which they thought might become an emporium for American and Indian produce. The scheme was at first sanctioned by an act of parliament, but on account of the jealousy of English trading companies, and the remonstrances of the Spaniards, who feared their colonies

would be interfered with, the king withdrew his countenance from it. Nevertheless, in 1698, a gallant expedition was sent out by the Scots, who founded a town called New Edinburgh, about midway between Puerto Bello and Carthagena, and under the ninth degree of latitude. During the winter months, everything seemed likely to answer the expectations of the colonists; but summer brought disease; and on their provisions running low, they found, to their infinite consternation, that they could get no supplies, the Spanish and English colonists of the neighbouring countries being forbidden to deal with them. In May and September 1699, ere intelligence of these circumstances could reach home, two other expeditions had sailed, containing 1800 men, who were involved on their arrival in the same disasters, and ultimately, being attacked by the Spaniards, the unfortunate colony was obliged to surrender. Very few ever regained their native country, and the large sums vested in the undertaking were irrecoverably lost. The massacre of Glencoe and the Darien expedition caused the king to be bitterly hated by the Scotch nation, and largely increased the ranks of the Jacobites.

The war with France, which commenced in 1690, was carried on both by land and sea till 1697, with varying success on land, but complete success for the English and Dutch fleets, which gained in particular the great battle of La Hogue. In September of that year, both sides being exhausted, the Peace of Ryswick was concluded, by which it was agreed that the fortresses taken by Louis in Flanders and to the south of the Pyrenees should be restored to Spain, and that neither sovereign should countenance conspiracies against the other. Before this, Louis had agreed to acknowledge William as king of England. In 1700, in consideration that he and his sister-in-law Anne had no children, her only surviving son, the Duke of Gloucester, having died that year, the famous Act of Succession was passed, by which the crown, failing these two individuals, was settled upon the next Protestant heir, Sophia, Duchess of Hanover, daughter of Elizabeth, the eldest daughter of James I.

About this time the causes of a new war took their rise in certain disputes respecting the succession to the crown of Spain. The title to that sovereignty, in the event of the death of the existing king, Charles II. without heirs, was claimed by the king of France, the Elector of Bavaria, and the Emperor of Germany, through various female lines of descent. A secret treaty, to which England was a party, was entered into for preventing the whole from falling into the hands of the reigning family of France, whose possessions would then have been so great as to be inconsistent, it was thought, with the independence and safety of neighbouring states. At the death of the king of Spain, however, a will was produced, in which it appeared that he had appointed the Duke of Anjou, second son of the Dauphin, to be his successor. The French king lost no time in enforcing the pretensions of his grandson, who, under the title of Philip V. became the founder of the Bourbon dynasty in Spain.

About the same time (September 1701), James, the exiled English king, died at St Germain, leaving his pretensions to his son, James, Prince of Wales, now a boy of thirteen years of age, and henceforth generally recognised in Britain by the epithet of the *Pretender*. Without regard to the Treaty of Ryswick, Louis XIV. acknowledged this young person as JAMES III. King of Great Britain, by which he added greatly to the hostile feeling which his other proceedings had already created in the British king and people. A war was accordingly in preparation, when King William died in his fifty-second year (March 8, 1702), in consequence of a fall from his horse.

William was a prince of commanding ability, particularly in military affairs. His ruling sentiment was a wish to reduce the power of the king of France, which he was able in no small degree to effect. His person was thin and feeble, and his ordinary demeanour was cold, silent, and somewhat repulsive. It was only in battle that he ever became animated or easy. He was a man of undoubted sincerity and conscientiousness, and sincerely attached to toleration in religion.

The reign of King William is remarkable for the first legal support of a standing army, and for the commencement of the national debt. It is also distinguished by the first establishment of regular banks for the deposit of money and the issue of a paper-currency. Formerly, the business of banking, as far as necessary, was transacted by goldsmiths, or through the medium of the public exchequer, by which plans the public was not sufficiently insured against loss. In 1695, the first public establishment for the purpose, the *Bank of England*, was founded by William Paterson, a scheming Scotsman; and next year the Bank of Scotland was set on foot by one Holland, an English merchant; the capital in the former case being only £1,200,000, and in the latter, the tenth part of that sum.

The most profound writer of this reign was John Locke, author of an *Essay on the Human Understanding*, an *Essay on Toleration*, and other works. The greatest name in polite literature is that of John Dryden, remarkable for his energetic style of poetry, some dramas, and his translations of Virgil and Juvenal.

QUEEN ANNE—MARLBOROUGH'S CAMPAIGNS.

William was succeeded by his sister-in-law, ANNE, second daughter of the late James II.; a princess now thirty-eight years of age, and chiefly remarkable for her zealous attachment to the Church of England. Her husband was Prince George of Denmark, a person of insignificant character. The movement against the king of France had not been confined to Great Britain; it was a combination of that power with the Emperor of Germany and the states of Holland. Queen Anne found it necessary to maintain her place in the Grand Alliance, as it was termed; and John Churchill, Earl, and afterwards Duke, of Marlborough, the husband of her favourite, Sarah Jennings, was sent over to the continent with a large army to prosecute the war in conjunction with the allies. Now commenced that career of military glory which has rendered the reign of Anne and the name of Marlborough so famous. In Germany and Flanders, under this commander, the British army gained some signal successes, particularly those of Blenheim, gained on the 2d of August 1704; and Ramillies, on the 12th of May 1706; in Spain, a smaller army,

under the chivalrously brave but eccentric Earl of Peterborough, performed other services of an important kind.

UNION OF ENGLAND AND SCOTLAND.

The treatment, by English traders, of the Darien expedition, had now inspired the Scottish people with the most unfriendly feeling against their southern neighbours, and they resolved to shew their power of counter-annoyance by holding up threats of dissenting from England in the matter of the succession. In 1703, their parliament passed the famous *Act of Security*, by which it was ordained that the successor of her majesty in Scotland should not be the same with the individual adopted by the English parliament, unless there should be a free communication of trade between the countries, and the affairs of Scotland thoroughly secured from English influence. The English ministers then saw that an incorporating union would be necessary to prevent the Pretender from gaining the Scottish crown, and to protect England from the attacks of a hostile nation. For this purpose they exerted themselves so effectually in the Scottish parliament, as to obtain an act enabling the queen to nominate commissioners for the arrangement of a union. These commissioners, who, with scarce an exception, were friends of the court, drew up a treaty which, in October 1706, was submitted to the Scottish parliament. The principal points were these: That the two nations were to be indissolubly united under one government and legislature, each, however, retaining its own civil and criminal law; the crown to be in the House of Hanover; the Scottish Presbyterian Church to be guaranteed; forty-five members to be sent by the Scottish counties and burghs to the House of Commons, and sixteen elective peers to be sent to the Upper House by the nobles; the taxes to be equalised, but, in consideration of the elevation of the Scotch imposts to the level of the English (for the latter people already owed £16,000,000), an equivalent was to be given to Scotland, amounting to nearly £400,000, which was to aid in renewing the coin and other objects. These terms were regarded in Scotland as miserably inadequate; and the very idea of the loss of an independent legislature and a place among governments raised their utmost indignation. Nevertheless, by dint, mainly, of bribery, the union was carried through parliament; and from the 1st of May 1707, the two countries formed one state, under the title of the Kingdom of Great Britain.

HIGH CHURCH ENTHUSIASM.

Since the Revolution, the Whigs might be considered as the predominant party in England. They almost exclusively constituted the ministries, and a large majority in the parliaments, of King William. The sentiments of the queen were of a different cast from theirs, and she disliked the Revolution Settlement, by which she reigned. As the remembrance of the errors of King James faded from the public recollection, the people began to partake more generally of the Tory spirit. The parliament which they returned at the beginning of the new reign, contained a much larger admixture of that party than the former one. The Tory feeling of both people and parliament chiefly took the direction of a strong attachment to the Church of England, which they wished, as did the queen herself, to maintain in uncompromising supremacy, and in all its privileges; while the Whig party, in general, were favourable to the toleration called for by the Dissenters. The distinction of High Church and Low Church now became conspicuous, the one phrase implying the ecclesiastical views of the Tories, while the other referred to those of the Whigs. In this parliament, the House of Commons passed a bill against *occasional conformity*, by which penalties were imposed on all persons in office who should attend dissenting places of worship; but it was thrown out by the Upper House, in which the bishops created by William voted against it.

An imprudent act of the ministry raised the High Church enthusiasm to an extraordinary height. A High Church divine of no great ability named Dr Henry Sacheverel, had preached in 1709 two sermons, in which he spoke violently against the toleration granted to Dissenters, and asserted with much vigour the Tory doctrine of *non-resistance*, according to which nothing can justify a subject in taking up arms against his legal sovereign. The ministers, headed by Lord Godolphin, were so weak as to give this man a solemn trial, on the ground that he had spoken evil of the Revolution; but the people rose so tumultuously in his favour, that, though declared guilty, it was found impossible to inflict upon him more than a nominal punishment. After the trial, he received more marks of public reverence and honour than were ever bestowed on the greatest national benefactor. In proportion to the popularity of Dr Sacheverel, was the loss of public favour experienced by the Whig party. About the same time, through some court intrigues, they forfeited all remaining favour with their royal mistress. Mrs Masham, a lady of the court, who had supplanted the Duchess of Marlborough as favourite of the queen, had contrived to introduce into the cabinet two Tory statesmen, Mr Robert Harley, afterwards Earl of Oxford, and Mr Henry St John, afterwards Lord Bolingbroke. The queen having dismissed the Whig ministry, Harley and St John came into power in August 1710, at the head of a decidedly Tory ministry. The queen at the same time called a new parliament, to which a larger majority of Tories were returned.

PEACE OF UTRECHT—DEATH OF QUEEN ANNE.

The members of the new cabinet immediately applied themselves, though very secretly, to the business of bringing about a peace. They had a majority in the Lower House, and by the creation of twelve new peers, they succeeded in overpowering the Upper. Among their acts was the dismissal of Marlborough from his command, on a charge of peculation being preferred against him. After a tedious course of negotiation, Britain and Holland concluded a peace at Utrecht (1713), leaving the Emperor of Germany still at war. By this arrangement, Philip V. was permitted to retain Spain and the Indies, but it was provided that he and his descendants should never inherit the kingdom of France, nor any future king of France accede to the crown of Spain. Britain obtained nothing tangible by all her exertions,

except the possession of Gibraltar and Minorca, the island of St Christopher, and the French colony of Acadie or Nova Scotia. At the same time the French king acknowledged Anne as Queen of Great Britain, guaranteed the succession of the House of Hanover, and engaged to make the Pretender withdraw from the French dominions. For the gratification of their High Church supporters, the ministers obtained an act for preventing Dissenters from keeping schools, and another for establishing church-patronage in Scotland, the former of which was repealed in the following reign.

It is believed that Queen Anne and her Tory ministers were in secret willing to promote the restoration of the main line of the Stuart family, and Harley and St John, who, from friends, had become bitter rivals, are now known to have intrigued for that purpose. But before any plan could be formed, the queen fell ill, and died (August 1, 1714), not, however, before she had shattered the hopes of Bolingbroke and the friends of the Pretender by giving up the Treasurer's staff to the Duke of Shrewsbury, who had taken a leading part in calling over the Prince of Orange. The Electress Sophia being recently dead, her son, George Louis, then Elector of Brunswick-Lüneburg, was proclaimed under the title of GEORGE I.

The reign of Queen Anne is not more distinguished by the wonderful series of victories gained by Marlborough, than by the brilliant list of literary men who then flourished. Alexander Pope stands unrivalled in polished verse on moral subjects. Jonathan Swift is a miscellaneous writer of singular vigour, and an extraordinary but ungenial kind of humour. Joseph Addison wrote on familiar life, and on moral and critical subjects, with a degree of elegance before unknown. Sir Richard Steele was a lively writer of miscellaneous essays. This last author, with assistance from Addison and others, set on foot the *Tatler*, *Spectator*, and *Guardian*, the earliest examples of small periodical papers in England, and which continue to this day to be regarded as standard works. Cibber, Congreve, Vanbrugh, and Farquhar were writers of sparkling but essentially immoral comedy. In graver literature, this age is not less eminent. Dr Berkeley shines as a metaphysician; Drs Sherlock, Atterbury, and Clarke as divines; and Bentley as a critic of the Roman classics.

ACCESSION OF THE HOUSE OF HANOVER —REBELLION OF 1715–16.

Although the new sovereign allowed six weeks to elapse before he came to this country, there was no demonstration on the part of the Jacobites against him. He was fifty-four years of age, honest, well intentioned, and steadfast in his political principles. He was totally ignorant of the English language, and was passionately attached to his native dominions. He imprisoned his wife on a mere suspicion of her fidelity, while his own private life was far from reputable. Knowing well that the Whigs were his only true friends, he at once called them into the administration. A committee of the House of Commons was appointed to prepare articles of impeachment against Oxford, Bolingbroke, the Duke of Ormond, and the Earl of Strafford. Bolingbroke, perceiving his life to be in danger, fled to the continent; and his attainder was in consequence moved and carried by his rival Walpole. Ormond suffered a similar fate. Oxford, after a protracted trial, was only acquitted in consequence of a difference between the Lords and Commons.

During the first year of King George, the Tories kept up very threatening popular disturbances in favour of High Church principles; but the Whigs, gaining a majority in the new House of Commons, were able to check this a little by the celebrated enactment called the *Riot Act*, which permits military force to be used in dispersing a crowd, after a certain space of time has been allowed.

The more extreme Tories now resolved to attempt bringing in the Pretender by force of arms. The Earl of Mar, who had been a Secretary of State in the late administration, raised his standard in Braemar (September 6), without any commission from the Pretender, and was soon joined by Highland clans to the amount of 10,000 men, who rendered him master of all Scotland north of the Forth. There, however, he permitted himself to be cooped up by the Duke of Argyll, who, with a far less numerous force, had posted himself at Stirling. Mar expected support from an invasion of England by the Duke of Ormond, and a rising of the people of that country. But the duke completely failed in his design, and no rising took place, except in Northumberland, where Mr Foster, one of the members of parliament for the county, and the Earl of Derwentwater, with some other noblemen, appeared in arms, but unsupported by any considerable portion of the people. The government, although ill provided with troops, sent such a force against Mr Foster as obliged him, although reinforced by a detachment from Mar's army, to retire into the town of Preston, in Lancashire, where, after an obstinate defence, the whole party (November 13) surrendered to General Carpenter. On the same day, the Earl of Mar encountered the Duke of Argyll at Sheriffmuir, near Dunblane. The battle was a drawn one, but, as Mar was unable to make any further movement, it was practically a victory for the royal troops. The Pretender himself landed in Scotland later in the year, but finding that he could do nothing, sailed back in February 1716, with Mar, to France. For this unhappy appearance in arms, the Earl of Derwentwater, Viscount Kenmure, and about twenty inferior persons, were executed; and forty Scottish families of the first rank lost their estates.

CHARACTER OF THE GOVERNMENT UNDER GEORGE I.

From the Peace of Utrecht, Britain remained free from foreign war for nearly thirty years, excepting that, in 1719, the ministry was called on to interfere for the repression of an attempt on the part of Spain to regain her Italian territories. A Scotchman, named Law, who had become Controller-general of France, and amused that country with financial schemes, which at first promised to enrich, but finally almost ruined the country, was the means, in 1720, of inspiriting the British people with a similar visionary project, called the South Sea Scheme. This might be described as a joint-stock company, professedly trading in the South Seas, but chiefly engaged in a scheme for buying

up annuities that had been granted in the reign of William and Mary, for the purpose of reducing the national debt. It seemed for a time to prosper, and many realised large fortunes by selling their shares at a premium to others; but in a short time its unsoundness was discovered, the price of shares fell, and thousands were utterly ruined. With great difficulty, and by an extremely complicated adjustment, the House of Commons equalised as nearly as possible the state of gain and loss among the innocent parties, and credit was restored. Sir Robert Walpole, who was chiefly concerned in effecting this arrangement, became Premier and Chancellor of the Exchequer, and for upwards of twenty years from that period (April 1721), he must be looked on as the prime mover and manager of the public affairs. Among the measures of this reign was a bill, carried in 1716, for repealing King William's Triennial Act, and giving to parliaments a duration of seven years.

The commerce and manufactures of England continued to advance steadily during this reign; but Scotland and Ireland remained in an unimproved state. Roads were now for the first time made in the Highlands. The most notable literary man of the time was Daniel Defoe, a voluminous writer of pamphlets on the Nonconformist side, but far more noted in later times on account of his admirable tale of *Robinson Crusoe*. Few writers have shewn so great a knowledge of human nature in all phases of life as he has.

GEORGE II.—WAR WITH SPAIN AND FRANCE.

George I. at his death, June 10, 1727, was succeeded, in his 44th year, by his son, GEORGE II. who, like his father, was German at heart, although he could speak English fluently. He was methodical, economical, and courageous, but passionate, and his private life was not free from reproach. His wife, Caroline, of Brandenburg-Anspach, was handsome, well educated, and clever, and for many years virtually ruled the country. In the early part of his reign, Walpole effected some useful measures, and upon the whole was a vigorous and enlightened administrator of public affairs, though nothing can justify the extensive system of bribery by which alone he pretended to manage the House of Commons. After a peace of extraordinary duration, he was urged, in 1739, much against his will, and on account of a trifling dispute between Spanish and British merchants, into a war with Spain. This war proving almost everywhere unsuccessful, Walpole resigned, and was called to the Upper House in 1742, as Earl of Orford. He died three years later. After the death of the Emperor Charles VI. of Germany, his dominions fell by inheritance to his daughter, the celebrated Maria Theresa, Queen of Hungary. She was opposed in this succession by the sovereigns of France, Saxony, and Bavaria, all of whom pretended to have some claims on her dominions. A war was commenced against her; the Elector of Bavaria was crowned emperor, under the title of Charles VII.; and such was the success of the French arms, that she was soon reduced to the greatest distress. With this quarrel Britain had little reason for interfering; but the king thought his dominions in Germany endangered, and many of the people were animated by their usual hostility to the French. Others, however, like William Pitt, then rising into notice as the leader of the discontented Whigs or 'Patriots,' denounced the war, declaring that Britain was being made a province of an electorate.

In 1743 the king joined the Earl of Stair, who had entered Germany at the head of a considerable army, and who had allowed himself to be shut up by the French in a valley near Dettingen, on the Main, and defeated the latter, fighting himself at the head of the first line. In May 1745, however, Marshal Saxe defeated an army under the king's second son, the Duke of Cumberland, at Fontenoy, owing to the desertion, by the continental allies, of the British infantry, which behaved most gallantly.

REBELLION OF 1745–46.

The Pretender had married, in 1719, the Princess Clementina Sobieski of Poland, and was now the father of two sons in the bloom of youth, the elder of whom has been distinguished in history by the title of Prince Charles Stuart. The misfortunes of the British arms on the continent, and the dissensions which prevailed among the people and the parliament, encouraged this prince to make an attempt to recover the throne of his ancestors. In 1745, he landed in Inverness-shire, with only seven attendants, and on the 19th August he raised his standard at Glenfinnan, within a few miles of the government station of Fort-William, and found himself surrounded by about 1500 men. A reward of £30,000 was offered for the head of the young prince, who, with all his family, was under attainder by act of parliament; and Sir John Cope, commander of the forces in Scotland, was ordered to advance with what troops he had into the Highlands, and suppress the insurrection. The prince pushed rapidly southward, took possession of Perth and Edinburgh in succession, and on the 21st of September a rencontre took place between him and Cope at Prestonpans. Seized with a panic, the royal troops fled disgracefully from the field, leaving the prince a complete victory. With the lustre thus acquired by his arms, he might have now, with 4000 or 5000 men, made a formidable inroad into England. Before he could collect such a force, six weeks passed away, and when at length (November 1) he entered England, a large body of troops had been collected to oppose him under the Duke of Cumberland. Eluding Cumberland, however, he advanced boldly to Derby, and created a kind of panic in the metropolis. His adherents, however, were disheartened by the small accessions to their strength they received in England, and determined to go no farther. The prince, therefore, reluctantly retreated to Scotland, followed by the army of the Duke of Cumberland.

After a flash of success on January 17, 1746, when he defeated General Hawley and a body of English troops at Falkirk, Prince Charles was completely defeated by Cumberland, April 16, at Culloden, near Inverness. He had himself the greatest difficulty, and encountered many romantic adventures, in escaping from the country, and the Highlands were subjected for several months to the horrors of military violence in all its worst forms. Three of the insurgent nobles, the Earl of Kilmarnock, and Lords Balmerino and Lovat, suffered death on Tower Hill, and a large number of meaner men were hanged at Carlisle

and at Kennington Common. For the mercilessness of his treatment of the conquered, Cumberland was called 'The Butcher.' Various measures were also passed by parliament for completing the subjugation of the Highlands; among these being acts prohibiting the use of tartan, and abolishing the tenure of ward-holdings, by which landed proprietors commanded, in peace and war, the personal services of those who lived on their estates.

PEACE OF AIX-LA-CHAPELLE.

During the remainder of the war in which Britain and other powers were now engaged with France, the latter was generally successful by land, and unfortunate at sea; the contrary being the case with Britain. In 1748, the two countries agreed, by a treaty formed at Aix-la-Chapelle, mutually to restore their respective conquests, and to go back to almost exactly the same condition in which they stood before the war.

COLONIES AND DEPENDENCIES OF BRITAIN—THE SEVEN YEARS' WAR.

For several years after this period, the national resources underwent rapid improvement. The ablest minister who immediately followed Walpole, was the Honourable Henry Pelham, First Lord of the Treasury and Chancellor of the Exchequer, whose commercial and financial schemes were usually very successful. Since the reign of Elizabeth, the British had been active in planting and rearing colonies, of which a considerable number now existed in the West Indies and in North America. The East India Company had also obtained large possessions in Hindustan, which proved the source of great wealth to Britain. The exclusive spirit in which Britain managed the commerce of those territories provoked the cupidity of the French, who commenced a system of aggression both in India and North America. The British government submitted to this for a short time, but at length, in 1756, it was determined to declare war. At first the French, who had drawn a chain of forts along the back settlements of the American colonies, were successful. But, on the accession of the celebrated William Pitt (afterwards Earl of Chatham) to the office of Secretary of State, a more auspicious era commenced. One after another, the French forts fell into the hands of the British troops, and a diversion was created by an attack upon Canada. In September 1759, General Wolfe, whose powers were first recognised by Pitt, reduced the town and fort of Quebec, though he himself fell in the moment of victory, and the whole colony soon after submitted to the British arms.

Meanwhile, Colonel Clive, an officer of the East India Company, who, although he had previously had no military training, developed rapidly into a great general and statesman, had been equally successful in the East Indies. He had destroyed the French settlement at Pondicherry, thereby securing to his country the whole coast of Coromandel; and by a decisive victory at Plassy (June 23, 1757), over a combination of French and native forces, he made the Company the lords of Bengal, and laid the foundation of the great territorial power which the British have since acquired in Hindustan.

While Britain was thus successful in two remote quarters of the world, she experienced a different fortune in Europe. Austria, Russia, and Poland had combined with France against the new and rising power of Prussia, which was at present directed by Frederick II. commonly called Frederick the Great. Britain, on this occasion, became the ally of the Prussian monarch, not from any regard to her own interests, but in order that the king might be able to protect his Hanoverian dominions. Immense sums of money were raised for the purpose of paying the troops of those countries which the king was anxious to defend; and the Duke of Cumberland was appointed their commander. This prince was so unfortunate (September 1757) as to bring an army of 40,000 men into an angular piece of country, from which there was no escaping, so that the whole were obliged to lay down their arms to the French, who then became masters of Hanover. Notwithstanding this failure on the part of his ally, Frederick was able, by his extraordinary military genius, and by British subsidies, to defend his dominions for several years against all the forces that Austria, France, and Russia could bring against him. In the midst of this war (October 25, 1760), George II. died suddenly, in the seventy-seventh year of his age, and was succeeded by his grandson GEORGE III. then only in his twenty-third year.

MISCELLANEOUS CIRCUMSTANCES CONNECTED WITH THE REIGN OF GEORGE II.

One of the leading domestic events of the reign of George II. was the rise of the religious sect called Methodists. The name was first given in ridicule, it is said, to some young members of the university of Oxford, who were noted, in a time in which there was little religious fervour, for their rigidly decorous life, their religious devotions, and their habit of visiting the sick. The chief among them were John and Charles Wesley and George Whitefield. The last, by his earnest eloquence, which was aided by a singularly fine voice, did a great deal for the spread and success of the movement by open-air meetings. The Methodists, who were at first much ridiculed, have now become a large body, and although originally within the pale of the Church of England, have separated from it.

Newspapers first acquired political importance in this reign. They originated in the time of the Commonwealth, but none of a regular periodical nature appeared till after the Restoration, when a busy writer, named Roger L'Estrange, established in London a weekly one called *The Public Intelligencer.* Till the Revolution, such small and unimportant newspapers as existed were trammelled by a licensing power and censorship. When these restrictions were removed, newspapers increased in number, till, in 1709, they were again restricted by the imposition of a penny-stamp. The influence which newspapers were calculated to have over the public mind was first recognised by Sir Robert Walpole, who, while he never thought of giving the least encouragement to literature on its own account, liberally pensioned various editors who supported his government. About the beginning of this reign, there were in London one daily paper, fifteen three times a week, and one twice a week, besides a few country papers. A monthly

pamphlet, begun in 1731 by Edward Cave, a London bookseller, under the name of the *Gentleman's Magazine*, was composed of the best articles from the newspapers, and thus originated the periodical works termed magazines and reviews, which are now conspicuous as vehicles of light literature and political discussion.

The peculiar literary genius of the age was shewn in the fictitious prose-writings of Fielding, Smollett, and Sterne, and in the pictures of Hogarth, all of which represent the national character in its greatest breadth. The novels of Richardson are also accurate as descriptions of manners, but contain no trace of the same humour. Next in distinction to these writings must be placed the essays of John Hawkesworth and Samuel Johnson, the latter of whom, besides being an essayist and poet, did a great service to literature in compiling a Dictionary of the English Language. James Thomson, William Collins, and Thomas Gray rank high as poets; and philosophy was represented chiefly by Francis Hutcheson and David Hartley. Drs Conyers Middleton, Joseph Butler, and Isaac Watts were the principal writers on religious subjects.

GEORGE III.—BUTE ADMINISTRATION—PEACE OF 1763.

Soon after his accession, George III.—eldest son of Frederick, Prince of Wales, who died before his father—espoused the Princess Charlotte of Mecklenburg-Strelitz, by whom he had a large family. His chief adviser was the Earl of Bute, a Scottish nobleman of Tory predilections, who had been his preceptor, and possessed a great influence over his mind. Partly through Bute, who was made a Secretary of State, more peaceful counsels now began to prevail in the government. Pitt, the Great Commoner, resigned in 1761, because his proposal to declare war against Spain, then the ally of France, was opposed by his colleagues. War broke out again, however, and was carried on with much success on the part of this country till 1763, when peace was made with both France and Spain by the Treaty of Paris. By this treaty, Great Britain gave up a certain portion of her conquests, in exchange for others which had been wrested from her; but she was nevertheless a gainer to an immense amount. She acquired from the French —Canada; that part of Louisiana east of the Mississippi; Cape Breton; Senegal; the islands of Grenada, Dominica, St Vincent, and Tobago; with all the acquisitions which the French had made upon the Coromandel Coast in the East Indies since 1749. From Spain she acquired Minorca, East and West Florida, with certain privileges of value.

TRANSACTIONS IN IRELAND.

Since the pacification at Limerick, Ireland had been ruled exclusively by the Protestant party, who, under the influence of feelings arising from local and religious antipathies, had visited the Catholics with many severities. They naturally became very discontented, and the contentions of the patriotic party with the adherents of the English ministry were carried on with the utmost keenness in parliament, when the rebellion in Scotland (1745) alarmed the government for the loyalty of Ireland. The celebrated Earl of Chesterfield was, in this exigency, sent for a short time as Lord-lieutenant, and allowed to hold forth all possible encouragement to the Catholics and patriotic party. So successful was he in his mission of conciliation that Ireland, though full of Roman Catholics, and bound to the Jacobite cause by many associations, remained perfectly faithful to the Hanover dynasty. When the danger was over, the earl was recalled, and the former system resumed.

CASE OF MR WILKES.

Ever since the accession of the Brunswick family in 1714, the government had been chiefly conducted by the Whig party, who formed a very powerful section of the aristocracy of England. George III. however, who had imbibed high notions of the royal prerogative from the Earl of Bute, shewed, from the beginning of his career, an anxious desire to extend the power of the crown, and to shake off the influence of the great Whig families. A Scotsman, with no connection in England, a favourite, and, moreover, a man of unprepossessing manners, the Earl of Bute had neither the support of the aristocracy nor of the people. He was assailed in parliament, and through the newspapers, with the most violent abuse — the peace, which was disliked by the people, furnishing a powerful topic against him. To this storm he at length yielded, by retiring (April 8, 1763).

Among the public writers who assailed the ministry, none was more virulent than Mr John Wilkes, member for Aylesbury, and editor of a paper entitled the *North Briton*. Mr George Grenville, who succeeded Bute, commenced his career by prosecuting Wilkes for a libel, and arrested him on a 'general warrant,' which was illegal. Wilkes was subsequently expelled from the House of Commons, and outlawed. A few years afterwards, he came back to England, and, in 1768, he was returned for Middlesex. Not being allowed to take his seat, he became, in the eyes of the mob, the champion of popular liberty, and riots followed in various parts of the country, resulting in loss of life. In 1774, Wilkes was allowed to take his seat.

AMERICAN STAMP-ACT.

The administration of Mr Grenville is also memorable for the first attempt to tax the American colonies. An act passed under his influence (March 1765) for imposing stamps on those countries, appeared to the colonists as a step extremely dangerous to their liberties, considering that they had no share in the representation. They therefore combined almost universally to resist the introduction of the stamped paper by which the tax was to be raised. Resolutions were passed in the various assemblies of the States, protesting against the assumed right of the British legislature to tax them. The home government was then induced to agree to the repeal of the act, but with the reservation of a right to impose taxes on the colonies. Between the Stamp-act and its repeal, a change had taken place in the administration: the latter measure was the act of a new ministry under the Marquis of Rockingham, which, however, did not long continue in power, being

supplanted by one in which Mr Pitt, now created Earl of Chatham, held a conspicuous place.

At the suggestion of Mr Charles Townshend, a member of this cabinet, it was resolved, in 1767, to impose taxes on the Americans in a new shape—namely, upon British goods imported into the colonies, for which there was some show of precedent. An act for imposing duties on tea, glass, and colours was accordingly passed with little opposition. Soon after this, Mr Townshend died, and the Earl of Chatham, who had been prevented by illness from taking any share in the business, resigned. The Americans met the new burdens with the same violent opposition as formerly.

JUNIUS—MINISTRY OF LORD NORTH.

At this time (1769), an unknown writer, styling himself Junius, commenced a series of letters in the *Public Advertiser* newspaper, animadverting in the most powerful manner on both the men and measures of the government, and particularly on the prime minister, the Duke of Grafton, who had succeeded Lord Chatham. The publisher of the newspaper was prosecuted for publishing these letters; but the author remained concealed, and his name, though still an object of curiosity, has never been discovered. The general belief is now that Sir Philip Francis, a keen politician of the time, was the author of the letters.

The Duke of Grafton having retired from the cabinet, his place was supplied by Lord North, son of the Earl of Guildford. This was the beginning of a series of Tory administrations which, with few and short intervals, conducted the affairs of the nation down to the close of the reign of George IV.

THE AMERICAN WAR OF INDEPENDENCE.

Meanwhile, the remonstrances of the American colonists had induced the ministry to give up all the new taxes, with the exception of that on tea, which it was determined to keep up, as an assertion of the right of parliament to tax the colonies. In America, this remaining tax continued to excite as much discontent as the whole had formerly done, for it was the principle of a right to impose taxes which they found fault with, and not the amount of the tax itself. Matters reached a crisis in 1773, when a number of men, disguised as Indians, boarded three ships which, laden with tea, had arrived in Boston harbour, and threw the cargoes into the sea. This act of violence was resented by the passing of a bill in parliament for interdicting all commercial intercourse with the port of Boston, and another for taking away the legislative assembly of the state of Massachusetts. The former measure was easily obviated by local arrangements; and in reference to the latter, a Congress of representatives from the various States met at Philadelphia, in September 1774, when it was asserted that the exclusive power of legislation, in all cases of taxation and internal policy, resided in the provincial legislatures. The colonists still avowed a desire to be reconciled, on the condition of a repeal of the obnoxious statutes. But the government had now resolved to attempt the reduction of the colonists by force of arms. Henceforth, every proposal from America was treated with a haughty silence on the part of the British monarch and his advisers, although the ablest men in parliament, such as Chatham, Bute, and Fox, then rising into fame, supported the colonists.

The war opened in the summer of 1775, by skirmishes between the British troops and armed provincials, for the possession of certain magazines. At the beginning, there seemed no hope of the contest being protracted beyond one campaign. The population of the colonies was at this time under three millions, and they were greatly inferior in discipline and appointments to the British troops. They possessed, however, an indomitable zeal for the cause they had agreed to defend, and in George Washington, whom the congress at Philadelphia had appointed commander-in-chief, they obtained a chief of not less military capacity than patriotism and probity. At Bunker's Hill, near Boston (June 17, 1775), they had the superiority in a well-contested fight with the British troops, of whom between two and three hundred were killed.

On the 4th of July 1776, the American congress took the decisive step of declaring their independence.

The first serious alarm for the success of the contest in America, was communicated in December 1777, by intelligence of the surrender of an army under General Burgoyne at Saratoga. This disaster, followed by the acknowledgment of the States by France, led to deep dejection in the country; and yet, when Mr Fox, now leader of the Opposition, made a motion for the discontinuance of the war, it was lost by 165 to 259.

In 1778, the government found it necessary, in order to appease the popular discontent, to send out commissioners, almost for the purpose of begging a peace. As if to avenge themselves for the indignities of 1775, the Americans received these commissioners with much haughtiness; and, being convinced that they could secure their independence, would listen to no proposals in which the acknowledgment of that independence, and the withdrawal of the British troops, did not occupy the first place. The ministry, still unwilling to submit to such terms, resolved to continue the war. The distress of Britain in this contest led to her various enemies and rivals in Europe declaring against her. Spain followed the example of France, and declared war; and in 1780, Holland was added to the number of her enemies. Russia then put herself at the head of what was called an Armed Neutrality, embracing Sweden and Denmark, the object of which was indirectly hostile to Britain. The Opposition in parliament now began, however, to gain in strength. After some votes, in which the ministerial majorities appeared to be gradually lessening, Mr Dunning, on the 6th of April 1780, carried, by a majority of eighteen, a motion, 'that the influence of the crown had increased, was increasing, and ought to be diminished.' This was looked upon as a severe censure of the government.

In the year 1778, an act had been passed relieving the Roman Catholics in England from some of the severe penal statutes enacted against them during the reign of William III. The apprehension of a similar act for Scotland caused the people of that country to form an immense number of associations, with a view to opposing it; and in the early part of 1779, the popular

spirit broke out at Edinburgh and Glasgow in several alarming riots, during which one or two Catholic chapels, and some houses belonging to Catholics, were pillaged and burnt. In England, the anti-Catholic party was headed by Lord George Gordon, a half-witted member of parliament, and son of the Duke of Gordon. Along with a mob of about 60,000 persons, he went to Westminster and demanded the repeal of the act in favour of the Roman Catholics. When this was refused, the mob attacked and destroyed the Catholic chapels, burned the prisons, including Newgate, and released the prisoners. The streets were in their possession for about a week, and it was not until about 500 persons had been killed or wounded, that the military succeeded in restoring order. Many of the ringleaders were executed, but Lord George Gordon, who was tried for high treason, was acquitted, on the ground of insanity.

In 1781, after some successes, Lord Cornwallis, the chief commander of the British forces in America, was besieged in Yorktown, Virginia, by the American and French troops, and, after a few weeks, was compelled to surrender.

When parliament next met, many of those who had formerly supported the war, began to adopt opposite views; and early in 1782, a motion, made by General Conway, for the conclusion of the war, was carried by a majority of nineteen. The necessary consequence was, that, on the 20th of March, Lord North and his colleagues resigned office. As usual in such cases, a new administration was formed out of the Opposition. The Marquis of Rockingham was made Prime-minister, and Mr Fox one of the Secretaries of State. The new ministers lost no time in taking measures for the restoration of peace. Before this was accomplished, however, Admiral Sir George Rodney had gained an important victory over the French fleet off the island of Dominica, April 12, 1782. On this occasion, thirty-seven British vessels encountered thirty-four French; and chiefly by the dexterous manœuvre of a breach of the enemy's line, gained one of the most complete victories recorded in modern warfare, the admiral, Count de Grasse, being compelled to strike. The triumph was necessary to recover in some measure the national honour, and enable the ministers to conclude the war upon tolerable terms. In November of the same year, provisional articles for a peace with the United States of America, now acknowledged as an independent power, were signed at Paris, and the treaty was concluded in the ensuing February. Peace was soon after concluded with France, Spain, and Holland. The two Floridas and Minorca were given back to Spain, although Gibraltar, which for three years and a half General Eliott had gallantly defended against the combined fleets of France and Spain, was retained. France obtained Chandernagore, Pondicherry, the island of St Pierre, and other possessions; and the Dutch had restored to them what they had lost.

On the unexpected death of the Marquis of Rockingham, in July 1782, the king chose as his successor the Earl of Shelburne, who, though nominally a Whig, was not sufficiently inclined to the general measures of that party to be agreeable to Mr Fox and other leading members of the cabinet. On their consequent resignation, the vacancies were filled up by the friends of Shelburne, among whom was Mr William Pitt, a younger son of the Earl of Chatham, who had already distinguished himself as an advocate of parliamentary reform.

COALITION MINISTRY.

This ministry was opposed by two parties of very different principles — namely, the adherents of the North administration, and the friends of those Whigs who had lately retired from the cabinet. These two parties, notwithstanding that they had been opposed to each other throughout all the late war, coalesced; and being triumphant over the ministry, forced themselves upon the king's counsels. Then was formed (April 2, 1783) what was called the Coalition Ministry, in which Lord North and Mr Fox acted together as Secretaries of State. The coalition, however, pleased neither the king nor the nation. Mr Fox had prepared and carried through the Lower House a bill for the regulation of the East India Company, by which all authority was to devolve on seven directors, chosen by the House of Commons; in other words, by which the immense patronage of this offshoot of the empire was to fall into the hands of the ministry. The India Bill, as it was called, being generally supposed to aim at fixing the ministry in power beyond the control of both king and people, roused much indignation; and His Majesty, therefore, fully confident of support from the people, used his personal influence, in no covert way, to induce the House of Lords to reject the bill, and (December 18) sent a messenger to demand the seals of office from his over-ambitious ministers, appointing Mr Pitt to be the Prime-minister and Chancellor of the Exchequer of a new cabinet, consisting chiefly of His Majesty's friends. The king and his new ministers, backed by a decided majority of the public, were opposed by two powerful aristocratic factions in the House of Commons, who defeated every measure that was introduced, refused the usual supplies, and voted again and again resolutions against the continuance of the present men in office, which they denounced as unconstitutional. But in the course of a few weeks, the influence of the Opposition was sensibly reduced; and when at length the majority had been worn down by the influence of the public and the court to *one*, which happened on a motion by Mr Fox, the king dissolved the parliament. The new House of Commons was so favourable towards the king and ministry, as to enable the public service to go on without further interruption.

LEGISLATIVE MEASURES IN IRELAND.

From the end of the reign of George I. a patriotic party in Ireland, composed of a mixture of Catholics and Protestants, had been exerting itself to reduce the influence of the English ministry in their country. Under the pretext of arming for the defence of the country, volunteer corps of 'patriots' were formed, which held meetings and passed resolutions in which they openly avowed their determination, at the hazard of life and fortune, to achieve the independence of the native legislature, and a complete participation in the commercial rights of the British. The government, being then too feeble to resist, repealed various

measures which had given the English parliament a right to interfere with Ireland. In 1783, however, the government now began to regain strength, and in a short time, by skilful measures, it prevailed upon the corps to dissolve.

MINISTRY OF MR PITT—FROM 1784 TO THE COMMENCEMENT OF THE FRENCH REVOLUTION.

In April 1785, Mr Pitt asked leave of the House to bring in a bill for reforming the House of Commons; but it was refused by a large majority. The desire of parliamentary reform nevertheless continued to animate a large portion of the community. In 1784, a regular society had been instituted in Scotland, for the purpose of obtaining such a measure; and in the succeeding year, forty-nine out of the sixty-six boroughs had declared in favour of it. There were also numerous associations of a similar character throughout England.

In 1786, commenced the parliamentary proceedings against Mr Warren Hastings—the first governor-general of India, and a man of conspicuous abilities and energy—for alleged cruelty and robbery exercised upon the natives of India during his governorship of that dependency of Great Britain. These proceedings were urged by the great orator Burke and other members of the Whig party, and excited so much public indignation against Mr Hastings, that the ministry was obliged to lend their countenance to his trial, which took place before parliament in the most solemn manner, and occupied in the aggregate one hundred and forty-nine days, extending over a space of several years. The proceedings resulted in the acquittal of Mr Hastings.

The king and queen had in the meantime become the parents of a numerous family of sons and daughters. The eldest son, George, Prince of Wales, had now for several years been of age, and exempted from the control of his father. He made himself remarkable by his extravagance and debaucheries, and by siding with the Whigs, thereby alienating the affections of his father, who was about this time seized with a mental malady, which ultimately compelled him to retire from active public life.

MISCELLANEOUS CIRCUMSTANCES FROM 1760 TO 1790.

At the beginning of the reign of George III. both the commerce and the manufactures of the country might be considered as in a highly flourishing condition. In Scotland, since the year 1746, great improvements of various kinds had taken place: the linen manufacture had been much advanced; a trade with the colonies had sprung up; agriculture was undergoing great changes for the better; the Highlands were now peaceful, and throughout the whole country were seen conspicuous symptoms of increasing wealth and comfort.

During the first ten years of the reign of George III. some discoveries and inventions were made, by which the prosperity of the whole empire received a new impulse. By the improvements effected in the steam-engine by James Watt, a superior mechanic power was obtained for the driving of machinery and other purposes. By means of the *spinning-jenny*, invented by Mr Hargreaves of Blackburn, the *spinning-frame*, invented by Mr Richard Arkwright, and finally the *power-loom*, invented by Mr Cartwright, the cotton manufacture was brought to a pitch of prosperity in Britain, such as no particular branch of manufacture had ever experienced before in any country.

The early part of the reign of George III. was distinguished by the discoveries of Captain Cook in the Pacific Ocean, by the formation of many canals for internal navigation, and by the foundation of the Royal Academy for the Promotion of the Fine Arts. This period derives lustre from the admirable paintings of Barry, Blake, Hoppner, and Reynolds. Astronomy was cultivated by Dr William Herschel, who, in 1781, discovered the planet Uranus. Chemistry was improved by Dr Joseph Black and Mr Cavendish. The science of medicine was advanced by Dr Cullen of Edinburgh; and natural history by Sir Joseph Banks. In literature, the chief place is due to Dr Samuel Johnson, who had flourished also in the preceding reign. Oliver Goldsmith and William Cowper in England, and Robert Burns in Scotland, were the most eminent poets. The leading historians of the time were Dr William Robertson, David Hume, and Edmund Gibbon; Hume and Adam Smith figure as philosophical writers; Sir William Blackstone wrote on English law; and amongst divines, the most eminent were Bishops Warburton, Jortin, and Hurd. The science of political economy may be said to have been created by Adam Smith, whose famous work on the *Wealth of Nations* is still a standard book upon the subject.

FRENCH REVOLUTION, AND CONSEQUENT WAR WITH FRANCE.

The country had for several years experienced the utmost prosperity and peace, when it was roused by a series of events which took place in France. The proceedings of the French nation for redressing the political grievances under which they had long laboured, commenced in 1789, and were at first very generally applauded in Britain, as likely to raise that nation to a rational degree of freedom. Ere long, the violence shewn at the destruction of the Bastille, the abolition of hereditary privileges, the open disrespect for religion, and other symptoms of an extravagant spirit, manifested by the French, produced a considerable change in the sentiments of the British people. The proceedings of the French were still justified by the principal leaders of Opposition in parliament, and by a numerous class of the community, democratic clubs being formed in various parts of the country; but they inspired the government, and the propertied classes generally, with great alarm and distrust.

When at length the coalition of Austria and Prussia with the fugitive noblesse had excited the spirit of the French people to a species of frenzy, and led to the establishment of a Republic, and the death of the king, the British government and its supporters were roused to a sense of the danger which hung over all ancient institutions, and a pretext was found (January 1793) for declaring war against France. Although Fox and Sheridan objected in parliament to this course, all who continued to make open demonstrations for political reform were now branded as enemies to religion and civil order. In Scotland, Mr Thomas Muir, a

barrister, Mr Palmer, a Unitarian clergyman, and others, were tried for sedition, and sentenced to various terms of banishment.

After alliances had been formed with the powers on the continent hostile to France, the British ministers despatched an army to the Netherlands, under the command of the king's second son, the Duke of York, to co-operate in reducing the fortresses in possession of the French. On the 1st of June 1794, the French Brest fleet sustained a severe defeat from Lord Howe; but as a counterbalance to this, the republican troops invaded Holland, and converted that country into a republic under their own control.

In the course of the year 1795, many belonging to the lower orders in the country began to appear violently discontented with the progress of the war, and to renew their demands for reform in the state. As the king was passing (October 29) to open the session of parliament, a stone was thrown into his coach, and the interference of the Horse-guards was required to protect his person from an infuriated mob. The ministers consequently obtained acts for more effectually repressing sedition, and for the dispersion of political meetings. They at the same time commenced a negotiation with the French Directory, which was broken off by the refusal of France to restore Belgium to Austria. In the ensuing year, the northern states of Italy were overrun by the French armies, and formed into what was called the Cisalpine Republic. The great Napoleon Bonaparte made his first conspicuous appearance as the leader of this expedition, which terminated in Austria submitting to a humiliating peace. At the close of 1796, a French fleet sailed for Ireland, with the design of revolutionising that country, and detaching it from Britain; but its object was defeated by stress of weather. To add to the distresses of Britain, while Austria was withdrawn from the number of her allies, Spain, by a declaration of war in 1797, increased in no inconsiderable degree the immense force with which she had to contend.

THREATENED INVASION—SUBSEQUENT EVENTS.

For some time an invasion of Britain had been threatened by France; and the successes of the republicans had hitherto so greatly exceeded all previous calculation, that the execution of their design did not appear improbable. Just as the interference of the neighbouring powers had, in 1792, roused the energies of the French, so did this proposed invasion stimulate the spirit of the British people. Volunteer corps were everywhere formed, and the desire of continuing the war became the ruling passion throughout the nation. The ministers, perceiving the advantage which was to be derived from the tendency of the national spirit, appeared seriously to dread an invasion, and this led unfortunately to a run on the Bank of England for gold, in exchange for its notes. The Bank, unable to meet this run, was obliged, February 25, 1797, to suspend cash payments—that is, to refuse giving coin on demand for the paper-money which had been issued—Bank of England notes were consequently much depreciated in value; and the currency was seriously deranged for some years.

In April, the seamen on board the Channel fleet, and also on board that at the Nore, mutinied for an advance of pay and the redress of some alleged grievances. Happily, by the firmness of the government, and some skilful dealings with the seamen, a loyal party was formed, by whom the more turbulent men were secured, and the vessels restored to their respective officers. The ringleaders, the chief of whom was a young man named Richard Parker, were tried and executed.

The same year was remarkable for several victories gained by the British fleets. A Spanish fleet of twenty-seven ships was attacked by fifteen vessels under Admiral Jervis (February 14), off Cape St Vincent, and completely beaten, with the loss of four large vessels. In this engagement, Commodore Horatio Nelson greatly distinguished himself. A fleet under Admiral Harvey, with a military force under Sir Ralph Abercromby, captured the island of Trinidad, a Spanish colony. In October, a Dutch fleet, under Admiral Van Winter, was attacked off the village of Camperdown, upon their own coast, by Admiral Duncan, who, after a desperate battle, captured nine of the enemy's vessels. These naval successes had the good effect of sustaining the spirit of the British nation under this unfortunate contest.

In 1798, the French overran and added to their dominions the ancient republic of Switzerland, which gave them a frontier contiguous to Austria. The same year the directors of the Republic, beginning to be afraid of the ambition of their general, Bonaparte, sent him at the head of an expedition to reduce and colonise Egypt, intending from that country to act against the British empire in the East Indies. The expedition was successful in its first object; but the fleet which had conveyed it was attacked in Aboukir Bay, by Admiral Nelson (August 1), and almost totally destroyed or captured. While so much of the strength of the French army was thus occupied in a distant country, Austria, Naples, and Russia entered into a confederacy, and, being subsidised by Britain, recommenced war.

The new confederacy was so successful in 1799, as to redeem the greater part of Italy; but a Russian army, under the famous Suwaroff, attempting to expel the French from Switzerland, was nearly cut to pieces in one of the defiles of that mountainous country. In August of the same year, Great Britain made a corresponding attempt to expel the French from Holland. Thirty-five thousand men, under the Duke of York, formed the military part of the expedition. The fleet was successful at the first in taking the Dutch ships; but the army, having landed under stress of weather at an unfavourable place for their operations, was obliged to make an agreement with the French, purchasing permission to go back to their country by the surrender of 8000 prisoners from England.

In 1799, Bonaparte suddenly returned from his army in Egypt, and, by a skilful management of his popularity, overturned the Directory, the Republican executive, consisting of five members, and caused himself to be appointed the sole depositary of the executive power of the state, under the denomination of First Consul. He immediately wrote a letter to King George, making overtures of peace; but was answered by the British secretary, that no dependence could be placed by Great Britain on any treaty with France, unless her government were again consolidated

under the Bourbons. Further overtures were also rejected.

The events of 1800 were of a very different nature from what had been calculated upon in England. In Egypt, the French overthrew a large Turkish army at Grand Cairo, and made themselves more effectually than ever the masters of the country; so that Britain was obliged to send an army next year, under Sir Ralph Abercromby, to accomplish at an immense expense, and a great waste of human life, what the French had formerly agreed to do. In Europe, the presence of Bonaparte was the signal for fresh successes. Defeating the Austrians at Marengo (June 14) and in other engagements, he obliged Austria (1801) to sue for peace, by which France became mistress of all continental Europe west of the Rhine and south of the Adige.

REBELLION IN IRELAND—UNION WITH GREAT BRITAIN.

The commencement of the revolutionary proceedings in France excited the wildest hopes of the Irish, already ardently desirous of a reform in their parliament. Towards the close of the year 1791. they formed an association, under the title of the United Irishmen, comprehending persons of all religions, and designed to obtain 'a complete reform of the legislature, founded on the principles of civil, political, and religious liberty.' Acts were passed for putting down the meetings of the association, although, on the other hand, measures were passed enabling Catholics to intermarry with Protestants, to practise at the bar, and to educate their own children.

The ministry, however, having been persuaded by the Protestant party to return to their former policy, and the patriotic party having despaired of effecting any improvement by peaceable means, an extensive conspiracy was entered into for delivering up Ireland to the French Republic. The scheme was managed by a directory of five persons, and though half a million of men were concerned in it, the most strict secrecy was preserved. The losses at Camperdown in 1797, however, crippled the naval resources of France, and prevented a renewal of the expedition. Losing all hope of French assistance, the conspirators resolved to act without it; but their designs were betrayed by one Reynolds; and three other members of the directory, Emmett, Macnevin, and Bond, were seized. Still the Union persisted in the design of rising on a fixed day. Lord Edward Fitzgerald, another of its leaders, was then arrested, and being wounded in a scuffle with his captors, soon after died in prison. On the 21st of May 1798, Lord Castlereagh, secretary to the Lord-lieutenant, discovered and exposed the whole plan of insurrection, which had been fixed to commence on the 23d. The conspirators, although thus thwarted, rose in various parts of the country, and in greatest force in Wexford. On the 21st of June, their whole force was collected upon Vinegar Hill, near Enniscorthy, where an army of 13,000 men, with a proportionate train of artillery, was brought against them by General Lake. They were completely overthrown and dispersed. From this time the rebellion languished, and in July it had so far ceased to be formidable, that an act of amnesty was passed in favour of all who had been engaged in it, except the leaders. On the 22d of August, when the rebellion had been completely extinguished, 900 French, under General Humbert, were landed at Killala, in the opposite extremity of the country from that in which the insurgents had shewn the greatest strength. On the 8th of September, they were met at Carrick-on-Shannon by an enormously larger force, to which they yielded themselves prisoners of war.

During the ensuing two years, the British ministers exerted themselves to bring about an incorporating union of Ireland with Great Britain; a measure to which the Irish were much opposed, but which, by the use of bribes and government patronage largely employed amongst the members of the Irish legislature, was at length effected. From the 1st of January 1801, the kingdom of Ireland formed an essential part of the empire, on which was now conferred the name of the United Kingdom of Great Britain and Ireland. The act of union secured to the Irish most of the commercial privileges which they had so long sought. One hundred commoners were to be sent by Ireland to the British (now called the Imperial) parliament; namely, two for each county, two for each of the cities of Dublin and Cork, one for the university, and one for each of the thirty-one most considerable towns. Four lords-spiritual, by rotation of sessions, and twenty-eight lords-temporal, elected for life by the peers of Ireland, were to sit in the House of Lords; and the cross of St Patrick, the patron saint of Ireland, was at the same time added to those of St George and St Andrew on the national flag.

The union, though, upon the whole, effected in a spirit of fairness towards Ireland, increased the discontent of the people, which broke out in 1803 in a new insurrection, under Robert Emmett and Thomas Russell. It came to nothing more, however, than a disturbance in the streets of Dublin, in the course of which Lord Kilwarden, a judge, and his nephew, Mr Wolfe, were dragged from a carriage and killed. The mob was dispersed by soldiery, and Emmett and Russell, being seized, were tried and executed.

CHANGE OF MINISTRY, AND PEACE OF AMIENS, 1802.

At the commencement of 1801, Britain had to reckon among her enemies the whole of the northern states of Europe, which had found it necessary to place themselves on a friendly footing with Bonaparte, and though they did not declare war against Britain, yet acted in such a manner as to render hostilities unavoidable. Nelson sailed in March with a large fleet for Copenhagen, and proved so successful against the Danish fleet, as to reduce that country to a state of neutrality. The death of the Russian Emperor Paul, which took place at the same time, and the accession of Alexander, who was friendly to Britain, completely broke up the northern confederacy. Yet the great achievements of France on the continent, joined to the distresses of a famine which at this time bore hard on the British people, produced a desire for peace. With the view, apparently, of facilitating the declaration of peace, a new ministry was appointed under Mr Addington, by whom a peace was at length, in March 1802,

concluded with France. By this peace, Britain gave up all her colonial conquests except Ceylon and Trinidad, and agreed to restore Egypt to Turkey, Malta to the Knights of St John, and the Cape of Good Hope to Holland.

WAR RENEWED WITH FRANCE, 1803—SUBSEQUENT EVENTS.

It was soon manifest that Bonaparte did not relish peace. By taking undue advantage of several points left loose in the treaty, he provoked Great Britain to retaliate by retaining possession of Malta; and the war was accordingly recommenced in May 1803. Britain immediately employed her superior naval force to seize the French West India colonies; while France took possession of Hanover, arrested all the English travellers, 10,000 in number, in France, and excluded British commerce from Hamburg. Bonaparte collected an immense flotilla at Boulogne, for the avowed purpose of invading England; but so vigorous were the preparations made by the whole British population, 400,000 men enrolling themselves as volunteers, and so formidable the fleet under Lord Nelson, that he never found it possible to put his design in execution. In the year 1804, he took the title of Emperor of the French. In April of the same year, the Addington administration was exchanged for one constructed by Mr Pitt.

In 1805, under the influence of Great Britain, a new coalition of European powers, consisting of Russia, Sweden, Austria, and Naples, was formed against Napoleon. He, on the other hand, had drawn Spain upon his side, and was making great exertions for contesting with Britain the empire of the sea. A fleet of thirty-three sail, partly French and partly Spanish, under Admiral Villeneuve, met a British fleet of twenty-seven, under Nelson, off Cape Trafalgar, October 21, 1805, and was completely beaten, though at the expense of the life of the great commander. At this time, however, Napoleon had carried all before him on the continent. By a sudden, rapid, and unexpected movement, he conducted an army into Germany, where the Austrians were already making aggressions upon neutral territory. He entered Vienna, and pursuing the royal family, and the allied armies of Russia and Austria, into Moravia, he gained, 2d December 1805, his greatest victory, that of Austerlitz, which put an end to the coalition, and rendered him the dictator of the continent. This series of events caused much gloom in the British councils, and with several other painful circumstances, among which was the impeachment of his colleague, Lord Melville, for malpractices in the Admiralty, proved a death-blow to Mr Pitt, who expired on the 23d of January 1806, completely worn out with state business, at the early age of forty-seven, half of which time he had spent in the public service.

Mr Pitt's ministry was succeeded by one composed of Lord Grenville, Mr Fox, and their friends; it was comprehensively called Whig, although Lord Grenville was in every respect a Tory, except in his advocacy of the claims of the Catholics for emancipation. In the course of 1806, the new cabinet made an attempt to obtain a peace from France, which now threatened to bring the whole world to its feet. But the Grenville administration encountered serious difficulties from the king, who never could be induced to look with the least favour on the Catholic claims, or those who advocated them. Exhausted by his useless labours, Mr Fox died, September 13, 1806.

A new coalition, excluding Austria, but involving Prussia, had been subsidised by Britain, and was now preparing to act. With his usual decision, Napoleon led what he called his 'Grand Army' by forced marches into Prussia; gained, on the 14th of October, the battles of Jena and Auerstadt, which at once deprived that country of her army, her capital, and her fortresses; and then proclaimed the famous 'Berlin Decrees,' by which he declared Great Britain in a state of blockade, and shut the ports of Europe against her merchandise. The king of Prussia, Frederick-William III. took refuge with his court in Russia, which now was the only continental power of any importance that remained unsubdued by France.

Towards that country, Napoleon therefore bent his steps. After a series of skirmishes and battles of lesser importance, he met the Russian army in great strength (June 14, 1807), at Friedland, and gave it a total overthrow. He might now have easily reduced the whole country, as he had done Austria and Prussia; but he contented himself with forming a treaty—called the Treaty of Tilsit, from the place where it was entered into—by which Russia agreed to become an ally of France, and entered into his views for the embarrassment of Britain by the exclusion of her commerce from the continental ports.

The Grenville administration was displaced in the spring of 1807, in consequence of the difference between its members and the king on the subject of the Catholic claims, which had long been urged by the Whig party, with little support from the people. The next ministry was headed by the Duke of Portland, and included Lords Hawkesbury and Castlereagh (afterwards Earl of Liverpool and Marquis of Londonderry), and Mr Canning, as secretaries; Mr Spencer Perceval being Chancellor of the Exchequer. One of the first acts of the ministry was the despatch of a naval armament to Copenhagen to seize and bring away the Danish fleet, which, it was suspected, was to be employed in subserviency to the designs of France, and for the injury of Britain. The end of the expedition was easily obtained.

FIRST PENINSULAR CAMPAIGN—SUBSEQUENT EVENTS.

The amazing successes of Napoleon had now inspired him with the idea of universal empire; and so great was the influence he had acquired over the French, and so high their military spirit, that the attainment of his object seemed by no means impossible. He was now, however, looked upon as the enemy of freedom and humanity, and any opposition that was offered was much more desperate than it had been before. It was in Spain, the crown of which Napoleon had given to his elder brother Joseph, that the first revolt took place; and the Spanish patriots appealed to Britain for help. In terms of a treaty entered into with a provisional government, a small army was landed, August 8, 1808, in Portugal, which had been recently taken possession of by the French. Sir Arthur Wellesley, who afterwards

became so famous as Duke of Wellington, was the leader of this force. In an engagement at Vimieira, on the 21st, he repulsed the French, under Junot, who soon after agreed, by what was called the Convention of Cintra, to evacuate the country. Sir Arthur being recalled, the British army was led into Spain under the command of Sir John Moore; but this officer found the reinforcements poured in by Napoleon too great to be withstood, and accordingly, in the end of December, he commenced a disastrous, though remarkably well-conducted retreat towards the port of Corunna, whither he was closely pursued by Marshal Soult. The British army suffered on this occasion the severest hardships and losses, but did not experience a check in battle, or lose a single standard. In a battle which took place at Corunna, January 16, 1809, for the purpose of protecting the embarkation of the troops, the gallant Sir John Moore was killed.

In 1809, Austria was induced once more to commence war with France, but was beaten in the decisive battle of Wagram. Peace was followed by the marriage of Napoleon to Maria Louisa, daughter of the Emperor of Austria, for which purpose he divorced his former wife, Josephine.

In the autumn of 1809, the British government despatched an armament of 100,000 men, for the purpose of securing a station which should command the navigation of the Scheldt. The expedition was placed under the command of the Earl of Chatham, elder brother of Mr Pitt, a nobleman totally unacquainted with military affairs on such a scale. The army, having disembarked on the insalubrious island of Walcheren, was swept off in thousands by disease. The survivors returned in December without having done anything towards the object for which they set out. This sad affair became the subject of inquiry in the House of Commons, which, by a majority of 272 against 232, vindicated the manner in which the expedition had been managed.

SUCCESSES OF WELLINGTON IN SPAIN.

A new expedition in Spain was attended with better success. Taking advantage of the absence of Napoleon in Austria, a considerable army was landed, April 22, 1809, under the command of Sir Arthur Wellesley, who immediately drove Soult out of Portugal, and then made a rapid move upon Madrid. On the 28th of July was fought the battle of Talavera, in which the British and Spanish troops had the advantage over the French under Marshal Victor.

Early in 1810, Napoleon reinforced the army in Spain, and gave orders to Massena to 'drive the British out of the Peninsula.' Wellesley, now raised to the peerage under the title of Lord Wellington of Talavera, posted his troops on the heights of Busaco—80,000 in number, including Portuguese—and there, on the 27th of September, was attacked by an equal number of French. Both British and Portuguese behaved well: the French were repulsed with great loss, and for the first time in the war, conceived a respectful notion of the British troops. Wellington now retired to the lines of Torres Vedras, causing the whole country to be desolated as he went, for the purpose of embarrassing the French. When Massena observed the strength of the British position, he hesitated; and ultimately, in the spring of 1811, performed a disastrous and harassed retreat into the Spanish territory.

It now became an object of importance with Wellington to obtain possession of the Spanish fortresses which had been seized by the French. He succeeded in capturing Almeida, and defeating Massena at Fuentes de Onoro; while Generals Beresford and Graham won the battles of Albuera and Barrosa. Wellington then retired into Portugal.

THE REGENCY.

The intellect of the king gave way completely at the close of the year 1810, and the Prince of Wales was, in consequence, appointed Regent. He did not, however, shew his former liking for the Whigs, but allowed them to remain in opposition.

EVENTS OF 1812 AND 1813.

In 1812, the events that had taken place in Spain having somewhat impaired Napoleon's prestige, Alexander, Emperor of Russia, ventured upon a defiance of his decrees against British merchandise, and provoked him to a renewal of the war. With upwards of half a million of troops, appointed in the best manner, Napoleon set out for that remote country, determined to reduce it into perfect subjection. A stratagem on the part of the Russians defeated all his plans. The city of Moscow, after being possessed by the French troops in September, was destroyed by incendiaries, so that no shelter remained for them during the ensuing winter. Napoleon was obliged to retreat; but, overtaken by the direst inclemency of the season, his men perished by thousands in the snow, while they were harassed by the Russian troops in their retreat. Of his splendid army, a mere skeleton regained Central Europe. Returning almost alone to Paris, he contrived, with great exertions, to reinforce his army, though there was no replacing the veterans lost in Russia.

Early in 1813, he opened a campaign in Northern Germany, where the Emperor of Russia, now joined by the king of Prussia and various minor powers, appeared in the open field against him. After various successes on both sides, an armistice was agreed to on the 1st of June, and Bonaparte was offered peace on condition of restoring only that part of his dominions which he had acquired since 1805. Inspired with an overweening confidence in his military genius, he refused these terms, and lost all. In August, when the armistice was at an end, his father-in-law, the Emperor of Austria, joined the allies, whose forces now numbered 500,000 men; while an army of 300,000 was the largest which Napoleon could at present bring into the field. By steady, though cautious movements, the allies advanced to France, driving him reluctantly before them, and increasing their own force as the various states became emancipated by their presence. At the close of 1813, they rested upon the frontiers of France; while Lord Wellington, after two brilliant campaigns in Spain, had advanced in like manner to the Pyrenees.

HOME AFFAIRS—WAR WITH AMERICA.

On the 11th of May 1812, the premier, Mr Perceval, was shot in the lobby of the House of Commons, by a man named Bellingham, whom some private losses had rendered insane. Lords Liverpool and Castlereagh then became the ministerial leaders in the two Houses of Parliament, but were quickly voted down by a majority of four. Some changes in the Cabinet were made, Lord Liverpool continuing as Premier, and Lord Castlereagh as Foreign and War Secretary. Neither the Regent nor his ministers, however, were popular; and the former, whose morals were far from being free from reproach, made himself very unpopular by fixing a criminal charge on his consort.

In this unhappy state of affairs, the United States, provoked by orders in council prohibiting the commerce of neutral states, as well as by a right assumed by British war-vessels to search for and impress English sailors on board the commercial shipping of the United States, declared war, June 1812, against Britain. Before the news had reached London, the orders had been revoked by the influence of Lord Liverpool; but the Americans, nevertheless, were too much incensed to retrace their steps. During the summer and autumn, several encounters took place between single American and British ships, in which the former were successful. It was not till June 1, 1813, when the *Shannon* and *Chesapeake*, the one a British, the other an American frigate, met on equal terms, that the British experienced any naval triumph in this war. On land, the Americans endeavoured to annoy the British by assaults upon Canada, but met with no decisive success. The British landed several expeditions on the coast of the States; and were successful at Washington, at Alexandria, and at one or two other points, but experienced a bloody and disastrous repulse at New Orleans. The war ended, December 1814, without settling any of the principles for which the Americans had taken up arms.

PEACE OF 1814—SUBSEQUENT EVENTS.

At the close of 1813, it was evident that Bonaparte could hardly defend himself against the vast armaments collected on all hands against him. Two months were spent in almost incessant conflict with the advancing allies, who, on the 30th of March, entered Paris in triumph; and in the course of a few days, ratified a treaty with Napoleon, by which he agreed to resign the government of France, and live for the future as only sovereign of Elba, a small island in the Mediterranean. Peace was proclaimed in London on the 20th of June. France was deprived of all the acquisitions gained both under the Republic and the Empire, and restored to the rule of the ancient royal family in the person of Louis XVIII. Wellington, now created a Duke, received a grant of £400,000 from the House of Commons, in addition to one of £100,000 previously voted; and received in person the thanks of the House for his services. Representatives from the European powers concerned in the war met at Vienna, October 2, in order to settle the disturbed limits of the various countries, and provide against the renewal of a period of war so disastrous.

In March 1815, however, their proceedings were interrupted by intelligence that Napoleon had landed in France, and was advancing in triumph to the capital. So unpopular had the new government already become, that, though he landed with only a few men, he was everywhere received with affection, his old soldiers rallying round him, and on the 20th of March was reinstated in his capital, which had that morning been left by Louis XVIII. Bonaparte then took the votes of the nation for his restoration; on which occasion he had a million and a half of affirmative, against less than half a million of negative voices, the voting being performed by ballot. His exertions to reorganise an army were successful to an extraordinary degree. On the 1st of June he had 559,000 effective men under arms, of whom 217,000 were ready to take the field.

A Prussian army of more than 100,000 men, under Blücher, a veteran general, and one of about 80,000 British, Germans, and Belgians, under Wellington, were quickly rendezvoused in the Netherlands; while still larger armies of Austrians and Russians, making the whole force above 1,000,000, were rapidly approaching. Napoleon, knowing that his enemies would accumulate faster in proportion than his own troops, crossed the frontier on the 14th of June, with 120,000 men, resolved to fight Blücher and Wellington separately, if possible. The rapidity of his movements prevented that concert between the Prussian and English generals which it was their interest to establish. On the 16th, he attacked Blücher at Ligny, and compelled him to retire upon a point nearly a day's march from the army of Wellington.

After some further fighting next day, Napoleon brought his forces to bear, on the 18th against Wellington alone, who had drawn up his troops across the road to Brussels, near a place called Waterloo. The battle consisted of a constant succession of attacks by the French upon the British lines. These assaults were attended with great bloodshed, but nevertheless were resisted with the utmost firmness, till the evening, when Blücher came up on the left flank of the British, and turned the scale against the French, who had now to operate laterally as well as in front. The flower of the French army, the Imperial Guard, made a desperate charge upon the British troops, but were beaten back; and the whole army then retired, the Prussian cavalry cutting down the fugitives in great numbers during the flight. On his return to Paris, Napoleon made an effort to restore the confidence of his chief counsellors, but in vain. After a fruitless abdication in favour of his son, he retired to Rochefort, with the intention of proceeding to America; but, finding no means of escape, was obliged to surrender to Captain Maitland of the *Bellerophon*, a British ship of war. He was condemned by his triumphant enemies to perpetual confinement on the island of St Helena, in the Atlantic, where he died in 1821. The conquests kept by Great Britain at the end of the war were the Cape of Good Hope, the Dutch possessions in Ceylon and Berbice, and other Dutch settlements in Guiana; Mauritius and Seychelles taken from the French; and Malta and Heligoland in Europe.

Louis XVIII. was now restored, and the arrangements of the Congress of Vienna were completed. The expenses of Great Britain during

this last year of hostilities exceeded seventy millions; and the national debt, which in 1793 had been £230,000,000, now amounted to the vast sum of £860,000,000.

The reaction in Europe during the latter years of Napoleon's reign against revolutionary doctrines, which led on the continent to what was styled a 'Holy Alliance' between Austria, Russia, and Prussia—these powers agreeing to help each other in the event of another crisis like that of the French Revolution—had also its effect in Great Britain, in fixing the power of the aristocracy, which, by composing the whole of the Upper House, and influencing the election of a major part of the Lower, might be said to constitute the government.

THE PRINCESS CHARLOTTE—POPULAR TUMULTS.

In May 1816, the Princess Charlotte, only child of the Prince-regent, was married to Prince Leopold of Saxe-Coburg, a young officer who had gained her affections when attending the allied sovereigns at the British court. In November 1817, to the great grief of the whole nation, the young princess died, immediately after having given birth to a dead son.

In August 1816, a British armament under Lord Exmouth bombarded Algiers, and reduced that piratical state to certain desirable conditions respecting the treatment of Christian prisoners.

The year 1816, and the four following years, have a melancholy reputation as a period of extraordinary distress, affecting almost every class of the community, and caused chiefly by the liberation of European commerce at the end of the war, and the consequent diminution of the trade which England had previously enjoyed through her exclusive possession of the seas. In the autumn of 1819, the misery of the working-classes had reached its greatest height, and parliamentary reform was then urgently demanded, as the only measure which could permanently improve their prospects. On the 16th of August, a vast body of operatives assembled at Manchester, in an open space of ground called St Peter's Field, professedly to petition for parliamentary reform. As they came in regular array, bearing banners with inscriptions, the magistrates professed to consider the meeting as dangerous to the public peace, and ere the proceedings were far advanced, a body of troops, consisting chiefly of yeomanry, dashed into the mass, trampling down many persons of both sexes under the horses' feet, and killing and wounding others with their sabres. The meeting was dispersed by these means, and Messrs Hunt and Johnston, the principal orators, were apprehended. The tragic nature of this event produced some marks of public resentment, but the magistrates who conducted the attack received the immediate and cordial thanks of the government; and when parliament reassembled in November, in addition to the strong measures already taken for suppressing popular discontent, acts were passed to suppress unstamped political publications, to prevent secret training to arms, and to restrict the right of calling a public meeting to magistrates.

On the 29th of January 1820, George III. died at Windsor, in his eighty-second year, having been insane since 1810. The Prince-regent was immediately proclaimed as GEORGE IV.; but there was no other change to mark the commencement of a new reign. A few days before (23d) the decease of George III. the Duke of Kent, his fourth son, died suddenly, leaving an infant daughter, Victoria, with a very near prospect to the throne. In 1772 had been passed the Royal Marriage Act, which incapacitated the descendants of George II. from marrying without the consent of their sovereign.

MISCELLANEOUS CIRCUMSTANCES FROM 1790 TO 1820.

This period is especially memorable for the introduction of the use of steam in navigation. A model vessel, with a small steam-engine on board, was tried in 1788 by Mr Patrick Miller of Dalswinton, in Dumfriesshire. The idea fell asleep for a few years, but was revived by Mr Fulton, an American, who, in 1807, set agoing a steam-vessel on the Hudson River, the first in the world which was regularly employed in conveying passengers. In 1812, Mr Henry Bell of Helensburgh launched a similar vessel on the Clyde, being the first seen in Europe; and from that period steam-vessels quickly became numerous.

The latter part of the reign of George III. was distinguished by marked improvements in the dress and social condition of the people. In the year 1750, cocked-hats, wigs, swords, and buckles were generally worn, and all gentlemen used hair-powder. From the year 1790 to about 1800, these and many other oddities completely disappeared. Speedy travelling by stage-coaches, and the rapid transmission of letters by mail-carriages, became at the same time general in all parts of the United Kingdom.

At no period did a more brilliant class of literary men flourish in Britain. Poetry assumed new and attractive forms in the works of Campbell, Moore, Southey, Coleridge, Wordsworth, Byron, Shelley, and Scott. The novel or fictitious tale was advanced to a dignity it had never known before, in consequence of the production, by Sir Walter Scott, of a series of such compositions, in the highest degree dramatic and entertaining. In the Edinburgh and Quarterly Reviews, periodical criticism acquired an importance it never before possessed. The name of Sir Humphry Davy stands pre-eminent in science, which was also cultivated with distinguished success by Wollaston, Leslie, Playfair, and Robison. In philosophical literature, the names of Dugald Stewart and Thomas Brown merit peculiar respect; and in art occur the great names of Reynolds, Lawrence, Gainsborough, and Wilkie.

REIGN OF GEORGE IV.

At the time when George IV. commenced his reign, the Manchester affair and the recent proceedings of the ministry, had inspired a small band of desperate men with the design of assassinating the ministers at a cabinet dinner, and thereafter attempting to set themselves up as a provisional government. On the 23d of February 1820, they were surprised by the police in their place of meeting in Cato Street, London; and, after a desperate resistance, five were seized, among whom one Thistlewood was the chief. These wretched men were tried for high treason, and executed. Nearly about the same time, an

attempt was made by the workmen in the west of Scotland to agitate for some alteration in the state; and two men were executed.

On the accession of the king, the name of his consort, Caroline, Princess of Brunswick-Wolfenbüttel, had been omitted from the liturgy. This and other indignities induced her to return from a voluntary exile in Italy, June 1820, to the great embarrassment of the king and his ministers, as she was received by the people with the warmest expressions of sympathy. The king ultimately caused a bill of pains and penalties against her to be brought (July 6) into the House of Lords, which thus became a court for her trial. Messrs Brougham and Denman, who afterwards attained high judicial stations, acted as counsel for Her Majesty, and displayed great ability, enthusiasm, and eloquence in her defence. The examination of witnesses occupied several weeks; but no evidence of criminality could soften the indignation with which almost all classes of the community regarded this prosecution. Though the bill was read a second time by a majority of 28 in a house of 218, and a third time by 108 against 99, the government considered it expedient to abandon it, leaving the queen and her partisans triumphant.

In July 1821, the coronation of George IV. took place under circumstances of great splendour. On this occasion, the queen made an attempt to enter Westminster Abbey, for the purpose of witnessing the ceremony, but was refused admittance by the military officers who guarded the door; an insult which gave such a shock to her health, as to cause her death in a few days (August 7). During the month of August, the king paid a visit to Ireland, where he was received with much cordiality by all classes of that excitable people, notwithstanding his known hostility to the Catholic claims. In August of next year he visited Scotland, and there also met with a most kind reception. During his absence in Scotland, his leading minister, the Marquis of Londonderry (formerly Lord Castlereagh), committed suicide, being weighed down by a sense of the difficulty of his position in regard to continental affairs. His successor was Mr George Canning.

JOINT-STOCK MANIA—COMMERCIAL EMBARRASSMENTS.

The two following years were characterised by an extraordinary activity in almost all departments of commerce, a number of measures tending to remove restrictions both on trade and labour being passed, mainly through the instrumentality of Mr Huskisson, an able financier introduced into the cabinet by Mr Canning.

Many joint-stock companies were now formed, as a means of giving capital a wider range than that to which it was usually limited. Some of these associations professed objects which were by long-established usage the proper business of individuals alone; and others involved hazardous and visionary projects, which were to be carried into effect in remote countries. The result was a serious commercial crisis. The first symptom of something being wrong was the turning of the exchange against England. A diminution of issues at the Bank followed. Then took place a run upon the banks, some of which, both in London and in the country, were obliged to stop payment. Between October 1825 and February 1826, fifty-nine commissions of bankruptcy were issued against English country banks, and four times the number of private compositions were calculated to take place during the same period. Some liberal pecuniary measures on the part of the Bank of England, helped in a short time, rather by inspiring confidence than by actual disbursement of money, to retrieve in some measure the embarrassed circumstances of the country.

CANNING'S ADMINISTRATION—CATHOLIC EMANCIPATION.

In the spring of 1827, the illness of Lord Liverpool (followed soon after by his death) opened the way for Mr Canning's promotion to the first place in the administration. Mr Canning, however, sank under the new load imposed upon him, and died in the ensuing August. His friend, Lord Goderich, succeeded as Premier, but resigned in January 1828, when the Duke of Wellington was appointed in his place, with Mr (afterwards Sir) Robert Peel as Secretary for the Home Department.

From the year 1805, the Catholic claims had been a prominent subject of parliamentary discussion, and since 1821 they had been sanctioned by a majority in the House of Commons. The Irish Catholics had in 1824 united themselves in an association, with the scarcely concealed purpose of forcing their emancipation by means of an exhibition of their physical strength. An act was quickly passed for the suppression of this powerful body, but it immediately reappeared in a new shape, and it became evident that Catholic emancipation must be granted sooner or later. In the spring of 1828, a kind of preparation was made for the concession, by the repeal of the test and corporation oaths, imposed in the reign of Charles II.; while the return of Mr Daniel O'Connell, the most distinguished orator of the Catholic party, for the county of Clare, shewed the strength of the Association, and alarmed the ministry. At the opening of the session of 1829, a bill was introduced for admitting Catholics to parliament, to most civil and military offices and places of trust, and to corporate offices, upon their taking an oath to support the existing institutions of the state, and not to injure the church; the Duke of Wellington admitting that he introduced it to avert civil war; and notwithstanding a great popular opposition, as well as the most powerful exertions of the older and more rigid class of Tories, this measure was carried by a majority of 353 against 180 in the House of Commons, and by 217 to 112 in the House of Lords. It received the royal assent on the 13th April 1829.

REIGN OF WILLIAM IV.

The agitations respecting the Catholic Relief Bill had in some measure subsided, when, June 26, 1830, George IV. died, and was succeeded by his next brother, the Duke of Clarence, who had passed his early life in the navy, under the title of WILLIAM IV. About a month after, a great sensation was produced in Britain by a revolution which took place in France, the main line of the Bourbon family being expelled, and the crown conferred

upon Louis-Philippe, Duke of Orleans. By this event, a great impulse was given to the reforming spirit in Britain, and the demands for an improvement in the parliamentary representation became very strong. The consequence was the retirement of the Wellington administration in November, and the formation of a Whig cabinet, headed by Earl Grey. This ministry succeeded, in spite of the opposition of the Tories, or Conservatives, as they now were called, in passing, June 7, 1832, measures for parliamentary reform in the three divisions of the kingdom. The acts disfranchised 56 boroughs; while 43 new ones, together with 30 county constituencies, were created; a £10 household qualification was established in boroughs, and the county franchise was extended to tenants of land with a rental of £50 a year. During the agitation, the country was visited by Asiatic cholera, which destroyed thousands.

During the few years which followed the passing of the Reform Bills, the attention of parliament was chiefly occupied by a series of measures, the most important of which, in a moral point of view, was the abolition of slavery in the colonies, which had been agitated for by Wilberforce and Clarkson, the sum of twenty millions being paid to the owners of the negroes, as a compensation for resigning a right of property which had long been a disgrace to humanity. By this act, eight hundred thousand slaves were (August 1, 1834) placed in the condition of freemen, but subject to an apprenticeship to their masters for a few years.

In the same year an act was passed for amending the laws for the support of the poor in England, which had long been a subject of general complaint. One of the chief provisions of the new enactment established a government commission for the superintendence of the local boards of management, which had latterly been ill-conducted, and were now proposed to be reformed. The able-bodied poor were also deprived of the right which had been conferred upon them, at the end of the eighteenth century, to compel parishes to support them, either by employment at a certain rate, or pecuniary aid to the same amount; they were now left no resource, failing employment, but that of entering poor-houses, where they were separated from their families.

In 1833, a reform took place in the mode of electing the councils and magistracies of the Scottish burghs. The parliamentary constituencies were now empowered to choose the requisite number of councillors, the latter, again, choosing the magistrates. The English and Irish municipal corporations were somewhat similarly reformed in 1835 and 1840.

During the summer of 1834, the ministry endeavoured to carry through parliament a bill to enable them to take unusual measures for restraining turbulence in Ireland. In consequence of a difficulty experienced in passing the measure, Lord Althorp and Earl Grey resigned. The place of the latter was supplied by Viscount Melbourne, and Lord Althorp was induced to resume office. The Irish Coercion Bill, with certain modifications, was then passed.

The Melbourne ministry continued in power for several years, the only other ministry during this reign being one which Sir Robert Peel constructed of the Conservatives who lost office in 1830, and which was compelled to resign after being only a few months in office. Among the measures passed by the Melbourne administration were an act for commuting tithes in England into a corn-rent charge payable in money; an act for enabling Dissenters in England to be married otherwise than by the established clergy; and another for a general registry of births, deaths, and marriages. This ministry also reduced the stamp-duty on newspapers to one penny, by which the circulation of that class of publications was very largely increased. In 1837, a bill was introduced into the House of Commons for settling the Irish tithe-question; but before this or any other measure of importance had been carried, the king died of ossification of the vital organs (June 20), which had also been the cause of his predecessor's death, in the seventy-third year of his age, and seventh of his reign, being succeeded by his niece, the PRINCESS VICTORIA.

REIGN OF QUEEN VICTORIA.

Queen Victoria, born May 24, 1819, began to reign June 20, 1837, and had, therefore, just completed her eighteenth year; was crowned on the 28th of June in the following year; and was married to her cousin, Prince Albert of Coburg and Gotha, February 10, 1840. This union was followed by the birth of four princes and five princesses; and as the marriage of the Prince of Wales, Albert Edward, who was born November 9, 1841, to the Princess Alexandra of Denmark (March 10, 1863) resulted erelong in the birth of two sons and three daughters, the amplest security has been given for the continuance of the present dynasty.

The Whig ministry, being on the decline, were obliged, in 1841, to yield to a vote of 'no confidence;' and Sir Robert Peel again took the helm of affairs. The parliament of 1841 was in many respects one of the most important during the reigning dynasty. Besides carrying out a great many reforms in the internal administration of the country, the corn-laws and other restrictive duties were abolished, and thus the great principle of *free-trade* was fairly established—a course in which Great Britain has since been more or less followed by other nations. Although the abolition of the corn-laws (1846) was received as a precious boon by the masses of the people, it alienated so many of Sir Robert's political supporters, that he was obliged to resign office, and was succeeded by Lord John Russell, to whom was assigned the further task of carrying out the principles of free-trade.

Among the internal commotions and difficulties that the nation had to pass through in this period, may be noticed the agitation of the Chartists (1838), who were chiefly working-men suffering from the prevalent distress, and so called because, at a meeting at Birmingham, they demanded a people's charter, containing six points—universal suffrage, vote by ballot, triennial parliaments, equal electoral districts, the abolition of property qualifications, and salaries for members of parliament. In the year 1848, when a revolution had driven from the throne of France its monarch, Louis-Philippe, and revolutionary movements had convulsed a large portion of the continent, the Chartists mustered on Kennington Common to the number of 20,000, intending to march through London to the House of Commons, carrying a

petition containing their demands, and said to be signed by more than 5,000,000 persons, which was to be presented by Feargus O'Connor, one of the members for Nottingham. London was very much alarmed, and a large number of special constables were enrolled. The whole affair, however, passed off quietly and happily without any conflict with the military, whom the Duke of Wellington had stationed out of sight, but at hand. After this, the Chartist agitation died down.

WARS OF THE PRESENT REIGN.

The wars of this reign, in which Britain has been engaged, if they have not been of such great importance as those in the time of George III. have been very numerous. In the year of the Queen's accession, some discontent in Lower Canada, on account of ill-defined political grievances, ended in open revolt. The rising, however, was quickly put down, and conciliatory and popular measures which were passed succeeded in restoring peace. In 1867, the provinces of Canada, Nova Scotia, and New Brunswick were, by statute, united federally into one Dominion, under the name of Canada, with a constitution similar to that of Great Britain and Ireland, being ruled by a Governor-general in name of the Queen, and by two Houses of Parliament. The Dominion now virtually embraces the whole of British North America.

In 1840, Great Britain, along with other powers, took the part of the Sultan of Turkey against Mehemet Ali, his pacha in Egypt, who had rebelled against him, and had even endeavoured to deprive him of a portion of his dominions. Acre was bombarded and taken by a British fleet under Admiral Stopford and Commodore Napier. A treaty was concluded by which Mehemet Ali was compelled to give up Syria, although he was permitted to retain Egypt.

Britain had no little trouble with China during this reign. Difficulties arose first in 1840, from the attempts of the imperial government in China to put down the contraband trade in opium carried on between that country and India. A war between China and Britain ensued, in which the latter was victorious, and China was compelled to sign a treaty at Nankin, by which the ports of Amoy, Foochow, Ningpo, Shanghai, and Canton were thrown open to foreign commerce, and the island of Hong-kong was ceded to Britain. Peace continued till 1856, when the seizure by the Chinese authorities at Canton of a ship and crew entitled to British protection, caused a fresh war, which continued with some interruptions until the 13th October 1860, when the allied British and French forces captured Pekin, the Chinese capital. The Chinese then submitted to a treaty, the most important of the stipulations of which were, that the Queen of Great Britain might appoint diplomatic agents to reside at the court of Pekin; that the Christian religion should enjoy the protection of the Chinese authorities; that British subjects should be permitted, under passports from their consuls, to travel in all parts of the interior of China; and that British ships should be allowed to navigate the Yang-tze. This war led to an expedition to Japan under Lord Elgin, and the opening to some extent of that interesting empire to foreign commerce.

After a peace of forty years, Britain again became involved in a European war. This arose from the assertion, by the Czar Nicholas of Russia, of a right to a protectorate of the Christian population in Turkey. In 1853, he urged this claim in such a form as to render it impossible for Turkey to admit it without ceasing to be an independent state. The other great powers of Europe, which had now become very jealous of Russia's encroachments all along her frontier, interfered as mediators, but in vain. After a year spent in negotiations, England and France formally declared war against Russia on the 27th March 1854. The war was carried on for two years, and during that time the other powers of Europe remained neutral, with the exception of Sardinia, which joined the alliance. A considerable British and French army was sent to the Crimea, landing there on the 14th September. On the 20th they defeated a Russian army strongly posted on the Alma. They then settled down to the siege of the great fortress of Sebastopol. During the winter, the British troops suffered terrible hardships, mainly from the imperfect arrangements made to provide them with shelter and supplies. The Russians made two desperate efforts to dislodge the allies, but were beaten with heavy loss in the sanguinary engagements of Balaklava (October 25) and Inkermann (November 5). The brunt of both engagements was borne by the British troops. The Czar Nicholas died (March 1855), and the war continued under his son, Alexander II. Meanwhile, there had been two naval campaigns in the Baltic Sea, a powerful English and French fleet entering the Gulf of Finland, blockading the Russian coasts, and compelling the enemy's fleet to seek shelter behind the granite fortresses of Cronstadt and Sveaborg. The bombardment and partial destruction of the latter fortress in the second campaign was the most important service rendered by the fleets. At length, after a terrific cannonade, continued for three days, the French carried the key of Sebastopol by assault, and the allies captured the whole south side of the city (September 8, 1855). During the winter of that year, the opposing forces maintained their positions. Austria now came forward as a mediator, and the result of her interposition was a conference at Paris (March 1856), which in turn led to the conclusion of a treaty guaranteeing the independence of Turkey, and stipulating that Russia should maintain no naval force in the Black Sea. The rather unexpected termination of the war was learned with something like a feeling of disappointment in this country, as both the army and the navy were known to be in the beginning of 1856 in a thorough state of efficiency, and it was hoped that an attempt would be made to retrieve previous blunders at the beginning of the war, by which the military reputation of Britain had suffered. In 1871, by an agreement among the powers consenting to the Treaty of Paris, the clause in it prohibiting Russia from maintaining a naval force on the Black Sea, was practically rescinded. The marriage of the Queen's second son, Alfred, Duke of Edinburgh, to the Princess Marie Alexandrowna, daughter of the Czar Alexander II. which took place, January 23, 1874, led to great demonstrations of friendship between the courts of Russia and Britain.

As early as 1838, Great Britain became involved

in war through her Indian dependencies. In that year, war broke out with Afghanistan, upon which she had made aggressions, and, in consequence, a series of disasters befell her troops. In 1842, being compelled to retreat from Cabul, they were almost entirely cut off in the mountain passes. This misfortune was, however, retrieved, but no further attempt was made to encroach on Afghanistan. In 1843, a war broke out with the Ameer of Scinde, which resulted in the conquest of that country by Sir Charles Napier. In the neighbouring kingdom of the Punjab, a contention among the Sikh chiefs led, in 1845, to a collision with English troops. After a number of severe and bloody engagements, in which the Sikhs were defeated, and of which the last was that of Goojerat (February 21, 1849), the Punjab also became part of British India. To these annexations to the British empire was added that of Pegu, taken from the Burman Empire in 1852. In July 1857, the news startled England that the sepoys—the native soldiers of the East India Company—stationed at Meerut had mutinied against their officers, under the mistaken idea, that it was intended by the British authorities to interfere with their religion. There had been signs of disaffection among the native troops for some months before; but it was not till the rising at Meerut, followed by a barbarous slaughter of Englishmen and women, that the alarming character of the crisis was realised. The rebels at Meerut, after this atrocity, marched into Delhi, and proclaimed its native king Emperor of Hindustan. In numerous other places, the native troops rose, and committed similar barbarities. At Cawnpore, the British garrison were slain, after having surrendered to the rebel Nana Sahib, who, hearing that the English troops were approaching, murdered all the English women and children who were in his hands. The few European troops that were in India at the time shewed remarkable bravery; Sir Henry Havelock and Sir James Outram, after inflicting many defeats on the mutineers, succeeded in relieving the garrison of Lucknow, which had been attacked by the sepoys, although to be in turn besieged by the rebels, who numbered 70,000 men, and were, besides, assisted by a large friendly population. Great exertions were made to meet the crisis at home; and by the end of the year, 30,000 troops from England had arrived in India, under the command of Sir Colin Campbell, afterwards Lord Clyde, who had distinguished himself greatly in the Crimean war. This general succeeded in relieving Lucknow, and this having broken the back of the insurrection, it was put down in the course of next year. The most important result of the mutiny was the transfer, by act of parliament, August 2, 1858, of the government of India from the East India Company to the crown.

The imprisonment by Theodore, king of Abyssinia of the British consul and several other Englishmen, led to a war. A British army, under the command of Sir Robert Napier (now Lord Napier of Magdala), landed in Abyssinia about the end of 1867, and overcoming the peculiar physical difficulties of the country, stormed the capital in April 1868. The objects of the expedition having been fully accomplished, the British troops withdrew from the country.

In the end of 1873, war broke out on the Gold Coast of Africa with the Ashantees. A force under the command of Sir Garnet Wolseley, captured and burnt the capital of the country, Coomassie, in 1874. A treaty was then concluded, and the English troops returned at once to England.

In 1879, an English force invaded the territory of the Zulus. These warlike barbarians inflicted severe loss on the invaders, but before the end of the year, were utterly defeated; their king, Cetewayo, was captured, and their country parcelled out amongst numerous chiefs. In 1883 the king was restored, under certain limitations.

The immediate occasion of the Afghan war in 1878–79 was the repulsion of a mission sent to the Ameer by the Indian Government. Jelalabad and Candahar were occupied without much difficulty. Shere Ali having died, his son Yakoob Khan concluded a treaty in May 1879. But ere the English troops had wholly retired from the country, a rising took place at Cabul in September; and the newly appointed English resident and his guard were massacred. Cabul was occupied by the English in October. Abdurrahman became Ameer; and for a year there was desultory war, during which one English force sustained a severe defeat, and another gained a brilliant and conclusive victory. English troops were wholly withdrawn in 1881.

In the end of 1880 the Boers of the Transvaal, annexed in 1877, rose in arms and proclaimed a republic. They fought well, inflicting a serious reverse on a British force at Majuba Hill. Britain yielded to the wish of the little state, and it was agreed by midsummer of 1881, that their territory should possess autonomy, but remain under British suzerainty.

In 1882 occurred a short but brilliant Egyptian war. A military party under Arabi Pasha had superseded the ordinary civil powers. Riots occurred at Alexandria, in which European and native lives were lost. Arabi having declined to cease strengthening the fortifications, English war-ships bombarded the forts in July 1882. Next month an English force under Wolseley, with a strong Indian contingent, landed in Egypt; and on 10th September Tel-el-Kebir was taken, and Arabi's forces totally and hopelessly defeated. Cairo was occupied, and the reorganisation of Egyptian affairs superintended by Britain.

Britain has been a spectator merely of many recent wars. Difficulties arose between us and the United States during and after the great American civil war of 1860–65, on account of the injury done to American commerce by Southern privateers, rigged out in British waters. At last, an International Tribunal sat at Geneva, and, in 1872, Britain had to pay upwards of £3,000,000 for the injuries done to American commerce by the *Alabama* and her consorts.

The war in 1859, between Austria and Sardinia, which was assisted by France, resulted in the defeat of Austria, and the consolidation of the kingdom of Italy. About this time began the formation of Volunteer corps throughout Great Britain.

In 1866, Austria was completely defeated by Prussia at the great battle of Sadowa.

In the great war waged in 1870 and 1871 between France and Prussia, which was assisted by the whole Germanic fatherland, Germany was

signally victorious. By a treaty of peace, signed February 26, 1871, France ceded to Germany the province of Alsace and a part of Lorraine, besides agreeing to pay a war indemnity of upwards of £200,000,000. The Bonapartist dynasty was driven from the throne of France, and King William of Prussia was proclaimed Emperor of Germany.

The war between Russia and Turkey in 1877-78, in which at one time it seemed likely England might be directly engaged, greatly weakened the Ottoman Empire. At the Congress of Berlin the subject principalities were recognised as independent. Bulgaria was made a principality; and Batoum and parts of Bessarabia and Armenia were ceded to Russia. By a separate convention, England undertook to defend Asia Minor, and obtained the right to occupy and administer Cyprus.

POLITICAL EVENTS—MINISTERIAL CHANGES.

After the rupture between Sir Robert Peel and the Conservative party, the Liberal party, as the Whigs are now styled, for a series of years enjoyed power, the chief statesmen being Viscount Palmerston, Lord John (now Earl) Russell, and Mr W. E. Gladstone; while the Conservative party began to recover under the Earl of Derby and Mr Benjamin Disraeli. The Conservatives came into power in 1859, but only retained it for a short time, during which a resolution was carried admitting the Jews into parliament; a bill was passed for the abolition of the property qualification for members of parliament, and an agitation was commenced for further parliamentary reform. Upon this question Lord Derby's government was defeated, and Lord Palmerston was again called to form a ministry. Lord Palmerston continued at the head of affairs till his death, October 18, 1865; one of the most important measures passed during this period being that for the abolition of the duty on paper, which has given a great impulse to newspaper literature. Earl Russell then became Premier, and with Mr Gladstone, who was Chancellor of the Exchequer, brought forward, after a general election, a new Reform Bill, proposing to reduce the franchise in burghs to £5; but, as the bill did not, in some points, meet with the entire approval of parliament, the ministry resigned, in June 1866, and was succeeded by a Conservative administration under Lord Derby and Mr Disraeli. Next year, a Reform Bill for England was carried, which vastly extended the franchise in burghs, by giving it to householders who pay poor-rates, and to persons occupying lodgings of the value of £10, and which also considerably lowered the franchise in counties. In the beginning of 1868, Lord Derby, on account of failing health, retired from the post of Premier, and was succeeded by Mr Disraeli. During this session were passed Reform Bills for Scotland and Ireland, in essential respects identical with that of England. At this time, the country was greatly excited by the state of Ireland. In 1866, there appeared in Ireland a number of wild adventurers from America, members of what is known as the Fenian Brotherhood. These sought to rouse the native Irish to rebellion, and succeeded to the extent of causing risings in Ireland, which were, however, quickly suppressed, through the suspension of the Habeas Corpus Act and other vigorous measures. The perpetration of some dastardly outrages in various parts of England, especially the blowing down of part of the wall of Clerkenwell Prison, led to a general feeling of insecurity throughout the country. During the debate on the Irish Reform Bill, Mr Gladstone moved that the Irish Church should cease to exist as an establishment. Government opposed the proposal repeatedly, and it was ultimately agreed to take the opinion of the new constituencies on it. Parliament was, therefore, dissolved in November of that year; and the opinion of the country being found to be in favour of Mr Gladstone's policy, Mr Disraeli resigned before the new parliament met, and a new government was formed, with Mr Gladstone at its head. This government passed the Irish Church and Irish Land Acts; the former, which came into effect on January 1, 1871, disestablishing and disendowing the Church of Ireland; and the latter giving outgoing tenants in that country a title to compensation in respect of improvements made by them on their holdings. This government passed several other measures of importance. One, the Army Regulation Bill, made (1871) several important military reforms, at the same time that a royal mandate cancelled the regulations which authorised the purchase or sale of commissions in the army; another, supplementary to the Reform Acts, substituted (1872) the ballot for open voting in parliamentary and municipal elections; while by two comprehensive acts (1870 and 1872) primary education has been extended and organised in England and Scotland, being rendered, in the former almost, in the latter absolutely, compulsory.

In 1874, Mr Gladstone resigned, and a new Conservative administration was formed by Mr Disraeli (afterwards Earl of Beaconsfield). This administration was chiefly memorable for its 'imperialistic' foreign policy, of which the proclamation of the queen as Empress of India, in 1877, was a significant event. (See above for the wars in Zululand and Afghanistan.) A general election in 1880 returned a large Liberal majority, and Mr Gladstone became the chief of a new Liberal Cabinet. Its main occupation was the difficult task of maintaining order in Ireland, and remedying Irish grievances. (For the Transvaal and Egyptian wars, see above.) The violent agitation of the Land League was accompanied by murders and other outrages, rents being withheld over a large area; and in 1881, a Peace Preservation Bill was passed, conferring on the administration the power of imprisoning without trial persons reasonably suspected of crime. Several hundred persons, including ultimately several Irish members of parliament, were thus imprisoned for a time. Meanwhile, an Irish Land Act conferring unparalleled privileges on the Irish tenantry had been passed, in spite of much opposition, especially in the House of Lords. This act enables tenants to have judicial rents fixed by courts created for the purpose, recognises the tenant's right to sell his tenancy, and makes provision for advancing money to tenants willing to purchase their holdings. In 1882, the affairs of Ireland still mainly occupied parliament. A modification of parliamentary procedure was necessitated by the repeated and persistent obstruction of the Irish

members; and a bill was passed securing to a majority of the House of Commons the right of closing a debate. The newly appointed Irish Secretary, Lord Frederick Cavendish, was assassinated on his first visit to Dublin. A new Prevention of Crime Bill was agreed to; but a conciliatory measure was prepared dealing with arrears of rent, and designed to rescue poverty-stricken tenants from hardship. In the spring of 1883, the government unmasked a widespread conspiracy, supported by funds from without, to assassinate persons hostile to the schemes of the most extreme anti-English agitators. The chief event in home politics in 1884 was the debates on the Franchise Bill for the further extension of the franchise.

RETROSPECT: FROM 1820 ON.

The early part of this period is remarkable for the great efforts which were made to diffuse knowledge more generally amongst the people. *Mechanics' Institutions* were formed in most of the larger towns, for the instruction of that class of the community in mechanical and natural science. Various periodical works of a cheap nature were also set agoing with a similar design, in such forms as to be intelligible to the less educated classes. In this period began also the *sanitary movement*, or the directing of attention to the means of promoting the public health. Great improvement was likewise effected in prison-discipline, as also in the treatment of the insane, and Industrial Schools were generally established.

The dominion of man over the material world made, during this period, a number of most signal steps of advancement. Even in agriculture, the oldest of all the arts, a marked improvement was made: by means of thorough draining and the application of chemical principles in manuring and tilling, the produce over a great part of the arable surface of the kingdom was at least doubled. Steam-navigation, invented in the previous period, was now brought into full play; ordinary roads were greatly improved by the mode of paving invented by Mr Macadam; an altogether new mode of travelling and transport was invented—namely, by railways and steam-locomotives, and, to crown all, came the invention of the electric telegraph.

The great exhibition of 1851 and its numerous successors here and elsewhere have been eminently useful in stimulating technical education. The extraordinary development of our colonies in Australia, New Zealand, Canada, and the Cape, is one of the signs of the times.

In 1866, after several failures, a submarine telegraph cable was laid between Ireland and America; the importance of this cannot be exaggerated. Since then, many other cables have been laid; there is a line of electric communication right round the world; India, Australia, and the Cape are now directly connected with England. The introduction of a penny and half-penny postage, and the cheapening of telegrams, have increased to an almost incalculable extent the power of communication between both men and nations.

This period has been remarkable for the number of geographical discoveries and the daring of explorers. During the early part of it, numerous efforts were made to find a North-west passage, especially by Sir John Franklin, who perished in the attempt in 1845. The North-west passage has since been more than once discovered, though it cannot be of practical avail. The North-east passage has been made, though not by an Englishman. Our knowledge of Africa has been extended by Livingstone, Grant, Speke, Baker, Cameron, Stanley, and others. One of the best results of African exploration is the extensive suppression of the slave-trade on this great continent, the credit of which must be mainly given to Dr Livingstone, Sir Bartle Frere, Sir Samuel Baker, and Gordon Pasha. Central Australia and other dark places of the earth have been diligently explored. The annual meetings of the British Association for the Advancement of Science, and of the Social Science Congress, have done a great deal for the extension and consolidation of scientific, industrial, and social knowledge.

At no time in British history have literature in all departments, science, and art been so diligently cultivated. Among the chief poets are Tennyson (poet-laureate), Robert and Mrs Browning, Alexander Smith, Rossetti, Morris, Swinburne, Matthew Arnold, and Robert Buchanan. The novel has assumed various shapes in the hands of Dickens, Thackeray, Bulwer Lytton, George Eliot (Miss Evans), Charlotte Bronté, Mrs Oliphant, Anthony Trollope, Charles Kingsley, Charles Lever, Wilkie Collins, Blackmore, Black, and others. Never, probably, did a more brilliant and painstaking class of historians flourish: among the chief names are Grote, Macaulay, Hallam, Kemble, Palgrave, Stanhope, Alison, Thirlwall, Finlay, Milman, Buckle, Burton, Stubbs, Froude, and Freeman. Hamilton, James and John Mill, Bain, Lewes, Spencer, Maurice, Hutchison Stirling, Edward Caird, and Wallace, in philosophy; the younger Mill, M'Culloch, Fawcett, and Cairnes, in political economy; and Chalmers, Maurice, Newman, Pusey, Stanley, Lightfoot, and John Caird, in theology, have maintained the character of Great Britain for subtlety of speculation, thoroughness of research, and influence on the thought of the time. Among essayists, De Quincey, Jeffrey, Hazlitt, Sidney Smith, and Matthew Arnold take a first place. Apart from all other literary men, yet partaking of the character of essayist, historian, philosopher, and prophet, stood Thomas Carlyle, one of the most singular and powerful forces in British literature. John Ruskin has also taken a unique place in the history of English thinking and feeling; and by his brilliant and suggestive writings on art, and on social and political questions, has left his mark on the period. The scientific men of this period are distinguished for the thoroughness of their researches, the number and value of their discoveries, and the originality and boldness of their theories; among the chief are Faraday, Darwin, Carpenter, Owen, Lyell, Murchison, Huxley, Tyndall, Lockyer, and Sir William Thomson. In art, we have such names as Turner, Landseer, Millais, Faed, Holman Hunt, Noel Paton, Rossetti, Burne Jones, Watts, Leighton, and Alma Tadema. Music has also made remarkable progress during the reign of the present queen, and is enjoyed in its higher form by an ever-increasing proportion of the nation.

CONSTITUTION AND RESOURCES OF THE BRITISH EMPIRE.

THE British Empire consists of the United Kingdom of Great Britain and Ireland, some small islands off their coasts, and numerous colonies and possessions in every part of the world; these making it a kingly commonwealth on which 'the sun never sets.' Though Great Britain is not a republic, though it is ruled by a hereditary monarch, and some of its legislators are hereditary also, the central principle of its political system is, that the law in theory and practice is no respecter of persons, and that before it all classes, even those politically privileged, are on an equal footing. This practically insures for the people an amount of personal freedom, untainted by license, equal to that possessed by most democratic republics in the world. Personal freedom—freedom to do anything that is not detrimental or hurtful to one's neighbours, is enjoyed by all classes in Britain, from the highest to the lowest; and in no part of the empire or in any of its dependencies is slavery in any shape or form tolerated. Another cardinal principle of the political system of Britain is, that the only absolute power in the land is the power of public opinion. It is not merely that every British subject has the personal right of private judgment, but that he has the right of giving it free public expression, so long as he does not thereby infringe on the rights of his neighbours. The proved aggregate opinion of the majority of the nation crystallises itself into definitive law, by means of certain constitutional machinery hereafter to be described, and thus the government is carried on, even under a hereditary monarchy and aristocracy, in such a way that the country is practically as free and as much self-governed as any republic, and the people do not regard the commands of constitutional and recognised authority as unbearable and tyrannical restraints. One of the most jealously guarded of the constitutional privileges of all classes of British subjects is this right of forming and expressing their opinions on public affairs, of petitioning for the redress of grievances, or in favour of reforms; and it is only a logical consequence of this that they maintain their 'right of public meeting,' as it is called, for the purpose of forming and giving publicity to their wishes or their suggestions on all questions of practical importance to the commonweal. Hence Britain is a democratic monarchy, a kingly commonwealth, an aristocratic republic, in which the personal freedom of the individual, in respect of thought, speech, or action, is unhampered by pressure of hereditary caste privileges or unjust laws, the practical equality of all subjects before the law strictly maintained, and in which the unrestricted political liberty of a republic is preserved, in combination with the pageantry, the moral order, and concentration of controlling force characteristic of more despotic monarchical forms of government.

Great Britain and Ireland occupy a position as a first-rate power much higher than we should expect, considering the comparatively small amount of the population of the islands themselves. A glance at the statistics of her commerce and revenues, and even a superficial review of the history of Europe for the last two centuries, will lead to the conclusion, that Britain enjoys an influence, prestige, and power beyond that of other nations far more populous, and more highly favoured by nature. This is partly owing to physical, and partly to moral causes. Of the first, one of the most important is its insular position—'the streak of silver sea,' as Mr Gladstone called it, severs Britain from the continent, protecting it from the perils of invasion and aggression, which have done so much to impoverish other European states. Then the temperate climate and natural fertility of the country, and the extent of its mineral wealth, have enabled it to outstrip all competitors in agriculture and manufactures; whilst its extensive sea-board has given to the maritime genius of the people ample scope for development, and secured to its shipping the largest share of the carrying-trade of the world. Of the moral causes, we may say that the Teutonic origin of the British people has had much to do with their aptitude for orderly political and social progress. A passion for regulated freedom, and a reverence for law and justice, are inherent in the race. Their painstaking industry and perseverance developed their own internal resources; and the greater amount of personal freedom, the greater security from political revolutions and convulsions, attracted to the country not only large numbers of foreigners of ability, who were driven into exile by the more tyrannical governments of their own lands, but also drew to Britain the capital necessary for the development of commercial greatness, on account of the greater security the country offered for its employment.

FORM OF GOVERNMENT.

The British government is a constitutional monarchy. Regarding it as a law-making and law-enforcing power, we may divide it into two branches—(1) the *legislative*, consisting of Sovereign, Lords, and Commons; (2) the *executive*, which in theory at least consists of the sovereign alone, though in these days in practice it is vested in a committee of responsible ministers, called a cabinet, which has taken the place of the old Privy-council, or 'the King in Council.' The cabinet is chosen by the sovereign from the chiefs of the most powerful political party in the Houses of Lords and Commons, and its members, as privy-councillors, are sworn to 'advise the king (or queen) according to the best of their cunning and discretion,' and to help and strengthen the execution of what may be resolved. The sovereign, or head of the

executive branch, is sworn to govern in accordance with constitutional form and precedent, and preserve the Protestant religion and the church established by law in England and Scotland.

The legislative branch of the government is called *parliament.* It consists of the Sovereign, the Lords, and the Commons; and their united concurrence is necessary for the repeal of old, or the enactment of new laws. The colonial dependencies are not represented in parliament. The *House of Lords*, or *Peers*, or *Upper House* of parliament, consists of a class of persons who form the peerage, and enjoy certain exclusive hereditary rights and legislative privileges. They are divided into lords temporal and spiritual; the former being laymen, the latter, ecclesiastics, bishops, and archbishops of the state church, who sit in the House of Peers only *ex officio.* The members of the Upper House hold their seats (1) by virtue of hereditary right; (2) by creation of the sovereign; (3) by virtue of office, *e.g.* bishops; (4.) by election for life, *e.g.* Irish peers; (5) by election for the duration of parliament only, *e.g.* Scottish peers. In 1873, the House of Lords consisted of 479 members, of whom 4 were peers of the blood-royal, 2 archbishops, 20 dukes, 19 marquises, 109 earls, 24 viscounts, 24 bishops, 233 barons, 16 Scottish representative peers, and 28 Irish representative peers. There are nine ladies peeresses in their own right, but they take no part in the deliberations of the Upper House, though they are members of the peerage. The number of names on the roll of peers was 393 in 1830, 457 in 1840, 448 in 1850, 458 in 1860, 473 in 1870; so that, with the increase of the democratic power in the nation, we find going on a manifest increase in the aristocratic element of the legislative branch of the government. More than two-thirds of the hereditary peerages were created within the present century. Of existing peerages, the three oldest date from the latter part of the 13th century, four date from the 14th, and seven from the 15th century. Twelve go back to the 16th century, 35 to the 17th, 95 to the 18th, and 239 are of the present century. From 1830 to 1873, 188 peerages were created; 34 being created under the administration of Earl Grey, 39 under that of Lord Melbourne, 11 under that of Sir Robert Peel, 24 under that of Earl Russell, 23 under that of Lord Palmerston, 25 under that of Lord Derby, 4 under that of Mr Disraeli, and 28 under that of Mr Gladstone. In olden times, no peer could take his seat without a special writ from the king. It has long been held, however, that every hereditary peerage entitles the holder of it to sit in the House of Lords, and any one giving proof that he is the lawful heir of one who had been called in these early times to the Upper House by the old royal 'writ of summons,' may claim to sit as a hereditary peer. The creation of a new peerage is the act of the sovereign advised by the prime-minister or head of the cabinet, and is done by the issue of a royal patent, the writ summoning the peer to the Upper House 'ad consulendum et defendendum regem;' but the rights of a peerage are acquired whether the party so summoned ever sits in the House at all. The sovereign may create a life-peer, one, that is, whose heirs have not the succession to peerage rights, but the House of Lords have refused to recognise as valid the 'writ of summons' calling such a peer to the Upper House, and have prevented him taking his seat there. The peers could once vote by proxy, but this privilege was suspended by a standing order of the House on March 31, 1868.

The *House of Commons, or Lower House*, has been composed, since the reign of Henry III. of knights of the shire, or representatives of counties; burgesses, or representatives of boroughs; citizens, or representatives of cities. Though the number of constituencies in England and Wales, when Henry VIII. ascended the throne, was only 147, large additions were made in each reign, up to the time of Charles II. In early times, all members of the Lower House were paid by their constituents. When members introduced the custom of giving their services gratuitously, many constituencies that had been exempted from returning representatives, on the score of poverty, began to resume their franchises, and hence the additions to the House that raised its members up to about 500 in the reign of the Stuarts. When, in the time of Queen Anne, the Union of England and Scotland took place, 45 members from Scotland were added to the 513 members that then formed the House. The Irish Union, in the beginning of the present century, added 100 Irish members; and since that time the number of members has remained at 658, and there is a general feeling against this number being increased; so much so, that even the last Reform Bill left it unaltered. The members of the House of Commons are elected by that portion of the people possessing the electoral qualification. In English counties, previous to the Reform Bill of 1832, an elector required to have freehold property to the annual value of 40s. In boroughs, the qualification varied, according to local usage—freemen and burgesses only being in most cases entitled to vote; and in Scotland the parliamentary franchise was enjoyed only by members of town-councils. The Reform Bill of 1832 increased the English county constituencies from 52 to 82, and the number of members from 94 to 159, but left Scotland and Ireland unaltered as regards county representation. It disfranchised 56 English boroughs, containing a population of less than 2000 each, and returning 111 members; it made 30 boroughs, with a population of less than 4000 each, send only one representative instead of two. Twenty-two new boroughs, containing 25,000 inhabitants and upwards, each received the privilege of having two representatives; and 20 other new boroughs, containing 12,000 inhabitants and upwards, got the privilege of having one representative in parliament. In Scotland, the Reform Bill increased the borough members from 15 to 23, giving her 8 more members than she had received by the Act of Union. The old 40s. freeholders in English counties then existing were not deprived of the franchise, but those acquiring freeholds after 1832 were only to have the franchise when their freehold was of £10 annual value. Copyholders holding an estate of £10 a year, 60 years' leaseholders of property worth £10 a year, leaseholders of £50 with 20 years' leases, tenants at will of property rented at £50 a year, also had the franchise by the Reform Bill of 1832. In English boroughs, the franchise was conferred on the old freemen, and on all occupiers of houses of £10 annual value. In Scotland, the franchise was extended in the same way from

those infeft as crown vassals, in property of the annual value of 40s., to all owners of property worth £10 a year, and to certain leaseholders. In Scotch boroughs, there was also a £10 occupation franchise.

In 1867–68, another Reform Bill was passed, which is at present in force. It extended the freehold franchise in counties in England from property of £10 annual value to property of £5; also the franchise of copyholders and leaseholders from £10 to £5, and the occupation franchise from £50 to £12. As to boroughs, it swept away the old £10 occupation franchise, and established household suffrage pure and simple—giving votes to all occupiers of dwelling-houses paying poor-rates; also to lodgers occupying lodgings of the clear annual value, when unfurnished, of £10 and upwards. The Reform Act of 1868, in Scotland, extended the county franchise to proprietors of lands or houses worth £5 rent; and to occupiers, resident or non-resident, of property of £20 ratable value. In boroughs, it conferred the franchise on occupiers of houses bearing rates, and on lodgers, as in England. In Ireland, the Act of 1868 left the county franchise unchanged; that is, the franchise is enjoyed by certain classes of freeholders; occupiers of land rated for the poor at a net annual value of £12; persons entitled to estates in fee, or in tail, or for life, of ratable yearly value of £5. The borough franchise was, however, given to occupiers of houses rated at £4, and of lodgings of the annual value of £10 unfurnished. The franchise cannot be exercised by peers, or by persons labouring under certain disqualifications, from alienage, infamy, felony, &c. Of university constituencies—in Oxford and Cambridge the electors consist of the doctors of the various faculties, and the masters of arts; in Dublin, the fellows, scholars, and graduates of Trinity College; in London, the graduates; in Scotland, the members of the university councils. In cases where a constituency returns four members, each elector can only cast three votes; and in Glasgow, which returns three members, each elector has only two votes. The number of electors on the register, in May 1882, was 3,134,801—viz.: 2,591,402 in England and Wales, 315,121 in Scotland, 228,278 in Ireland. The number of county electors was 948,258 in England and Wales, 98,444 in Scotland, 166,294 in Ireland—total, 1,212,996. The number of borough voters was 1,629,373 in England and Wales, 204,365 in Scotland, and 57,981 in Ireland. The numbers in each constituency vary, from the county of Middlesex with its 34,982 voters, to the borough of Portarlington with its 141.

In 1872, as a check to illegitimate influences, the Ballot Act was passed, which was to continue in force till 31st December 1880, and which has since been continued from year to year. It provides that every elector shall vote for his representative in secret. Each elector is furnished with a ballot-paper, on which there are printed the candidates' names, with a number printed on the back, and a counterfoil attached having the same number. It provides that 'at the time of voting, the ballot-paper shall be marked on both sides with an official mark, and delivered to the voter within the polling-place; and the number of such voter on the register of voters shall be marked on the counterfoil; and the voter having secretly marked his vote on the paper, and having folded it up so as to conceal his vote, shall place it in a closed box in the presence of the officer presiding at the polling-station, after having shewn him the official mark at the back.' Any marks made on the ballot-paper tending to identify the voter, will render it invalid. The only personal qualifications required by a member of parliament are, that he be a native of the United Kingdom, and be twenty-one years of age. Commissioned officers in those departments of the civil service charged with the administration of the revenue, judges, priests and deacons of the Church of England and the Roman Catholic Church, government contractors, sheriffs or returning-officers, Scottish or English peers, aliens, persons convicted of treason or felony, naturalised foreigners (save when the privilege is specially conceded by act of parliament), are all disqualified from serving as members of the House of Commons. Irish peers are eligible. If any member accept an office of profit from the crown, by Act 6 Anne, his election is void; but he is eligible for re-election if the office he has accepted be not a new one created since 1705. No member can resign of his own accord; so, when a member wishes to vacate his seat, he accepts the stewardship of the Chiltern Hundreds, a nominal office in the gift of the Chancellor of the Exchequer, and thus ceases to be a member.

The House of Commons consists of 658 members, returned as follows:

England and Wales—	Members.
52 Counties and Isle of Wight	187
200 Cities and Boroughs	301
3 Universities	5
Total of England	493
Scotland—	
33 Counties	32
22 Cities and Groups of Boroughs	26
4 Universities	2
Total of Scotland	60
Ireland—	
32 Counties	64
33 Cities and Boroughs	39
1 University	2
Total of Ireland	105

In England and Wales, in 1883, the proportion of representation to population in the counties was one member to 5170 of the electors, and 73,260 of county population. In boroughs the average was one to 5,500 electors, and 42,000 inhabitants. The representation of the various constituencies is still very unequal.

There can be little doubt that the existing proportions in which the representation is shared by the three kingdoms, are far from fair—at least as regards Scotland. If population is taken as the basis of representation, England should have 476 members instead of 493, as at present; Scotland 70 instead of 60; and Ireland 112 instead of 105. If the respective contributions to revenue were made the basis of representation, then England should have 514 members, Scotland 79, and Ireland 65. If both considerations are allowed to influence equally the distribution of representation between the three countries, then, taking the mean

of the two sets of figures referring to population and revenue, we should have for England 494 members, for Scotland 75, for Ireland 89.

Functions of Parliament.—Sir Edward Coke says 'the power and jurisdiction of parliament is so transcendent and absolute, that it cannot be confined, either for causes or persons, within any bounds.' The sovereign is the head of parliament, and can alone summon, prorogue, or dissolve it. No parliament, save on the death of the sovereign, can assemble of its own accord. The legal limit to the duration of a parliament is seven years. Parliament is assembled by summons of the sovereign issued through the Lord Chancellor, at least thirty-five days previous to its assembling. In the reign of William and Mary, it was enacted that parliament must be summoned once in three years at least; but now, as the vote of supply for the army and the budget is only granted to the executive for a single year, parliament must be summoned annually, and of late this has always been done. Every session ends with the prorogation of parliament by the sovereign personally, or through royal commissioners, or by proclamation; and this quashes all bills not carried through, and all pending parliamentary proceedings, save impeachments and appeals and writs of error in the Lords. Should the term of prorogation elapse, and no summons to meet be issued by the sovereign, parliament cannot assemble of its own accord, and the summons must be issued six days before the time of meeting. Adjournment of parliament is merely the continuance of the session from one day to another, whereas dissolution is the civil death of parliament.

Both Houses of Parliament have high privileges for maintaining their authority and protecting their members. The Speaker or president of the House of Commons claims the privilege of free speech from the sovereign at the opening of a new parliament for members of the Lower House; but a member may be severely punished for contempt by the Speaker, if he abuse this privilege. Courts of law cannot inquire into or review cases of persons committed to prison for breach of the privileges of parliament, and even yet the publication of the debates of the House is a breach of privilege, though of late the privilege has been waived, save where the reports were maliciously perverted. Members of both Houses are, whilst parliament is sitting, free from arrest or imprisonment in civil matters; so are peeresses by creation, in their own right or by marriage. Parliamentary witnesses are also free from arrest. Persons not members or officials of the House have no right to be present at its debates. The two Houses with the sovereign pass laws, impose taxes, superintend the administration of public affairs, and though they cannot direct or control the conduct of the *executive*, they can watch and criticise it; and the Lower House, if it finds its remonstrances unheeded, can always force the executive to listen to its demands, by exercising its privilege of withholding the supplies, and refusing to vote the Mutiny Act, or act legalising the standing army—and thus bring the whole machinery of government to a dead-lock, till its demands are conceded. Indeed, what gives the Lower House preponderating influence is, that all bills relating to money for the public service must originate with the Commons, the Lords merely being able to give their formal assent, and not having power to alter or modify them. No act of the two Houses becomes valid till it is ratified by the sovereign. In the Lower House, the president is called the Speaker because he is the medium of communication between the House and the sovereign, and ranks as first commoner in Great Britain. In the Lords, the president is the Lord Chancellor, or premier judge of England. The Speaker is elected by the House; the Chancellor presides in the Lords *ex officio*. All proposals must come before either House in the form of a *bill*—this being the title given to an act of parliament when it is under discussion. Permission must first be got to introduce it. Then it is read and considered twice by the House. If it pass the second reading, it is considered the House is committed to the principle of the bill, and it is then scrutinised in detail by the whole House sitting as a committee, in which each member may speak as often as he likes, whereas in regular sittings he can only speak once—except to explain wherein any of his first statements have been misrepresented or misunderstood. Having passed through committee, the bill is then read for the third time; and if it has originated in the Commons, when it passes the third reading, it is sent to the Lords, where it goes through precisely similar stages of discussion and consideration. If it passes the Lords, it is sent to the sovereign for ratification, and then, when ratified by royal assent, it becomes a law of the land. Should either House make alterations on the bills passed by the other, they must be reported to the House wherein the bill originated. If the two cannot agree to the modification suggested, or if they cannot arrive at a compromise which satisfies both parties, the bill falls to the ground. The royal assent is never refused in modern times. No cabinet would hold office unless with the assurance of getting the assent of the crown to any bills they passed, and as the sovereign cannot reign without a ministry, and a ministry cannot exist without the support of parliament and of the Commons, who hold the supplies under control, the royal veto is never exercised. Votes by proxy are not allowed in the Commons.

Until 1873, the Upper House exercised judicial functions as a supreme court of tribunal, its law members forming a judicial committee, that gave final decisions in all appeals from judgments given in all inferior courts of law in the three kingdoms. The appellate jurisdiction of the House of Lords was finally reconstituted in 1867, and transferred to a professional tribunal, consisting of the Lord Chancellor and the Lords of Appeal in Ordinary. (There is no appeal in criminal cases from the Scottish Court of Justiciary.) The Lords try offenders impeached by the House of Commons. Questions concerning the privileges or rights of either House must be settled in that House, and nowhere else—*e.g.*, the Commons decide finally as to the validity of the election of a member of the Lower House. The speaker of the House of Commons does not vote or speak. In case of equality, however, he gives the casting vote. In the Lords, the Speaker or Chancellor votes and takes part in debates, but has no casting vote; and if there be an equality, the 'non-contents' or 'noes' are held to prevail over the 'contents' or 'ayes.'

The executive is nominally vested in the crown, really in the sovereign and responsible ministers of state, who form the Cabinet, and who are placed at the head of the great departments of the public service. The sovereign's share in the legislature consists in dissolving, proroguing, or summoning parliament, or giving assent to bills, and, as head of the executive, with managing the revenue. The sovereign's prerogative includes sending or receiving ambassadors, declaring war or peace, and entering into treaties with foreign powers. The crown is hereditary in the House of Brunswick; but should the sovereign become a papist, or join the Roman Catholic Church, the people are absolved by the 'Act of Settlement' from all allegiance. The sovereign is the fountain of honour, justice, and mercy. In legal parlance, he never dies. He is head of the Established Church, and generalissimo of the army and navy; but he cannot raise an army without consent of parliament, nor can it be maintained unless that consent be renewed, as it is from year to year. A maxim of the constitution is, that the king can do no wrong. The ministers forming the Cabinet are responsible for the actions and policy of the executive, and are intrusted with the duty of watching over the interests of the crown in the Houses of Parliament, and answering for and defending the acts of the government there. The chief of the ministry or Cabinet is the First Lord of the Treasury; it is at his recommendation the other great ministers of state are appointed; indeed, all the crown patronage is dispensed in accordance with his advice. His nominal duty is receiving and issuing public moneys. Next comes the Lord Chancellor, who presides in the highest law-courts in the country, and is Speaker of the House of Lords; then the Secretary of State for Home Affairs; the Secretaries for Foreign Affairs, Colonies, and War; the Chancellor of the Exchequer, or finance minister; First Lord of the Admiralty; Secretary for India; Lord President of the Privy Council; and Lord Privy Seal, are almost always in the cabinet. Some three or four of the following may have seats in the cabinet also, viz.: the Chief Commissioner of Works, Chancellor of the Duchy of Lancaster, President of the Board of Trade, President of the Local Government Board, Vice-president of the Privy-council, Postmaster-general, Chief Secretary for Ireland. Sometimes a statesman may have a seat in the Cabinet without undertaking any office. The Cabinet exists only as long as it can command the confidence of parliament, or work harmoniously with the crown. It is not recognised by the law—no record is kept of its proceedings—the names of those who compose it are never officially announced. Besides this, there is the Privy-council, consisting of men of proved eminence as politicians, or men of high rank and character. Indeed the Cabinet is an outgrowth of the Privy-council, and may be regarded as having been originally a select executive committee of that body, chosen as being more workable because less unwieldy. Gradually it became wedged into the parliamentary system, and moulded into its present form, the great distinction between Cabinet and Privy-council being that it is not necessary for members of the latter body, as it is for members of the former, to have seats in parliament. The Privy-council take no share in the government, save when summoned by the sovereign to give advice, in which case they are responsible for the consequences of it—it being a maxim of the constitution, that the king can never act alone without advice; which leads to the other maxim, the king can do no wrong.

JUDICIAL ADMINISTRATION.

The superior courts of common law, for the trial of civil cases, are the Court of King's (or, as at present, Queen's) Bench; the Court of Common Pleas; the Court of Exchequer, designed at first only to decide in cases concerning the revenue; and the Court of Chancery, presided over by the Lord Chancellor, which administers the law of equity. Courts under these designations sit both in Westminster and in Dublin. By the Supreme Court Judicature Act of August 5, 1873, modified or extended by additional acts in 1875, 1876, 1877, and 1879, the distinctions between common law and equity were abolished, and these superior courts, along with the High Court of Admiralty, Probate, and Divorce, and London Court of Bankruptcy, united in 'The Supreme Court of Judicature of England,' consisting of two divisions: (1) Her Majesty's High Court of Justice is to have original jurisdiction in all causes of action as regards common law and equity, and appellate jurisdiction from certain inferior courts. Since 1881 there are but three divisions—Chancery; Queen's Bench; Probate, Divorce, and Admiralty. Those of Common Pleas and of Exchequer have ceased to be separate divisions; and the titles of Lord Chief-justice of Common Pleas and Lord Chief-baron of Exchequer are abolished. (2) Her Majesty's Court of Appeal, which has appellate jurisdiction only in all causes from all quarters, and to which the old appellate jurisdiction of the House of Lords (except as regards Scotch causes) is transferred. In the former the title is 'Judge of Her Majesty's High Court of Justice;' but the titles, Lord Chief-justice of England, Master of the Rolls, are continued. The Court of Appeal consists of four *ex officio* judges, and as many others as the crown appoints, not exceeding nine. The *ex officio* judges are the Lord Chancellor, Lord Chief-justice of England, Master of the Rolls, and the President of the Probate, Divorce, and Admiralty Division. 'Additional judges,' unsalaried, may be appointed from the supreme courts of India and Scotland, or from the superior courts of Westminster—their titles being Lords-justices of Appeal.

The superior criminal courts are the House of Lords—in the cases of *impeachment*, and of the trial of peers for certain crimes—and the Court of Queen's Bench. The Central Criminal Court is devoted almost exclusively to the trial of crimes committed in the metropolis and surrounding districts. There are also courts of assize, which, in England, perform six provincial circuits, in some instances once, and in others twice a year. These courts exercise criminal jurisdiction, and at the same time try issues of fact in civil causes. Minor cases, criminal as well as civil, are judged by bodies of provincial magistracy, termed Justices of the Peace, who meet in session in every county once every quarter of a year. But in certain cases, individual justices act as judges, although not sitting in

session. There are also magistrates of police. In civil causes, the county courts—a modern institution—have, in England, jurisdiction where the debt in dispute does not exceed £50 in amount. For matters of bankruptcy and insolvency, there are courts both in London and Dublin, and in the provinces in England. Besides the civil and criminal courts, there are ecclesiastical courts which have jurisdiction in matters of church-discipline. Until lately, the ecclesiastical courts had jurisdiction in cases connected with marriage, wills, &c., and the courts of Admiralty superintended maritime causes, and questions between persons of different nations; but such cases now go before the Exchequer division, and the Probate, Divorce, and Admiralty division of the new 'High Court of Justice.' The Prosecution of Offences Act, 1879, sanctioned for the first time the appointment of a public prosecutor in England.

Guernsey, Jersey, Alderney, the Isle of Man, and other small islands in the British Channel, which politically belong to the United Kingdom, possess a variety of peculiar privileges and legal usages.

In Scotland, laws peculiar to itself, founded upon the principles of the Roman and the feudal law, are administered by a supreme civil tribunal, denominated the Court of Session, which remains fixed at Edinburgh, and by a criminal tribunal, named the Court of Justiciary, which not only sits in the same city, but makes circuits through the provinces. The sheriff or county courts exercise a very extensive jurisdiction in civil matters—it being almost unlimited, unless where the matter at issue involves a question of ownership of land, houses, or other heritage, or relates to the constitution of a marriage, or to divorce. The sheriffs are also criminal judges in cases not sufficiently important to come before the supreme court. Minor civil and criminal cases are also judged in Scotland by the justices of the peace, and by the magistrates of the boroughs. Scotland possesses the advantage of public prosecution of offences, the injured party being only a complainer to the public prosecutor. The chief public prosecutor is the Lord Advocate; the inferior public prosecutors, in connection with the various minor courts, are termed Procurators-fiscal. The whole expense of prosecution is defrayed by the national exchequer.

The peculiar boast of the criminal law of the British Empire is the *jury*. In England and Ireland, where the principle of the criminal law requires the injured party or his representative to prosecute, he can only do so by permission of a jury of accusation, called the grand jury; another jury sits for the purpose of deciding if the evidence against the accused has established the guilt. Juries of the latter kind consist, in England and Ireland, of twelve men, whose verdict must be unanimous; in Scotland, the jury upon the charge consists of fifteen men, who decide by a majority of votes. The jury is an institution of Teutonic origin, transmitted to Britain through the Saxons; and it is justly considered as a most efficient protection of the subject from the vindictiveness of power. Civil cases, turning upon matters of fact, are likewise decided in all parts of the United Kingdom by juries consisting of twelve men. Unanimity in the verdict is required in these civil cases, as well in Scotland as in England and Ireland, with this difference in Scotland, that, after the jury have been kept six hours in deliberation, the verdict of nine is sufficient.

CHURCH.

In Great Britain, the Protestant religion is established by law. But there is the broadest toleration of all creeds not offensive to public or private morals. Non-established churches are allowed to manage their own affairs as they please under protection of the law, though they have no subsidies or patronage conceded them by the state. In England, the Protestant Episcopal, in Scotland the Presbyterian churches are established by law. In Ireland, there is now no established church, the Protestant Episcopal Church, which was united to the Church of England, having been disestablished on and after 1st January 1871. The sovereign is supreme head and governor of the established churches in England and Scotland; and in the case of old sees, nominates the archbishops and bishops, the form being, to send to the dean and chapter of the vacant see the royal license to elect the crown nominee, and afterwards to confirm the appointment under the Great Seal. The bishoprics of Gloucester and Bristol, Chester, Peterborough, Oxford, Ripon, and Manchester are conferred by direct letters-patent from the crown.

In the colonies, no one church, as a rule, is favoured by the state more than another. The crown may appoint colonial bishops, but it can give them no jurisdiction, and it is only under special acts of parliament that the bishops in India have any jurisdiction at all. The Church of England can take no step out of the ordinary routine save by act of parliament. Laymen, save through parliament, cannot interfere with the doctrines or practice of the church—which doctrines, as defined by the 39 Articles and Book of Common Prayer, are, as regards disputes as to interpretation, liable to be adjudicated on by the Judicial Committee of the Privy-council, as a tribunal of final appeal. Each bishop has a diocese—the two archbishops of York and Canterbury have provinces, and the latter is 'Primate of all England and Metropolitan.' Other ranks in the hierarchy of the Anglican church are archdeacons, deans, and prebendaries, rectors, vicars, curates—though, strictly speaking, there are only three orders of clergy—bishops, priests, and deacons. The provinces of York and Canterbury have each a convocation of bishops, archdeacons, and deans, of proctors representing the inferior clergy, which assemblies are summoned by the archbishops in accordance with a royal mandate. They must have the sanction of the sovereign before their resolutions are binding. In England there are 12,000 parishes and 200 extra parochial places, and in every parish there is a parish church, ministered unto by the rector, who holds the living. He is sometimes called the parson—or *persona ecclesiæ*—that is, the jural person who holds the rights that inhere in a parish church. He has for life a freehold of parsonage, glebe, tithes, and other dues, which dues may be 'appropriated' in cases where the 'living' is spiritually annexed to some corporation which is patron of the benefice. In such cases, the minister appointed by the corporation

is not a rector, but a vicar, whose functions are the same as those of a rector in a 'non-appropriated' benefice. Patronage of livings, or *advowson*, is a species of real property, and it is *appendant*, as when it is a manorial possession and right, passing by grant of the manor only, without any other authority; or it is an *advowson in gross*, as when it has been severed from the property of the manor, and ceased to be an advowson appendant. An advowson may be bought like any other property; but if an alien purchases, the crown has to exercise the right of presentation to the living; if a Roman Catholic, the right is exercised by either Oxford or Cambridge alternately. In 1835, the right of corporate towns to present was abolished. Besides the Queen, Lord Chancellor, Prince of Wales, higher clergy, the chapters and universities, there are about 3850 lords, gentlemen, and ladies who hold advowsons. There are two archbishops, 30 bishops, with incomes ranging from £15,000 a year, the emoluments of the archbishop of Canterbury, to £2000, the income of the bishop of Sodor and Man. There are 30 deans, with salaries of from £3000 to £700. As assistants to the bishops, there are 82 archdeacons, who hold other preferments, their archdiaconal salaries being small. Under them are 613 rural deans, or unpaid supervisors of local clergy. The total number of clergy of all classes is about 23,000. It is difficult to fix what the total revenue of the church from all sources is—a probable estimate is about £8,000,000 a year. There are about 13,271 benefices, of which 1217 are under the value of £100 a year (many being under £50); 3231 range from £100 to £200; 6407 from £200 to £500; 1902 from £500 upwards; and there are 494, the incomes of which are not given in the *Clergy List*. A large part of the church property is managed by the Ecclesiastical Commissioners, who pay fixed salaries to the prelates.

The official census does not collect church statistics. However, the approximate membership of the Established Church of England and other denominations may be taken as 13,500,000, leaving about 12,500,000 to the nonconformist denominations. Next to the Church of England, the Roman Catholic Church is the most powerful, their numbers in Great Britain being about 2,000,000, and in Ireland 3,960,891. Of the Protestant Dissenters, the most prominent are the so-called Methodists or Wesleyans—including 'the Old and New Connection,' 'Primitive and Free Church Methodists,' 'Bible Christians'—and they may possess about 9000 places of worship, and about 3,500,000 adherents. In Wales, where Calvinistic Methodists form the dominant church, this denomination has 250,365 adherents. The Congregationalists or Independents have 3500 places of worship, and about 1,250,000 adherents in the British dominions. The Baptists have in England and Wales 2000 ministers, 241,764 members, and 325,691 scholars. Of the minor religious bodies, the Unitarians have 355 ministers, 352 chapels, and about 80 mission stations. The Quakers have about 17,000 members. The Moravians have 5550 members, and 6200 scholars. The Catholic Apostolic Churches (Irvingites) have 19 churches. The New Jerusalem Church (Swedenborgians) have 58 societies, with 4207 registered members. The Mormons have 82 churches. The Jews, 50,000 members, and 100 ministers and readers. In 1873, the entire number of sects with registered places of public worship was 131, the number of their places of worship being 19,483; in 1882, 186 and 21,864 respectively.

In Scotland, the Presbyterian Church is established. Its standard of doctrines is the Westminster Confession of Faith. It is a pure democracy—all members being of equal rank and power in the body politic of the church—except when elected to presiding offices, the tenure of which, however, is usually temporary. The church is governed by three inferior church courts, and one supreme ecclesiastical court, in which laity as well as clergy are fairly represented, and have equal deliberative and executive power. In every parish there is the Kirk Session—composed of the parish minister, who is chairman, or 'moderator'—and a variable number of 'elders,' who may be laymen or non-beneficed clergymen, but are usually laymen. They are elected by the male communicants of the church. The session superintends the affairs of the visitation of the sick and poor connected with the church, and keeps up the discipline of the church and parish, interfering in glaring scandals, and inflicting church penalties on offenders. Findings of the session may be appealed against to the court immediately above, called the Presbytery, consisting of the parish ministers and representative lay elders from kirk sessions in the district under jurisdiction of the presbytery. The functions of a presbytery, as regards church government, are not unlike those of a bishop. The next court of appeal from the presbytery is the Synod, composed of a collection of presbyteries in a particular ecclesiastical province; and over the synod there is the supreme church authority in Scotland, the General Assembly, composed of clerical and lay representatives from the various presbyteries, whose authority extends to all questions interesting the church; whose decisions in matters of doctrine, morals, discipline, &c. in everything, in fact, that does not affect civil rights, are not subject to review even by the Queen in council. It is presided over by a moderator, invariably a clergyman; and the civil head of the church—the Sovereign—is represented at its meetings by a Lord High Commissioner. The church is divided into 16 synods and 84 presbyteries. There are 1300 ministers, 1250 churches, and 1800 of what, prior to the Education Act, were known as parish or Established Church schools, with 140,000 scholars. The membership of the church is usually estimated at about half the population of Scotland.

Of nonconformist bodies in Scotland, the Free Church is the most important. Except in two questions of church polity, it differs in no material respect from the Established Church. It consists of 16 synods and 73 presbyteries, ruled by a General Assembly. It has 1084 ministers, 1055 congregations; it pays an equal dividend annually, from a voluntarily subscribed Sustentation Fund, of £160 to each minister; and for the various purposes of the Church it raised, in 1882, £607,680. The United Presbyterian body, between which and the Free Church there exists a treaty of mutual eligibility as regards membership, has 31 presbyteries, 551 churches, 587 ministers, and probably about 174,000 members in Scotland and Ireland, who raise £383,730 for church purposes. The Presbyterian Church has offshoots

in England and Ireland. The Church of Scotland in England has 4 presbyteries, 20 churches, 20 ministers, and 10 military chaplains. The Presbyterian Church of England (comprising a former branch of the Scottish United Presbyterian Church) has 10 presbyteries, 275 churches, 130 ministers, 56,000 members, and 22,000 scholars. In Scotland, the Episcopal Church is in the position of a dissenting body; it has 255 clergymen, and about 75,000 members.

In Ireland, the Established Protestant Church in union with the Church of England, was disestablished and disendowed by act of parliament, 32 and 33 Vict. cap. 42, on January 1, 1871. The Irish Roman Catholic Church numbers 3,951,888 members and adherents; the Protestant Episcopal Church of Ireland, 635,670 adherents; the Irish Presbyterians are in number 485,503; Methodists, 47,669; Independents, 6014; Baptists, 4894; Quakers, 3696; Jews, 453; other persuasions, 19,035. The Roman Catholic Church is under 4 archbishops—Armagh, Cashel, Dublin, and Tuam—and 23 bishops. On the death of the bishop, the clergy of the diocese elect a vicar capitular, who acts as interim bishop; they nominate a person for the office, and postulate or petition the pope to ratify their choice. The bishops of the province also nominate eligible persons to the pope, but the candidate is chosen virtually by the cardinals constituting the Congregation *De Propaganda Fide* at Rome, whose nomination is always ratified by the pope. The emoluments of a bishop come from his own parish, usually the best in the diocese, from marriage licenses, and from the cathedraticum, an annual sum of from £2 to £10 paid by the parish priests, according to the value of their parishes, to keep up episcopal dignity. Parish priests are nominated by the bishops, and are paid by voluntary offerings, mass, baptismal and marriage fees, and Easter and Christmas dues.

EDUCATION.

In spite of the progress made in education since the passing of the Reform Bill of 1832, the ignorance of the masses in England is still deplorable. From a return issued, we find nearly 20 per cent. of the males, and more than 27 per cent. of the females who were married in England and Wales in the year ending September 1872, unable to write their names in the register. This shews improvement, however, since 1841, when the proportions of persons in that ignorant condition were—males, 33 per cent.; females, 49 per cent. The figures also shew the percentage of ignorance greatest in the mining, manufacturing, and agricultural districts, and less in the latter than in the former. In Ireland, the Registrar-general reports in 1872 that 36 per cent. of the men, and 46 per cent. of the women married in 1869, were unable to write their names. In fact, England had, and hardly has still, any definite national system of primary education. The various religious bodies, and private munificence and enterprise, were relied on to supply the country with primary schools. Since 1833, but chiefly since 1846, the government stepped in, but only as an auxiliary or a stimulant to the working of the various agencies carrying on the elementary instruction of the people, and parliament voted an annual grant for educational purposes, the disposal of which was vested in the Committee of the Privy-council for Education. The Committee never took the initiative in promoting education. It only gave grants to those that did, no matter who they were, or what sect they belonged to, provided always that they could shew they were working out satisfactory results, as tested by government inspectors. These grants in aid were (1) for building; (2) for maintaining schools; (3) capitation grants to the teachers of so much per head for each scholar whose proficiency satisfied the school inspectors. In 1870, a step was made towards establishing a national system of primary education, by the passing of Mr Forster's Act (33 Vict. c. 75), which enacted that there should be provided for each school-district a sufficient number of public elementary schools, available for all children residing in that district, for whose elementary education suitable provision is not otherwise (that is, by denominational or adventure schools) made. If new schools are erected to meet the requirements of the district, a thing to be determined by the ratepayers (who signify their desire for increased school accommodation by electing a school-board, under whose management these new public primary schools are placed), the Act provides that all children attending these new public schools, whose parents are unable from poverty to pay for the instruction given, shall be admitted free, and their school-fees paid from local rates. The general expenses connected with managing these schools also must come off local rates. The school-boards have the option of enacting the compulsory education of children between the ages of 5 and 13, of either remitting the fees of indigent children attending the board schools, or, if the parents desire the children to attend denominational schools, of paying their fees for their attendance there—a provision which is made by the 25th clause, and has raised a storm of discontent on the part of the advocates of unsectarian education—or of erecting and opening free schools for the special benefit of indigent children, and supporting them out of the rates. The ratepayers may or may not elect a school-board; that is, they may, if they please, render the Act a dead-letter, and stick to the old haphazard voluntary system; indeed, as a matter of fact, though school-boards have been formed in all the large towns, where they were least needed, comparatively few have been established in the small towns and rural districts, where the influence of the landlords and Established Church is most powerful, and where primary schools were most urgently wanted. The Act is a compromise, in fact, the central ideas of which are two—permissive compulsion and permissive sectarianism. Where its machinery is not adopted, the old system of voluntary schools, with government grants in aid, still prevails.

Scotland has had since 1696 a legalised system of national elementary education. By law, each parish was provided with a primary school at the expense of the landowners or heritors, who had to maintain it, and provide the teacher with certain emoluments, though he was also allowed to charge a small fee for each pupil. These schools were under the management practically of the ministers and presbyteries of the Established Church.

The country outgrew its parochial system of elementary education, and supplementing it there arose large numbers of voluntary, denominational, and private adventure schools, receiving grants in aid from the Privy-council, on the same conditions as primary schools in England. In 1872, the Education (Scotland) Act remodelled the whole system. It swept away clerical ascendency in the parish schools, and in the denominational schools, by making provision for these being transferred to the management of school-boards elected by the ratepayers. It enacted compulsory education for children between the ages of 5 and 13, and enforced the election of a school-board in each parish by the ratepayers, charged with the duty of levying a local rate in support of the public schools and their teachers, of prosecuting and punishing parents who neglected to send their children to school, and with the payment of the expense of educating indigent children whose parents were unable to pay for their instruction. No religious teaching is permitted except after or before the ordinary time laid down for secular instruction, and then its kind and quantity are determined by the school-board. It also set apart 11 borough schools—Aberdeen, Ayr, Dumfries, Edinburgh, Elgin, Glasgow, Haddington, Montrose, Paisley, Perth, and Stirling—to be 'managed by the school-boards accordingly, with a view to promote the higher education of the country.' The teachers are to be paid, appointed, and dismissed at the discretion of the boards, and are to be selected only from men who hold certificates of competence from the Scottish Education Department. Parliamentary grants in aid as formerly are to be continued to boards or national schools that fulfil the required conditions.

Ireland has long had a system of national primary education, only the people do not sufficiently avail themselves of it. The main feature of it is an arrangement by which children of different sects are taught religion at separate times by their respective pastors, the expenses being borne by the government. The schools are under the superintendence of a mixed national board, composed of both Catholics and Protestants; but as in the case of the Scottish Education Board (which lasted for seven years only), it is subject in turn to the central authority of the Privy-council's Committee on Education.

As to higher education, there are in England the universities of Oxford, Cambridge, and Durham; the various colleges affiliated to the university of London; the higher classical schools of Eton, Rugby, Winchester, Harrow, Cheltenham, Marlborough, Merchant Taylors', City of London, Charter-House, Salisbury. In Scotland are the universities of Edinburgh, Glasgow, Aberdeen, and St Andrews, where education is given in a more liberal and less expensive way than in Oxford and Cambridge, and a college at Dundee. In Ireland are Trinity College, Dublin; the Roman Catholic College, Maynooth; and the Royal (formerly Queen's) University, with colleges in Cork, Belfast, and Galway. These latter colleges are purely secular (giving no religious or theological instruction), and are endowed by the state.

The progress of primary education in Great Britain in the years 1864–81 is well shewn in the following tables:

ENGLAND AND WALES, AND ISLE OF MAN, INCLUSIVE OF ROMAN CATHOLIC SCHOOLS IN GREAT BRITAIN.

Years ended 31st August.	Number of Schools inspected.	Number of Children who can be accommodated.	Average number in Attendance.
1864	6,470	1,332,553	862,817
1865	6,867	1,470,473	901,750
1866	7,134	1,510,721	919,922
1867	7,601	1,605,409	978,332
1868	8,051	1,724,569	1,060,082
1869	8,592	1,838,416	1,153,572
1870	8,986	1,950,641	1,255,083
1871	9,521	2,092,984	1,345,802
1881	18,062	4,389,633	2,863,535

SCOTLAND, EXCLUSIVE OF ROMAN CATHOLIC SCHOOLS.

Years ended 31st August.	Number of Schools inspected.	Number of Children who can be accommodated.	Average number of Children in Attendance.
1864	1421	188,904	148,317
1865	1573	207,335	155,995
1866	1619	213,487	162,133
1867	1739	231,898	169,131
1868	1843	246,041	181,698
1869	1745	237,928	179,214
1870	1963	264,594	198,448
1871	1944	264,041	201,392
1881	3074	612,483	409,966

TOTAL FOR GREAT BRITAIN, WITH EXPENDITURE, &C.

Years ended 31st August.	Number of Schools Inspected.	Number of Children who can be accommodated.	Average number of Children in Attendance.	Number present at Inspection.	Expenditure.
1864	7891	1,521,457	1,011,134	1,133,291	£655,036
1865	8438	1,677,808	1,057,745	1,246,055	636,806
1866	8753	1,724,208	1,082,055	1,287,604	649,097
1867	9340	1,837,307	1,147,463	1,394,100	682,201
1868	8894	1,970,610	1,241,780	1,527,655	797,495
1869	10,337	2,076,344	1,332,786	1,639,502	820,755
1870	10,949	2,215,235	1,453,531	1,780,528	912,451
1871	11,465	2,357,025	1,547,195	1,866,006	1,938,624
1881	21,136	5,002,116	3,273,501	3,848,011	6,152,216

From 1839 to 1872, parliament has expended £13,874,487 in Great Britain on primary education. On schools in England connected with the Church of England, there were expended £8,098,788; on British and Foreign Society schools, £1,327,305; on Wesleyan schools, £656,952; on Roman Catholic schools, £538,901; on workhouse schools, £78,323; on inspection and administration,

£1,445,625. As to the results, the following table shews the percentage of children who presented themselves for examination under the various standards from Nos. 1 to 6, fixed by the Education Code in 1871–72 :

	Percentage of Children examined in Standards						Totals.
	1.	2.	3.	4.	5.	6.	
England and Wales :							
Day-schools	64·11	64·54	52·78	56·07	56·99	48·4	60·74
Night-schools	64·41	65·43	62·52	63·2	61·58	65·35	64·07
Scotland :							
Day-schools	87·66	86·95	80·05	68·01	74·56	74·3	81·58
Night-schools	82·9	90·0	84·21	75·0	70·0	69·79	82·15

The percentage of children presented for examination in 1871–72, as given in the foregoing, who failed to wield efficiently the 'knife, fork, and spoon' of education—*i.e.* who failed to pass in reading, writing, and arithmetic—was as follows :

England and Wales.	Day-Schools.	Night-Schools.	Scotland.	Day-Schools.	Night-Schools.
Reading	11·33	8·59	Reading	1·79	·18
Writing	17·68	17·81	Writing	8·16	11·02
Arithmetic	27·79	24·32	Arithmetic	12·3	9·57

The inferences we draw from the above are, (1) that the proficiency of a lamentably large number of scholars is never tested ; (2) that too few attain proficiency enough to come up to the higher Standards 4 to 6 ; (3) that either the teaching must be better, or the pupils cleverer in Scotland than in England ; (4) that the results obtained from the night-schools are more satisfactory than those from the day-schools. It must, however, be remembered that in England the examinations in day-schools were held under the Code of 1871, whilst those in night-schools were held under the Code of 1870 up to the end of February 1871, and thereafter under the Code of 1871 ; but in Scotland the inspections and examinations were all under the Revised Code. The total parliamentary grants for primary schools in Great Britain amounted to £3,102,079 in 1881–82, an increase of about £124,000 on the previous year.

As regards Ireland, the money spent by the Commissioners of National Education in 1881 was £729,868. At the close of 1882, the number of schools was 7648, shewing an increase on the previous year of 58 schools. There were 1,066,259 children enrolled, but the average daily attendance was only 674,290, indicating a decrease of those on the rolls of 16,761, and an increase of 205,733 in daily attendance, as compared with the previous year. The state of education in Ireland is, however, by no means satisfactory as yet. In Ireland, government increases the number of schools, but the people do not seem to care much about taking advantage of them. In some years, notwithstanding, two or three hundred applications have been made for grants in aid to new schools. Of the total number of schools, we find 2620 in Ulster, 1170 in Munster, 1534 in Leinster, 1126 in Connaught, or 6914 in operation at the close of 1871. Of the children on the school-rolls in 1872, 79·98 per cent. were Roman Catholics ; 11·19 per cent. were Presbyterians ; 8·04 per cent. were Protestant Episcopalians, and 0·79 per cent. were of other persuasions.

There is no proper system of national *technical* education in Britain ; but the Science and Art Department, by grants in aid to schools, and capitation grants to teachers who bring their pupils up to a certain standard of proficiency, do a great deal to supplement the want of such a system. Schools of art and design, and mechanics' institutes, and various adventure schools of the kind, have their teachers licensed by the department, subject their students to its examinations, and get its grants in aid. In 1872–73, the expenditure of the department, exclusive of the vote for the Geological Survey, was £209,117, or £17,596 more than in 1871–72. The number of schools at the end of 1881 was 1360, an increase of 412 as compared with the year 1871 ; the number of pupils (61,177) was nearly doubled in the same time. From these schools, 38,837 students went up for the examinations in May 1881 ; besides self-taught students, and pupils of teachers not licensed by the department. In May 1881, the examinations were held at 987 provincial and 111 metropolitan centres. The payments to teachers of proficient students came to £43,519, or 14s. 2d. for each person under instruction. There were 1000 of these schools in England and Wales, 151 in Scotland, 209 in Ireland. The number of persons instructed in art increased from 212,501 in 1871, to 244,134 in 1872. Great progress has, however, been made of late in technical education proper, mainly in connection with the City and Guilds of London Institute of Technical Education. The great difficulty in the way of establishing technical education was, that the masses of the working classes, in the first place, had no desire to be instructed in the scientific principles of their craft ; and in the second, their primary education was so bad, that they could not understand scientific teaching when they got it, and could have no taste for it.

Industrial schools, ragged schools, or reformatories for young criminals, have been instituted for supplying the lowest, or 'City Arab' portion, of our juvenile population with the rudiments of education, and also with food and clothing in cases of great destitution.

ARMY AND NAVY.

A detailed account of these services will be given in MILITARY AND NAVAL ORGANISATION.

FINANCES.

The public revenue for the year 1881–82 was £85,822,281, and the expenditure £85,472,556. The following table gives an analysis of the income and expenditure for the year ending 1873, when there was a surplus of over 5½ millions, an indication of economy on the part of the government, and great prosperity on the part of the country. Where does the revenue come from? Customs duties gave the following net produce—Chicory, £62,667 ; cocoa, £35,413 ; coffee, £202,601 ; currants, £318,059 ; figs, £37,645 ; raisins, £152,579 ; rum, £2,370,514 ; brandy, £2,085,849 ; Geneva, £94,830 ; various spirits, £330,373 ; sugar, unrefined, £2,689,320 ; refined, £556,782 ; molasses, £36,979 ; tea, £3,191,981 ; tobacco and snuff, £7,046,930 ; wine, £1,686,629. How few know that out of every shilling's-worth of cocoa they buy, 1¾d. is paid to government ; of coffee, 2¼d.

INCOME.

	£	s.	d.
1. Customs	21,032,332	0	0
2. Excise	25,904,450	0	0
3. Stamps	9,998,033	0	0
4. Income Tax	7,403,737	0	0
5. Land Tax	1,095,946	0	0
6. Inhabited House Duty	1,243,087	0	0
7. Post Office	5,212,145	0	0
8. Telegraph Service	978,066	0	0
9. Crown Lands	458,903	0	0
10. Miscellaneous	3,796,770	0	0
	77,123,469	0	0

EXPENDITURE.

National Debt.

	£	s.	d.	£	s.	d.
11. Interest, Terminable Annuities, and Management of the Public Debt				26,804,853	0	0

Army and Navy.

	£	s.	d.	£	s.	d.
12. Army	14,466,700	0	0			
Army Purchase Commission	946,500	0	0			
Navy	9,543,000	0	0			
				24,956,200	0	0

Civil Services.

	£	s.	d.	£	s.	d.
13. Collection and Management of the Revenue Departments:						
Customs	972,510	0	0			
Inland Revenue	1,621,791	0	0			
Post Office	2,634,131	0	0			
Post Office Packet Service	1,133,058	0	0			
Telegraph Service	841,766	0	0			
Crown Lands paid out of Gross Revenue	80,448	0	0			
				7,283,704	0	0
14. Public Works and Buildings, Class I	1,077,669	0	0			
15. Salaries and Expenses of Public Departments, Class II	1,918,509	0	0			
16. Law and Justice, Class III	4,497,686	0	0			
17. Education, Science, and Art, Class IV	2,223,216	0	0			
18. Colonial and Consular, Class V	628,420	0	0			
19. Superannuations, Class VI	518,621	0	0			
20. Miscellaneous, Class VII	55,989	0	0			
				10,920,110	0	0
21. Civil List				406,910	0	0
22. Annuities and Pensions				303,139	0	0
23. Interest on Loans, Secret Service, &c.				108,240	0	0
24. Telegraph Sinking Fund, per Act 32 and 33 Vict. cap. 73				11,740	0	0
25. Fortifications, per Act 32 and 33 Vict. cap. 76				250,000	0	0
26. Localisation of the Military Forces, per Act 35 and 36 Vict. cap. 68				58,000	0	0
				19,341,843	0	0
				71,102,896	0	0
Excess of Income over Expenditure				6,020,573	0	0
				77,123,469	0	0

currants, 3¾d.; raisins, 2½d.; molasses, 1⅝d.; raw sugar, 2d.; refined sugar, 2¼d.; tea, 4¼d.; whilst the spirit-duty adds 3s. 9d. to every shilling's-worth bought. In the case of tobacco, of every 3d. paid for an ounce, a halfpenny is for the tobacco, and 2½d. for taxes. The excise produces from chicory, £6647; licenses, £1,188,081; malt, £7,544,175; railways, £507,079; spirits, £13,749,542; sugar, £153,893. Stamp-duties, which are prices fixed to stamped papers, on which it is imperative that all legal documents concerning transfer of property, contracts, &c. shall be drawn, yielded £9,998,033. The income-tax is held to be a war-tax, and never regarded as a permanent duty. It is imposed on incomes above a certain amount, now £150, and has varied in amount from 1s. 4d. a pound in the year 1857 to 2d. in 1874. Regarding the Post-office, it may be said that the transfer of the telegraph service of the country to this department of government, effected in 1870, resulted in giving a large net profit on each year's transactions, amply sufficient to pay the interest on the money the state had to invest in buying up the rights and property of the various telegraph companies. The cost of collecting the customs duties is, roughly speaking, about £3, 17s. 1¾d. for every £100 of duty raised. During the period 1858–73, there have been reduced or repealed taxes to the amount of £35,879,871; taxes imposed equal to £15,672,218; shewing a gross reduction of taxation for that period of £20,207,653.

Turning to local taxation for expenditure connected with relief of the poor, police, maintenance of roads, public health, &c. we may subjoin the following table (see next page). Adding local to imperial taxation, we find that the total taxation of Great Britain for 1873 was £102,022,770, or £3, 4s. 1d. per head of the population.

Expenditure.—The chief item of our expenditure is the payment of interest on and management of the National Debt. During the present century it has swallowed up £1,900,000,000 of money. Up to the restoration of Charles II. there was no public debt, for wars were paid for from revenues derived from crown lands allotted to vassals on conditions of feudal service and payments by way of rent. Charles II. abolished these feudal obligations, but exacted nothing in return, so that the landholders became landowners, and compensated the crown by empowering it to tax the people at large by excise duties, &c. Charles II. got into debt to the extent of £500,000, but even then it was called the 'King's Debt,' not the National Debt. With King William 'the Deliverer' came the idea that it was the duty of Britain to keep up the balance of power in Europe, and also the idea of a 'National Debt,' and in 1699 an act was passed allowing a permanent interest of 3 per cent. on it. The wars of the reign of George III. increased the debt from £102,014,018, the amount at his accession, to £834,900,960. The National Debt had been reduced to £763,045,940 on March 31, 1882. This sum is inclusive of unfunded debt and terminable annuities. The total charge for interest and management was £29,665,945 in the same year. Between 1867 and 1882 the debt was reduced by 40 millions.

Local Expenditure.	Amount.
England and Wales.	
In the Metropolis:	£
Poor Relief, including Workhouse Loans repaid	1,646,103
All other Parochial Expenditure payable out of Poor-rates	140,321
Extraordinary expenditure for construction and repairing of Workhouses and Pauper Asylums	295,367
	2,081,791
Local Management by Vestries, &c. (exclusive of Metropolitan Board of Works), Maintenance of Roads, &c. Watering, Lighting, Sewerage, &c.	1,331,215
Metropolitan Board of Works: Local Public Works, Sewerage, &c.	1,402,808
Corporation and Commissioners of Sewers of City of London, Local Public Works, Sewerage, &c.	1,031,722
Metropolitan Police	859,616
Burial Boards, &c.	42,586
Total Metropolis	6,749,738
Country Districts:	
Poor Relief, including Workhouse Loans repaid	6,240,621
All other Parochial Expenditure payable out of Poor-rates	618,457
Extraordinary Expenditure for construction and repairing of Workhouses and Pauper Asylums	303,657
	7,162,735
For County purposes: Police, Prisons, Lunatic Asylums, &c.	2,542,521
In Municipal Boroughs for Local Public Works, Police, &c.	2,966,834
By Improvement Commissioners and Local Boards, for Local Public Works, Lighting, Sewerage, &c.	4,908,591
For Maintenance of Public Roads, by—	
Highway Boards	1,375,084
Turnpike Trusts	937,226
By Burial Boards for Public Cemeteries	191,787
Other purposes	407,265
Total Local Expenditure in Country Districts	20,492,043
Coast Districts:	
For Erection, Maintenance, and Repairs of Commercial Harbours	2,539,912
For Erection, Maintenance, and Repairs of Lighthouses, &c. and for Pilotage and Saving Life at Sea	615,308
Total England and Wales	30,397,001
Scotland.	
By Parochial Boards for Relief of the Poor	1,490,136
County Assessments: Police, Prisons, Roads, &c.	210,000
Turnpike Trusts	217,094
Edinburgh Police, &c.	138,511
Glasgow Police, &c.	130,473
Other purposes	813,786
Total Scotland	3,000,000
Ireland.	
By Town Authorities	510,879
Grand Jury Cess: Roads, Bridges, Prisons, &c.	1,030,071
Poor-rates	838,353
Police	959,493
Harbours	321,420
Other purposes	215,205
Total Ireland	3,875,421
Total United Kingdom	37,272,422

Divisions.	Receipts from Taxes.	Other Receipts.	Total Local Revenue.
	£	£	£
England and Wales.	20,750,800	10,192,900	30,943,700
Scotland.	2,000,000	1,000,000	3,000,000
Ireland	2,663,300	1,144,100	3,807,400
United Kingdom	25,414,100	12,337,000	37,751,100

AGRICULTURE.

The extent to which the soil is cultivated in England is very much misunderstood. Taking the area of the United Kingdom, including the Channel Islands, as being 80 million acres, we find that there are 11,648,245 acres under corn crops; 5,111,944 acres under green crops; 30,058,983 acres under other crops, grass, &c.; 2,412,251 under timber crops—accounting for only about 50 millions of the total acreage of the kingdom. The remaining 30 millions, after making allowance for what is covered by building, bogs, lake, mountain, and waste land, &c. seems, and must surely be, capable, in great part at least, of reclamation and cultivation. Each year since agricultural statistics began to be made up it would appear that the return of cultivated acreage is on the increase. As regards holdings in Great Britain, England seems to be the land of small holdings. Of holdings of ¼ to 1 acre, there are in England and Wales 68,525 acres; in Scotland, 1319; 49,000 of these being held in England by agricultural labourers and working-men. Of holdings of from 1 to 5 acres, there were in England, 93,148; in Wales, 10,041; in Scotland, 21,091. In 1873, in Great Britain, the live-stock was estimated as follows: Cattle, 5,764,549; sheep, 29,427,635; pigs, 2,500,259. The wealth in the shape of profits derived from agricultural enterprise is difficult to estimate. The only indication that can be given of it is the gross amount assessed for income-tax under schedule A. (profits derived from occupation of land, &c.), and in 1880 that came to £69,383,066 in Great Britain and Ireland, shewing an increase of 10 millions in 10 years.

COMMERCE AND INDUSTRY.

The national balance-sheet, indicating the amount of business done by the country with other nations, has never been more satisfactory than in 1872, for in that year more business was done by Great Britain than had ever been done by any other country before. In 1871, the total imports and exports came to £614,590,180. In 1872, they reached the colossal sum of £669,282,458, and of this, £256,267,347 was the value of British manufactured articles exported, as against £223,066,162 in 1871. These figures give an idea of the wonderful wealth, resources, and business talent of the country. It is to be noted too that in 1840 the value of the imports was £62,004,000; in 1872, it was £354,693,624; *i.e.* an increase of 572 per cent., and that in those years the increase in the value of imports per head of the population was from £2, 7s. 6¾d. to £11, 2s. 10d. or nearly fourfold. The value of British produce and manufactures exported in 1840 was £51,308,740; in 1872, it was £256,257,347—an increase of £204,948,607, or 499 per cent.; or, taking the proportion per head of the population, an increase from £1, 8s. 9d. to £8, 1s. Nothing could more clearly demonstrate the wonderful and progressive material prosperity, the growing opulence of Great Britain, than these figures; extending over a period which began with a year when the country was in the deepest distress, and when things that are in the very poorest houses to-day common necessaries of life, were dainty luxuries, rarely indulged in more than once a week—often not once a month—often not from one end of the year to the other. During these 19 years, Britain has had a national traffic amounting to upwards of 8000 millions sterling, and that affords an indication of the vast improvement made in the condition of the people.

Another fact bearing on this matter is, that in 1842–43, the gross amount of income and profits assessed in Great Britain was £251,013,003. In 1870–71, it was £442,188,798. This shews that the national income has in 28 years increased 76·14 per cent. Though British commerce extends all over the world, its dealings on a large scale are with comparatively few countries; half the total import trade being with six countries, viz. United States, France, India, Russia, Germany, and Australia; half the exports going to United States, Germany, India, France, Netherlands, and Australasia. British trade with America and Germany is increasing at the greatest rate.

The chief imports, cotton, corn, sugar, wool, silk manufactures, and tea amount to nearly one-half the value of the total British imports. Two-thirds of the total exports are represented by cotton fabrics, woollens, iron, linen manufactures, coal, machinery. The total imports and exports for 1880 were valued at £697,644,031.

	1870.	1871.	1872.
	£	£	£
Articles Imported—			
Cotton	53,469,753	55,907,070	53,380,670
Corn	34,169,644	42,502,252	51,228,816
Sugar	17,184,868	18,188,417	21,187,601
Wool	15,812,598	17,940,639	18,523,350
Silk	15,171,291	8,397,324	9,141,873
Tea	10,097,619	11,635,644	12,933,143
Articles Exported—			
Cotton Manufactures	71,410,131	72,821,411	80,164,155
Woollen do.	26,821,217	33,283,112	38,493,411
Iron	24,038,090	26,124,134	35,996,167
Linen Manufactures	9,485,835	9,741,664	10,956,761
Coal	5,506,890	6,267,047	10,442,321
Machinery	5,286,503	5,966,941	8,201,112

The progress of textile industry in Britain is illustrated by the fact, that whereas the quantity of raw cotton imported in 1815 was only 99,000,000 pounds, it rose to 891,751,952 pounds in 1855, and to 1,256,984,736 in 1861. Owing to the convulsion in America, it fell the following year to 523,973,296 pounds, and slowly rose to something like its proper quantity in 1866, after the effects of the American war had ceased to operate injuriously. In 1880 it was 14,541,648 cwts. The import of wool has been steadily on the increase. In 1880 it was 463,508,963, of which 226,129,887 pounds are retained for home use. In the cotton, woollen, and worsted trades we find, in 1870, 684,774 persons employed, an increase of 189,067 hands since 1850. In 2483 cotton factories there were, in 1870, 300,480 horse-power in form of steam, 8390 in form of water, and 450,087 hands employed in the trade. There were 125,130 persons employed in 1829 factories of woollen goods in 1870. There were, in 1870, 109,557 persons employed in 630 worsted factories. Minor branches of textile industry employed in 1870 upwards of 60,000 persons, of whom 40,000 were workers in silk, and 22,000 in flax—the rest being engaged in the hosiery and lace trade.

MINES.

The rich mineral wealth of England has done much, as already remarked, to make it so prosperous. There are 30 coal-fields in the United Kingdom of which the Yorkshire one is the largest, having 505 pits in 1880. Stafford had 598; Scotland, 651; Lancashire, 535; Durham and Northumberland, 380; South Wales, 344; Midland group (Derby, Nottingham, Leicester, and Warwick), 335; Gloucester and Somerset, 139. Ireland has a large number of pits, but their output is trifling. As regards output, Durham and Northumberland stand highest, with 34,000,000 tons in 1880. Scotland comes next, with 18,200,000 tons. The total output of the United Kingdom in 1881 was 154,000,000 tons from 3813 collieries. In 1872 there were 393,344 persons employed in the mining trade. Within the last thirty years our exports of coal have increased almost eightfold, as this table shews.

Year.	Exported Amount in Tons.	Value.
1847	2,483,161	£1,087,122
1872	12,712,231	9,858,418
1881	19,587,063	8,785,950

In 1871, the Cornish mines yielded 21,948 tons of iron ore; the Devonshire, 14,125 tons; Somersetshire, 32,884 tons; Gloucestershire, 207,599 tons; Wiltshire, 159,894 tons; Oxfordshire, 28,330 tons; Northamptonshire, 779,314 tons; Lincolnshire, 290,673 tons; Shropshire, 415,972 tons; Warwickshire, 34,075 tons; North Staffordshire, 1,513,080 tons; South Staffordshire, 705,665 tons; Derbyshire, 492,973 tons; Lancashire, 931,048 tons; Cumberlandshire, 1,302,704 tons; York (North Riding), 4,581,901 tons; York (West Riding), 407,997 tons; Northumberland and Durham, 285,297 tons; North Wales, 51,887 tons; South Wales and Monmouthshire, 969,714 tons; Isle of Man, 75 tons: Scotland, 3,000,000 tons: Ireland, 107,734 tons. The total iron ore produced in the United Kingdom came to 18,026,049 tons in 1880, the value being £6,585,806.

Since the discovery of gold in California, Australia, &c. a large amount of bullion has been imported from gold-producing countries to Britain. A certain quantity of it, both gold and silver, seems to be exported again. The value of the bullion and specie imports and exports was as follows:

	1860.	1865.	1870.	1881.
	£	£	£	£
Imports	22,985,196	21,624,201	29,300,980	16,864,403
Exports	15,641,578	8,593,332	7,224,939	22,502,819
Excess—				
Imports	7,343,618	12,868,869	22,076,041	..
Exports	..	..	..	5,638,411

In order to conduct this enormous national traffic, we have a large carrying-trade both by land and sea. The land carrying-trade is now chiefly by means of

RAILWAYS.

The first railway was opened in 1825; and from that year to 1850, 6621 miles of railway were laid in Great Britain and Ireland, being 265 miles a year.

TOTAL LENGTH, CAPITAL, PASSENGERS CONVEYED, RECEIPTS, AND WORKING EXPENSES OF RAILWAYS IN THE UNITED KINGDOM.

Years.	Length of Lines open on 31st Dec.	Total Capital Paid up (Shares, Loans, &c.)	Number of Passengers (including Season Ticket Holders).		Total of Traffic Receipts.		Total of Working Expenses.	Net Receipts.
					Total.	Per Mile.		
	Miles.	£	Total.	Per Mile.	£	£	£	£
1861	10,869	362,327,338	173,773,218	15,988	28,565,355	2628	13,843,337	14,722,018
1862	11,551	385,218,438	180,485,727	15,625	29,128,558	2522	14,268,409	14,860,149
1863	12,322	404,215,802	204,699,466	16,612	31,156,397	2528	15,027,234	16,129,163
1864	12,789	425,719,613	229,348,664	17,933	33,911,547	2651	16,000,308	17,911,239
1865	13,289	455,478,143	251,959,862	18,960	35,751,655	2691	17,149,073	18,602,582
1866	13,854	481,872,184	274,403,895	19,734	38,164,354	2754	18,811,673	19,352,681
1867	14,247	502,262,887	287,807,904	20,201	39,479,999	2771	19,848,952	19,631,047
1869	15,145	518,779,761	305,764,285	20,189	41,075,321	2712	20,780,078	21,915,849
1870	15,537	529,908,673	330,160,801	21,249	43,417,070	2794	21,715,525	23,362,618
1871	15,576	552,680,107	375,409,146	24,415	47,107,558	3064	23,152,860	25,739,920

In the following list will be found some particulars of the chief lines of railway, their mileage, cost, profits, &c. exclusive of leased lines :

Amount Expended.	Cost per Mile.	Dividend 1873. First Half-year.	Name.	Miles open in 1872.	Gross Traffic Receipts First Half-year. 1872.	Price, Nov. 11, 1872.
£	£	£ s. d.		No.	£	£
5,112,490	34,293	2 17 6	Bristol and Exeter	152	228,373	119
24,254,744	33,180	1 15 0	Caledonian	731	1,215,008	93
1,943,249	15,929	1 15 0	Dublin, Wicklow, and Wexford	122	105,515	74
8,105,878	24,701	2 10 0	Glasgow and South-western	315	406,999	109
28,446,046	36,187	..	Great Eastern	759	1,081,338	41
21,380,121	34,208	3 0 0	Great Northern	625	1,254,266	133
3,097,587	12,100	..	Great North of Scotland	256	106,891	37
6,471,590	14,543	2 15 0	Great Southern and Western	445	332,496	109
48,908,907	34,264	2 17 6	Great Western	1502	2,433,980	119
3,073,593	12,546	3 0 0	Highland	245	131,120	105
25,147,487	58,716	3 12 6	Lancashire and Yorkshire	428	1,578,688	144
59,365,412	37,692	3 10 0	London and North-western	1575	4,021,023	147
17,921,671	47,665	0 15 0	London, Brighton, and South Coast	376	693,807	80
19,390,418	140,510	..	London, Chatham, and Dover	138	388,592	20
17,984,209	32,050	2 7 6	London and South-western	560	837,079	106
14,950,475	58,860	0 15 0	Manchester, Sheffield, & Lincoln & S. Y.	254	742,866	74
7,652,459	1,093,208	1 5 0	Metropolitan	7	222,089	64
44,659,294	38,008	3 5 0	Midland	1175	2,481,986	133
3,920,322	11,265	2 5 0	Midland Great Western	348	226,406	90
1,533,418	36,929	2 10 0	Monmouthshire	52	85,399	114
21,151,834	25,800	..	North British	820	980,990	60
46,309,528	34,790	4 5 0	North Eastern	1331	2,762,148	162
3,739,247	31,992	1 5 0	North London	12	177,871	113
7,176,559	24,081	1 5 0	North Staffordshire	298	291,331	63
3,493,999	29,112	1 5 0	South Devon	120	136,867	64
18,949,057	54,608	1 15 0	South Eastern	347	784,354	104

Stockton and Darlington opened.....Sept. 1825
Liverpool and Manchester " .....Sept. 15, 1830
London and Birmingham " .....Sept. 17, 1838
London and Greenwich opened.....Dec. 26, 1838
Blackwall " .....Aug. 3, 1841
London and Brighton " .....Sept 21, 1841

The number of passengers in 1881 in the United Kingdom was 622,423,000, and the total traffic receipts £63,873,000. In 1872 the passenger returns were—first class, 37,678,538, receipts £4,319,185; second class, 72,459,562, £4,228,201; third class, 312,736,722, £10,318,761.

England and Wales had, in 1883, 12,810 miles of railway; Scotland, 2930 miles; Ireland, 2440 miles. To the total paid-up capital, England and Wales contribute £616,453,000; Scotland, £94,808,000; Ireland, £34,258,000. Of traffic receipts, England got £54,322,000; Scotland, £6,966,000; Ireland, £2,585,000. In an average year, the trains on these various lines travel altogether a total distance equal to more than 7000 times the circumference of the earth, and more than twice the distance of the earth from the sun.

SHIPPING.

The other great branch of the carrying-trade is the mercantile marine. The progress of British shipping since the era of free-trade began is not less remarkable than the progress of the British import and export trade—indeed, it has been a consequence, to some extent, thereof. In 1849, the protective Navigation Laws were repealed, and from that time progress has been very wonderful. In 1872, there were, of sailing-vessels in Great Britain, 19,709, with a tonnage of 4,245,904 tons register, employing 137,101 men. Of steamers, there were 2845, with a tonnage of 1,515,704 tons, employing 66,619 men. Comparing this with the figures for 1849, when the protective Navigation Laws were in force, 1872 shews an increase of 4333 vessels, of 2,665,266 tons in their capacity, and of 51,109 men employed. Further comparing the figures shewing the number of vessels, British and foreign, entering and clearing at ports in the United Kingdom, from and to foreign ports, it is seen that British shipping stands highest. In 1881, the tonnage of vessels entered and cleared at ports in the United Kingdom came to—British, 41,543,259 tons; foreign, 16,406,286 tons; giving an excess of 25,136,973 tons in favour of British shipping. It is also a

curious fact that, whilst the repeal of the Navigation Laws has increased our own shipping-trade, it has not injured the foreign shipping-trade done with us. Comparing 1872 with 1849, the last year of the restrictive laws, there is in the former year an increase in British tonnage represented by 22,228,605 tons, or 444 per cent.; and an increase in foreign tonnage of from 2,949,182 tons in 1849 to 13,781,935, represented by 457 per cent.

MONETARY SYSTEM.

The coin in circulation in Great Britain may be taken at upwards of 75 millions of gold, 13 millions for silver and copper. Taking the last quarter of the year 1872, it seems the average monthly circulation of bank-notes has been—Bank of England, £25,162,000; private and joint-stock banks in England, £4,973,691. In Scotland, the bank-note circulation for the same period was £5,632,112. In Ireland, for the Bank of Ireland, it was £3,254,525; and for joint-stock and private banks it was £4,365,564. The total for the United Kingdom was £43,387,892. In England, the notes are not lower than £5; in Scotland and Ireland they are as low as £1. The Bank of England monopolises the circulation within 65 miles of London. The authorised issue of notes is £15,000,000. The aggregate fixed issues of provincial English banks, originally £8,631,647, have fallen to £6,653,966. In Scotland, the authorised issue is £2,749,271, the average amount of specie held by the banks is £3,500,000, and the actual circulation about £5,500,000, issued by 10 joint-stock banks and upwards of 700 branches. The authorised circulation of the Bank of Ireland is £6,354,494.

Savings-banks.

In the Post-office savings-banks there is a vast amount of capital invested, giving one a fair idea of the wealth of the working-class in the mass. In 1863, in the United Kingdom, it came to £3,376,828, and has gone on steadily increasing by one or two millions each year, till it in 1881 amounted to £36,194,496. Besides these banks, we have others, called trustees' savings-banks, in the United Kingdom; in which we find deposited, in 1863, £40,951,505, but then the deposits decrease until 1867, when they begin to increase but slowly; and even in 1881 they only amounted to £44,140,116. Perhaps the institution of Post-office banks has something to do with this. In 1841, the total deposits in savings-banks were £24,474,689. And the total deposits in Post-office and trustees' savings-banks were, in 1881, £80,334,612, an increase of £55,859,923. The commercial policy initiated by the free-traders has therefore enriched the labouring classes as well as their employers.

THE BRITISH COLONIES AND DEPENDENCIES

embrace about one-third the surface of the globe, and one-fourth its population. The total area of them is 4,500,000 square miles, or 30 times the area of the mother-country. The articles on geography will treat of them in detail; meantime, we may subjoin the following table, giving a brief view of the resources of these portions of the empire:

Name of Country.	Area in Square Miles.	Population.	Revenue.	Public Debt.	Imports and Exports.
			£	£	£
Great Britain and Ireland.....	121,115	31,857,338	76,608,770	732,203,081	669,282,458
Indian Possessions.....	1,558,254	240,000,000	50,110,215	111,542,208	96,676,750
Other Eastern Possessions....	25,268	3,120,297	2,188,164	1,800,000	33,294,748
Australasia.....	2,582,070	2,102,055	9,500,000	39,000,000	64,656,968
North America.....	3,169,375	4,311,044	4,374,163	21,715,283	35,853,601
Africa.....	223,291	898,083	970,765	1,455,000	9,319,209
West Indies.....	12,683	1,010,000	1,068,576	1,000,000	10,616,316
European Possessions	120	155,063	209,098	250,000	15,139,827
Various Settlements.....	96,171	185,542	550,000	650,000	5,314,265
Totals.....	7,788,347	283,639,422	£145,579,751	£909,615,572	£940,154,142

EMIGRATION.

During the years 1840 to 1872, the total number of emigrants from Great Britain has been 6,578,058. Of these, 4,487,497, more than two-thirds, however, have not gone to the colonies, but to a rival country—namely, the United States. From 1840 to 1872, 956,748 emigrants have gone to British America; 958,077 to Australasia; and 175,736 to other places. In 1881 the numbers were, for United States, 176,104; British America, 23,912; Australasia, 22,682; other places, 20,304.

POPULATION AND SOCIAL STATISTICS.

A special part is devoted to this subject, so here we may be brief. The total area of the British Islands is 121,115 square miles, with a population in 1881 of 35,262,762; this includes the army and navy and merchant seamen abroad. The population from 1801 to 1841 is given by estimate. The number of families in 1841 was incorrectly taken. It will be noticed that the figures under the head 'increase' for Ireland 1841–71 indicate a *decrease* of 2,811,370. The census of 1881 shewed the population of England and Wales to be 25,968,286, an increase of 3,256,020 since 1871; Scotland was 3,735,573, an increase of 375,555; and Ireland 5,174,836, a decrease of 237,541: making a total increase in the United Kingdom of about 3½ millions. The census of 1871 shewed an increase of 519,612 inhabited houses in England and Wales; of 18,965 in Scotland; 944 in Channel Islands and Man; but in Ireland a decrease of 33,927. The net increase of inhabited houses for the United Kingdom was 505,620. The population in urban districts, in England and Wales and Scotland, seems to have grown about twice as fast as it has done in the rural districts. Although

POPULATION ENUMERATED IN ENGLAND AND WALES, SCOTLAND AND IRELAND, AT EACH DECENNIAL CENSUS, 1801–71, AND ISLANDS IN THE BRITISH SEAS, IN 1851–71, EXCLUSIVE OF ARMY, NAVY, AND MERCHANT SEAMEN ABROAD.

England and Wales.	Population.			Increase.		Families.		Inhabited Houses.	
	Males.	Females.	Total.	Decennial.	Per cent.	Number.	Persons in each.	Number.	Persons to each.
1801	4,254,735	4,637,801	8,892,536	..	..	1,896,723	4·69	1,575,923	5·64
1811	4,873,605	5,290,651	10,164,256	1,271,720	14·30	2,142,147	4·74	1,797,504	5·65
1821	5,850,319	6,149,917	12,000,236	1,835,980	18·06	2,493,423	4·81	2,088,156	5·75
1831	6,771,196	7,125,601	13,896,797	1,896,561	15·80	2,911,874	4·77	2,481,544	5·60
1841	7,777,586	8,136,562	15,914,148	2,017,351	14·52			2,943,945	5·41
1851	8,781,225	9,146,384	17,927,609	2,013,461	12·65	3,712,290	4·83	3,278,039	5·47
1861	9,776,259	10,289,965	20,066,224	2,138,615	11·93	4,491,524	4·47	3,739,505	5·36
1871	11,058,934	11,653,332	22,712,266	2,646,042	13·19	..	..	4,259,117	5·03
Scotland.									
1801	739,091	869,329	1,608,420	..	..	364,079	4·41	294,553	5·46
1811	826,296	979,568	1,805,864	197,444	12·27	402,068	4·49	304,093	5·93
1821	982,623	1,108,898	2,091,521	285,657	15·82	447,960	4·66	341,474	6·12
1831	1,114,456	1,249,930	2,364,386	272,865	13·04	502,301	4·7	369,393	6·40
1841	1,241,862	1,378,322	2,620,184	255,798	10·82	550,428	4·76	502,852	5·21
1851	1,375,479	1,513,263	2,888,742	268,558	10·25	600,098	4·81	370,308	7·80
1861	1,449,848	1,612,446	3,062,294	173,552	6·00	678,584	4·5	393,220	7·78
1871	1,603,143	1,756,875	3,360,018	297,724	9·72	742,694	4·5	412,185	8·02
Ireland.									
1821	3,341,926	3,459,901	6,801,827	..	..	1,312,032	5·18	1,142,602	5·95
1831	3,794,880	3,972,521	7,767,401	965,574	14·19	1,385,066	5·61	1,249,816	6·21
1841	4,019,576	4,155,548	8,175,124	407,723	5·25	1,472,739	5·55	1,328,839	6·15
1851	3,212,523	3,361,755	6,574,278	1,600,846*	19·58*	1,204,319	5·44	1,046,223	6·28
1861	2,837,370	2,961,597	5,798,967	775,311*	11·79*	1,128,300	5·14	995,156	5·83
1871	2,639,826	2,771,590	5,411,416	387,551*	6·83*	1,071,494	5·04	961,229	5·63
Islands.									
1851	66,854	76,272	143,126	19,086	..	..	..	21,845	6·55
1861	66,140	77,307	143,447	321	..	31,530	4·55	23,012	6·23
1871	66,222	78,416	144,638	1,191	..	..	..	23,982	6·02

* Decrease.

there were nearly 5,000,000 of inhabited houses in Great Britain in 1871, only 796,452 were assessed for house-duty; of these, 723,514 were assessed under £100 rent, only 72,938 above that. There were 92,922 assessed at £20, 299,894 under £30, and 561,003 under £50. It seems incredible that in a country of such wealth as this, of 5,000,000 houses, only 796,452 should be taxed as within the £20 rental limit, and it is thought the tax is evaded in many cases by the houses being let or valued at something just within the limit, to evade the tax.

PAUPERISM.

Notwithstanding the flourishing state of the nation, 1 in every 25 of its adult inhabitants is a pauper—a fact worthy of the gravest consideration. During the 33 years of great national prosperity from 1840, the poor-rates of England and Wales came to £283,294,738, of which, in actual relief of the poor, were spent £195,043,694, and for other purposes, £85,467,491. In Scotland, from 1846 to 1872, the poor-rates came to £18,401,879, the expenditure was £18,179,544. In Ireland, from 1840 to 1872, the poor-rates collected were £25,401,482, the expenditure £24,629,598. In England and Wales, £8,007,403; in Scotland, £862,171; in Ireland, £868,820, were spent in relief of the poor by rates in 1872. As regards

CRIME,

the following little table will give a concise view of the leading facts and figures bearing on this subject:

CRIMINAL CONVICTIONS, 1858 TO 1872.

Year.	England and Wales.	Scotland.	Ireland.
1858	13,246	2850	3350
1859	12,470	2563	2735
1860	12,068	2414	2979
1861	13,879	2418	3271
1862	15,312	2693	3796
1863	15,799	2438	3285
1864	14,726	2359	3000
1865	14,740	2355	2661
1866	14,254	2292	2418
1867	14,207	2510	2733
1868	15,033	2490	2394
1869	14,340	2592	2452
1870	12,953	2400	3048
1871	11,946	2184	2257
1872	10,862	2259	2565

There is manifest here a gratifying decrease of crime—comparing the figures not one year with the one before it, but regarding them as a whole. The number of paupers in receipt of relief in the unions and parishes of England and Wales in 1881 was 803,126; in Scotland, 97,787; in Ireland, 109,655. The number of criminal convictions in the same year were respectively 11,353; 1832; and 2698.

MILITARY AND NAVAL ORGANISATION.

THOUGH we are very far from maintaining with Hobbes, that, in a state of nature, every man instinctively wages war against his neighbour, it is clear, from a study of the remains left by primeval man, in the shape of rude weapons, &c. that the Golden Age of peace lies far beyond the dawn of history, far beyond the still grayer dawn of even prehistoric antiquity. The desire on the part of people who have much to get more, and to get it by taking it from those that are weaker than themselves; and the equally strong desire on the part of those who have little of this world's goods, to augment their possessions by despoiling their richer neighbours, at all times in the history of mankind have impelled nations as well as individuals to wage wars, offensive and defensive, against each other. In later times, wars have arisen from other causes than mere lust of material conquest. We have had wars for ideas; and of all wars, the most sanguinary are those waged on behalf of certain social and religious ideas. The wars of the old French Republic—of the Communists at Paris and Carthagena, but ended the other day—and of the Crusades, are specimens of political, social, and religious conflicts. Such wars are not always pure evils. They are often to society what surgical operations are to the human body, painful but powerful remedies for cankering malignant disease—remedies which act by removing the old corrupt growths, and enabling more healthy forms of organisation to take their place. In this light, the wars of the French Revolution, which stamped out the frivolous feudalism and effete civilisation of the 18th century, in spite of all the blood and treasure they cost, are not altogether to be regretted—by us at least, who breathe so freely in the purer, clearer, political atmosphere of the 19th century.

In the early stages of a nation, when few have settled occupations, and war is a matter of muscle and courage, rather than of discipline and science, the armed force naturally consists of all able-bodied men. As civilisation advances, and the division of labour becomes more distinct, the duties of war are delegated to a portion only of the community; at first, taken from other occupations merely when actual warfare requires it; ultimately, as the lines between different pursuits become more marked, and each advances to a science, detached altogether from the businesses of peace, and devoted wholly to war or preparation for it. These stages are represented, the first by a militia, which follows soon after the settlement in a fixed place of a wandering nation; the second, by a standing army, which only appears at an advanced period in a nation's life. In modern times, offensive war is by all civilised nations intrusted to the standing army; but for defensive purposes the older forms still exist, and form the military 'Reserves.'

The tendency of modern civilisation is to substitute armed nations, as in Switzerland, and partially in Germany, for standing armies, such as those of France and Russia. An armed nation will only engage in a popular war, and such an army is not likely to let itself be made the passive instrument of tyranny in the hands of a sovereign. In a national army, the occupation of a soldier may not be an ignoble one. He is not a mere mercenary who makes war for money and loot. He gives up remunerative civil employment, in order to help to protect the community in its peaceful pursuits, and it is but just he should be paid a little more than will keep body and soul together by the people he protects. His pay is but a fraction of the premium due for the insurance of the national life every state effects when it establishes and maintains a national army. A soldier of such an army is not a professional man-slayer. He kills because he is commanded to make war, and the end can only be attained by violence; but he prefers to gain victory without slaughter: on the other hand, he is ready to lay down his life rather than let the enemy overcome the policy of his country.

BRITISH MILITARY SYSTEM.

In Saxon England the war-force was a militia of a local character, each shire, hundred, and tithing being bound to furnish its quota of armed men for the king's service on occasion of national emergency. The strength of this force lay in its admirable archers. Under the Normans the array took a more feudal form, each baron or knight appearing in the field, at the call of his suzerain, with his armed retainers. At this period the strength was principally in the knights and men-at-arms, who, encased in armour, took little heed of the undisciplined footmen, who as spearmen, billmen, and slingers constituted a rabble infantry. Under the Plantagenets, the races had become sufficiently assimilated for the monarchs to gladly add bodies of Saxon archers to their armies. Henry V. appears to have had an army in the modern sense, paid by the crown, and but little dependent on the feudatories. The Wars of the Roses put an end to feudal musters, and thenceforth the wars of England were waged by royal armies. These, however, were not standing armies, for each was disbanded when the occasion ceased for which it had been raised. The jealousy of standing armies manifested by the people, finds legal expression in the 'Bill of Rights' of 1690, which declares that 'the raising or keeping of a standing army in time of peace, unless it be with the consent of parliament, is against law;' and the Act, annually passed, for bringing into force the Army Discipline and

Regulation Act, like the Mutiny Act which it superseded in 1879, declares this formally in one of its first paragraphs. Parliament, in sanctioning the maintenance of such a force, never does so for more than one year—and it can extinguish it by a couple of votes when necessary. Practically, the strength of the army for each year is decided by the government of the day, at a cabinet meeting, held shortly before each annual session of parliament. The cabinet act on data forwarded by the commander-in-chief, and the decision of the ministry is carried out by the War Secretary, who frames 'the army estimates,' or detailed statement of the proposed strength and cost of our military force, for acceptance and sanction by the House of Commons. These estimates are submitted to the House in certain chapters or 'votes,' and discussed and criticised. Then parliament is real ruler of the army in another way. Without its consent, military discipline could not be kept up, or a military code enforced in time of peace. In theory, the army is in direct subservience to the sovereign; but in time of peace, without the special sanction of parliament, the sovereign cannot subject a soldier to the operations of any other law save those applicable to civilians. Therefore parliament furnishes the sovereign with the means of enforcing military discipline independently of the common law, by passing annually the 'Army Discipline and Regulation Act.' This Act superseded in 1879 the time-honoured, annually renewed 'Mutiny Act,' which enabled the crown to enforce the 'Articles of War,' or military code by which the British army is ruled.

The strength of the army varies, of course, each year. The estimates for the year ending March 1880, provide for a force of 7384 commissioned officers; 17,241 non-commissioned officers, trumpeters, and drummers; and 111,000 rank and file—being a total of 135,625, including the depots of regiments in India, and the general and departmental staff. The following statement shews the strength of the different branches of our regular army in 1883-84, the cost of which is defrayed from army grants:

Branches.	Officers.	Non-commissioned Officers, Trumpeters, and Drummers.	Rank and File.
Officers on General and Departmental Staff—			
General Staff	242	163	..
Army Accountants	281	70	..
Chaplains' Department	87	..	..
Medical Department	677	4	..
Control Department	348	161	..
Total Staff	1,635	398	..
Regiments—			
Royal Horse Artillery	118	223	2,436
Cavalry, Life Guards, and Horse Guards	555	1,380	10,489
Royal Artillery	689	1,474	16,643
Royal Engineers	424	788	4,012
Infantry and Foot Guards	2,823	7,046	70,850
Departmental Corps	54	946	4,186
Colonial Corps	112	217	2,146
Total Regiments	4,775	12,074	110,762
Staff of Yeomanry, Militia, and Volunteers	629	6,453	..
Miscellaneous Establishments—			
Instruction in Gunnery and Engineering	22	65	69
Royal Military Academy, Woolwich	13	20	7
Royal Military College, Sandhurst	28	19	19
Staff College	5	3	1
Regimental Schools	14	180	..
Manufacturing Establishments	20	37	2
Various	58	174	50
Total Miscellaneous	160	498	148
Summary—			
Total General and Departmental Staff	1,635	398	..
Total Regiments	4,775	12,074	110,762
Staff of Militia, &c.	629	6,453	..
Miscellaneous	160	498	148
Total force, cost of which is defrayed from army grants	7,199	19,423	110,910

The total force of the British army in India is about 61,000 men of all ranks. So far, we have only considered the strength of the regular army; this, however, does not represent the total armed force of Great Britain. From the earliest times, we have had in Britain an army of reserve. In early times we had the 'Fyrd;' then the 'Trained (or Train) Bands;' then the militia, which is the modern form of the two former forces, and which is the ancient constitutional defensive force of the empire. The militia is not bound to serve anywhere out of the three kingdoms. This formed the first line of reserve; and we include in it a mounted militia known as yeomanry, consisting of farmers and country gentlemen, mounted on their own horses, but otherwise armed, and when on duty, paid by the crown. Behind this, we have the second line of reserve—the volunteers, who in 1804 numbered 405,000 strong; and lastly, the *levée en masse*, or general call to arms, which would muster over 3 or 4 millions of able-bodied, but untrained and undisciplined men. The Estimates recognise four classes of reserves or auxiliary forces—militia, yeomanry, volunteers, and enrolled pensioners and army reserve forces. The total number of militia in the Army Estimates for 1883–84, is put down at 142,874, comprising a permanent staff, and including the militia reserves. The militia are turned out for 21 days' training per annum. The yeomanry amount to 14,404, including their permanent staff. The volunteer force numbers, including staff, 247,921. The army reserve (a body of much greater importance since the short service system was introduced) is divided into two classes: in the first class there are 33,500 men; and in the second, 9000 men.

A general idea of our military organisation may be gathered from the following statement: Since 1873, the United Kingdom has been divided into 13 military districts, each under command of a general officer. Under these are sub-districts—in the case of the infantry, 102; in that of the artillery, 12; in that of the cavalry, 2 in number, commanded by colonels—the whole, districts and sub-districts, and their respective commanders,

being under the direct authority of the commander-in-chief. The military force of an infantry sub-district consists of a brigade. It is composed of two line battalions—one of which is generally abroad, the other at home—two militia battalions, the enrolled pensioners and army reserve, the brigade depot, and the local rifle volunteer corps. In an artillery sub-district there are the royal artillery, the militia and volunteer artillery, and the artillery of the army reserve. In a cavalry sub-district, the force consists of the regular cavalry, the yeomanry, volunteer, and reserve cavalry. The colonels commanding these sub-districts are necessarily officers in the regular army, and they are responsible for the efficiency and discipline of all the various forces, regular and auxiliary, in their sub-districts. Thus it will be seen that the auxiliary volunteer forces are no longer out of the pale of our national army organisation, but that regular army, and auxiliary volunteers and reserves, all form one homogeneous defensive force.

As regards the sources from which our soldiery are derived, the following table gives one an idea of the numbers of men contributed to the army by each of the three kingdoms :

Army.	Natives of England.	Natives of Scotland.	Natives of Ireland.
Household Cavalry....	940	172	93
Cavalry of the Line....	11,661	1,091	2,429
Royal Horse Artillery..	4,192	330	899
Royal Artillery.....	18,710	2,020	5,589
Royal Engineers.....	3,024	1,108	630
Foot Guards.....	5,604	604	108
Line Infantry.....	71,262	10,232	38,812
Army Service Corps....	1,827	260	333
Army Hospital Corps..	481	68	199
Total.....	117,701	15,885	49,092

PERSONNEL.

By the personnel of the army, we mean the men belonging to the various combatant and administrative branches of the army.

Infantry.—By the recent changes the 109 regiments of the line, with the Rifle Brigade, have been so reorganised as to form 71 territorial regiments, having linked battalions of line and militia. Since 1881 the old numerical designations have made way for territorial ones, and many of the smaller regiments have ceased to have a separate existence, having become the second battalion of one of the new regiments. Thus the former 94th is now the second battalion of the Connaught Rangers ; the 73d is the second battalion of the Black Watch or Royal Highland Regiment. Some of the old and familiar descriptive (not numerical) names are still retained by the regiments ; thus the East Kent Regiment is also known as the Buffs.

The Foot Guards include the Grenadier, Coldstream, and Scots Fusilier regiments, all celebrated in history, from the days of Marlborough downwards. They are *corps d'élite*, the flower of the British infantry. The men are picked men, of great stature and strength ; the officers are to a great extent members of the nobility, or of the families of very wealthy commoners.

The Colonial Corps consist of the West Indian Regiments and Malta Fencibles. The West Indian regiments are composed of negroes, with white officers and sergeants, and are enrolled for duty in the West Indies and in Africa. Under good leading, they render gallant service. The Malta Fencibles is a corps of artillery, in which officers and men are alike natives.

The infantry are organised into regiments, a man enlisted for one regiment serving throughout his time in that same corps. Officers occasionally exchange from one regiment into another ; but their ordinary service and promotion are in one regiment throughout their career, until they attain the rank of general officer. As regards strength, a regiment is somewhat indefinite, for it may include any number of battalions ; and the number of companies in a battalion may vary from 8 to 14, while the men in a company range from 60 to 100, or even more. Each battalion comprises twelve companies, of which two remain at home to form a depot of instruction for recruits when the regiment is sent abroad. A company is under the command of a captain, who has a lieutenant and a sub-lieutenant, or, as he used to be called, an ensign, to assist him. His men consist of 4 corporals, 1 pioneer, and 60 privates ; while, as an intermediate class—the non-commissioned officers—there are 1 colour-sergeant, 3 sergeants, and 2 drummers. The total strength of a company is therefore 74 officers and men of all ranks, and 12 such companies form a battalion. In command of the whole battalion (which is usually divided into right and left wings) is a lieutenant-colonel, assisted by a major for each wing ; an adjutant, who superintends drill ; a quartermaster, who looks after quarters, clothing, &c. ; a paymaster, who pays the corps ; a surgeon-major, and one or two surgeons, whose functions are obvious. There are also certain non-commissioned officers of the regimental staff, as the sergeant-major, schoolmaster, quartermaster-sergeant, sergeant-instructor of musketry, band-master, drum-major, paymaster-sergeant, armourer-sergeant, hospital-sergeant, orderly-room clerk, band-sergeant, sergeant-master-tailor ; besides musicians and hospital-orderlies. Finally, to complete the corps, there is the colonel, who, however, has no functions to perform, his office being purely a sinecure, and constituting an honourable pension of a thousand a year for a general officer.

For purposes of drill, each *company* is divided into two *subdivisions*, and each subdivision into two *sections*. When the men stand in position, a 'rank' consists of a row of them taken sideways ; a 'file,' of a row taken from front to back. Hence the body of private soldiers are spoken of as rank and file.

The above description shews the organisation of a battalion on its peace-footing, its strength being about 930 men. On war breaking out, nothing is easier than to augment this strength. The whole machinery of officers and non-commissioned officers is ready ; it only remains to add to the privates by new enlistment. The recruits are distributed among the companies, where their small number among the disciplined soldiers renders their inexperience immaterial. A battalion may thus be increased 30 per cent. without seriously diminishing its efficiency.

The 60th Rifles and Rifle Brigade wear dark-green uniforms ; certain Highland regiments are clothed in the costume of their reputed clans,

with tartan and kilt. The other regiments wear scarlet tunics, black shakoes or bear-skins, and black, dark-blue, or white trousers, being distinguished from one another by the colour of the facings—that is, the collars, cuffs, and pocket-lapels. Each regiment and battalion has also two ensigns or colours: one the Queen's colour, consisting of the Union-jack; the other, the regimental ensign, bearing the emblem of the corps, and around it memorials of the different actions in which it has distinguished itself. The arms of the men are the rifle and bayonet; non-commissioned officers use a sword-bayonet; and the sergeant-majors have swords; while officers carry the sword alone, except that in battle they usually arm themselves with revolver-pistols. In dress, the difference, except as regards fineness of material, between officers and men, is as little conspicuous as possible: the officer wears a shoulder-sash of crimson silk; the sergeant also has a shoulder-sash, but of crimson cotton.

Cavalry.—The British cavalry comprises thirty-one regiments: Life Guards, two regiments; Horse Guards, one regiment; Dragoon Guards, seven regiments; Dragoons, three regiments; Lancers, five regiments; Hussars, thirteen regiments.

These are, as regards equipment and stature, divided otherwise into Guards, three regiments; Heavy Cavalry, four; Medium, eleven; Light, thirteen. Like infantry, cavalry is organised in regiments, though the number in each is somewhat smaller. Each regiment comprises eight troops, corresponding to the infantry companies. The ranks are much the same as in the infantry; the lowest grade of officers, however, were, previous to recent reforms, styled cornets. Each regiment has on its staff a riding-master and a veterinary surgeon, for whom no necessity arises in the infantry. Also among the non-commissioned officers, the principal of each troop is not called a colour-sergeant, but a troop-sergeant-major. The private soldiers are not spoken of as rank and file, but commonly as 'troopers.' The drummers of the infantry are represented in the cavalry by trumpeters.

Twelve regiments wear scarlet uniforms, nineteen blue. They are further distinguished by their facings and ornamentation, which is far more abundant than in the infantry. The Life Guards and Horse Guards are adorned, rather than protected, by polished steel cuirasses and helmets. The other regiments wear on their heads black and brass helmets, bear-skin caps, busbies, and leather shakoes; these bear various plumes. The regiments also carry colours, called guidons or pennons, which are smaller than infantry colours.

The arms of cavalry are the sabre for all, varying from 40 to 34 inches in length; a rifled carabine (usually breech-loading) for all troopers except lancers; a rifled pistol in the holster for non-commissioned officers of all cavalry, and for lancer troopers, whose principal weapon is a lance 9 feet 3 inches in length, loaded and sharp at the point. The small pennons on these lances give their gay air to regiments of lancers. Officers carry swords and their own pistols—usually revolvers.

The horses are bought at the different horse-fairs, as four-year-olds of about 15 hands 2 inches height, and at prices not exceeding £35. Two troops of cavalry constitute a squadron, and a regiment may contain any number of squadrons; but the number is not often less than three nor more than four. There are no battalions of cavalry; and if it is desired to augment a regiment, one or more squadrons must be added. In computing the force of cavalry with an army, the calculation is made by squadrons. In battle, the cavalry mode of fighting is by a charge in a deep compact mass of thirty or sixty troopers wide, and many deep. In such a charge the weight of man and horse is an important ingredient, infantry formed in square being alone able to resist heavy cavalry charging in mass. So long as the weight does not impair the speed or overcome the endurance of the horse, there can be no question of the superiority of the heavy trooper, save for the general duties of a campaign, where the light-horse, well mounted, on small hardy animals, and armed with the lance, possess advantages over all other cavalry.

Artillery.—In the British army, the artillery constitutes nominally one vast regiment, known as the 'Royal Regiment of Artillery;' but except as regards the promotion of officers, this unity is only nominal. The regiment is divided into six Horse Brigades, nine Field Brigades, thirteen Garrison Brigades, three Mixed Brigades, one Depot Brigade, and one Coast Brigade, each of which, except the Depot and Coast Brigades, has a colonel-commandant, who is a general officer, holds a sinecure, and corresponds to the colonel of an infantry regiment. The strength of a brigade varies from 600 to 2500 men, according to the duty required.

Horse Artillery has all its officers and men mounted either upon horses or the limbers and ammunition wagons, to enable them to keep pace with cavalry, that being the department to which horse artillery is usually attached in the field.

Field Artillery, as its name implies, is ready to march with an army and operate in the field. It is only required to keep pace with infantry.

Garrison Brigades are trained in precisely the same manner as field brigades, and can be forthwith converted into that formation; but as their duties are confined to the guns of fortresses, or of batteries in a siege, they have no horses attached to their establishment.

The Depot Brigade has its headquarters at Woolwich, and serves as a nursery in which recruits are trained for duty in the other brigades, and to which invalids from foreign service are sent pending recovery.

The Coast Brigade is a sort of veteran establishment, composed of old artillerymen selected for good conduct and long service. The officers are mostly promoted from the ranks of other brigades. The duty is to take charge in small detachments of the minor forts and towers which guard the coast. This is of the nature of a resident service, in which the men are able to have their families with them, and forms an appropriate reward and rest for deserving old soldiers.

The brigades (except the Coast and Depot) are divided into batteries, which form the unit in calculating the force of artillery with an army. Each battery consists usually of six guns—Armstrong, 6-pounder, 9-pounder, or garrison—and has for officers one captain, one second captain, three lieutenants, an assistant-surgeon, and a veterinary surgeon; with men and horses in proportion to

the weight of ordnance. The strength and equipage of a 9-pounder Armstrong battery of field artillery on active service may be adduced as a specimen :

Officers	8	
Non-commissioned officers and men	256	
Artificers	13	
		277
Riding horses	35	
Draught horses	212	
Bât horses (pack animals)	8	
		255
9-pounder Armstrong guns	6	
9-pounder rocket carriage	1	
Ammunition wagons	18	
Spare gun carriage	1	
1 forge wagon, 1 store wagon, 2 general service wagons, 1 store cart	5	
		31

Ammunition.....1272 rounds for guns.
102,960 rounds for small-arms.
100 rockets.
10 sets of artificers' tools.
6 months' materials for repairs.

As the above includes neither the food nor tents for the men or horses, it may be imagined what are the impedimenta of an army, when forty batteries are by no means an extraordinary force of artillery.

In siege works, where very heavy ordnance and mortars are brought into operation, under the collective title of siege-train, a different and temporary organisation of the artillery takes place. In the field, the artillery of the army is collected into divisions, with the horses picketed round, so that it may be put in motion at a minute's notice. This formation is called the Park of Artillery.

Engineers.—The corps of Royal Engineers is an important and the most scientific adjunct of the army. The officers undergo very high training in pure and applied science; the men are only admitted if proficient in some trade of a constructive character, as proved by actual trial. Formerly, the men were styled *Sappers and Miners*, and at a still earlier date *Military Artificers*, the officers only being called Engineers; but in 1857 the term Royal Engineers was extended to the whole corps. Officers and men are highly paid ; and from the experience they obtain in scientific duties, are in high request in colonies and civil life for many important situations. From this cause many leave the corps prematurely. The men embrace the following trades : carpenters, joiners, masons, bricklayers, smiths, wheelers, coopers, painters, plumbers, engine-fitters, miners, printers, harness-makers, surveyors, draftsmen, photographers, tailors. From this it will be seen how various the work is which the corps is called on to perform. In time of peace the engineers are the general artificers of every garrison and camp, in addition to their prime duty of keeping the fortresses in repair. In war-time, if on the march, they form bridges over rivers, render roads practicable, throw up field-works to cover the army; in attacking a place they take the principal part in forming the approaches and batteries. They also construct mines, and in case of assault provide means of crossing the ditch and scaling the walls. In defensive works, they countermine, to prevent the mines of the besiegers from doing mischief, and repair the ramparts as fast as the enemy's fire damages them. The strength of the engineers consists of about 5000 men, of whom the privates are called Sappers. The organisation is in forty companies and two troops of train. Four companies are employed on the Ordnance Survey, six form an instructional depot at Chatham, and the remaining companies are distributed at home and in the colonies. Besides these forty companies, however, there are 260 officers employed in India, who have no men of the corps under them, the non-commissioned officers and men there being native Indians. The functions of the engineer train are to carry the intrenching and other apparatus of the corps, and more especially the train of pontoons for bridging rivers which obstruct the march of an army. The uniform of the corps is a scarlet tunic; blue facings ; Oxford mixture trousers, with scarlet stripe ; fur busby of black sealskin, with white plume and blue bag. In some foreign armies the pontonniers are organised as a distinct body.

Military Train.—This is formed for the purpose of providing armed transport for the army in time of war. It is a corps of mounted infantry, and during peace is maintained in somewhat a skeleton condition. It is, however, capable of unlimited expansion in the field. Its duties are to carry the provisions, the wounded, the tents, and the reserve ammunition. In the Peninsular war the Duke of Wellington found the necessity of organising a transport corps, which was called the Royal Wagon Train ; but we forgot that lesson, and entered the Crimea without any proper transport, until Colonel M'Murdo enrolled the Land Transport Corps, which, two years after, was remodelled into the Military Train.

Occasional Corps.—The necessities of actual warfare generally lead to the formation of temporary, local, or peculiar forces, such as foreign legions of mercenaries; and in the Russian war, the expensive Army Works Corps of navvies, organised by Sir Joseph Paxton, the organisation and status of which was, however, purely civil, its duties being to make railways, and throw up earthworks at spots not actually under fire ; native transport corps, such as the Coolie corps in China, or the corps of Fantee men and women engaged in the late Ashantee war.

Staff.—No matter how gallant, strong, or well disciplined an army may be, it can perform no efficient service unless its operations be directed by a properly organised staff of commanders. For this purpose, from two to four regiments are banded together as a brigade under a brigadier-general or major-general, who has a brigade-major to assist him, in somewhat the capacity of an adjutant ; two or more brigades are associated, with perhaps some batteries of artillery, and companies of engineers and military train, to form a *division*, under a lieutenant-general, whose staff consists of an assistant-adjutant-general and an assistant-quartermaster-general ; two or more divisions, including all arms, are thrown together into a *corps d'armée*, as the command of a general. For his staff he has a deputy-adjutant-general and deputy-quartermaster-general, with their subordinates; and an assistant military secretary. Over all the *corps d'armée* is the commander-in-chief, who may be a general or field-marshal. His staff is brilliant and numerous, having at its head his adjutant-general, quartermaster-general, and military secretary. Besides these officers, every general officer, according to his rank, has one or more young

officers attached to him as aides-de-camp. These are detached from their regiments, and their employment is to convey the orders of their general to the different sections of his command. They form his personal staff, and share his tent.

Staff-officers receive a high rate of pay for staff duty in addition to their other pay as officers of their rank in the army. They wear broad gold shoulder-belts and cocked-hats with lofty white plumes. As all staff-officers are mounted, their plumes render them very conspicuous as they gallop about on the field of battle.

We have now described the organisation of the fighting men of the army, and how they are commanded; but to keep our men up to the fighting mark, they require to be fed, housed, doctored, taught, and—unfortunately—punished; and for each of these services there is a distinct body of officers and men, forming the

Administrative Departments of the Army.

These departments are all now merged into the Control Department, of which there are three divisions—relating to (1) the food, (2) the shelter, (3) the stores of the army. The chief officers of the department are controllers, deputy-controllers, &c.

Food.—The collection of food, its preservation, and punctual distribution to the sections of the army, are the all-important functions of the Commissariat, which is superintended by a commissary-general, deputy, assistants, &c. The formation of magazines of food, and the conveyance of great supplies to the requisite point, in perhaps a devastated country, require a great power of organisation in the superintendent of the commissariat. Attached to this department is the commissariat staff corps, a body of disciplined butchers, bakers, &c. who ply their trades with the army, and furnish the troops with fresh meat and bread.

Shelter.—In times of peace, and when not encamped, the soldiers are lodged in capacious barracks; each of these is in charge of an officer styled a commissary of barracks, who has barrack-sergeants and labourers to assist him in maintaining it in a habitable condition. When the troops are encamped, or in the field, they are housed in tents during the summer, and in huts during the winter. These are under the charge of the quartermaster-general's department, which is responsible for their preservation, cleanliness, and issue in proper numbers to the troops.

Medical Attendance.—Soldiers are liable to disease—first, in a small degree, from wounds received in action; secondly, and more, from the hardships of campaigning; thirdly, and in a proportion far exceeding the other two together, from the results of their own excesses. To counteract disease, and superintend the general sanitary arrangements, the army has a very large staff of medical officers, comprising inspectors, deputy-inspectors-general, surgeons-major, and surgeons. The officers are fairly paid; but the upper ranks are too few to insure rapid promotion, and much of the duty lies in tropical and unhealthy climates. These causes render the Army Medical Department unpopular with the profession. The Purveying Department consists of non-professional officers, who have charge of the food, clothing, and comforts of the sick. The Army Hospital Corps is a body of ward-masters, male nurses, cooks, &c. for service in the military hospitals: they are under the orders of the surgeons. There is likewise a staff of female nurses for the general hospitals, originated by Miss Florence Nightingale. Every regiment has its surgeons, who attend their patients in the regimental hospital, which is a hut or tent set apart for the service. More serious cases are sent to the divisional hospital, where there is a deputy-inspector-general and medical staff. On a still larger scale is the general hospital, established usually in rear of the army, where there is a full staff of officers, nurses, &c. with every appliance that medical skill can suggest, under the direction of an inspector-general.

Stores.—An army requires stores in a variety and to an amount which seem quite incredible to a civilian. It is of prime necessity that these should be duly supervised as to their storage, classification, and issue, for melancholy results have ere now ensued from ill-organised arrangements for the army stores. The Control Department undertakes this duty. It consists of commissaries of stores, their deputies, assistants, &c. in five grades.

Divine Service.—Having provided for the welfare of his body, the state turns its attention to the soldier's spiritual interests. At every military station of importance there is a chaplain, who is a commissioned army officer; where the troops are too few to justify this, they attend a neighbouring church, the incumbent of which is paid according to the space occupied. Army chaplains are not allowed to interfere with the secular instruction of the men. They are of three denominations—namely, Church of England, Roman Catholic, and Presbyterian, all of whom rank equally. Their pay rises, with length of service, from 10s. to 22s. 6d. a day. When a man joins the army, he is required to declare his religion; and he is compelled to attend the ministration of that religion once every Sunday, when practicable. The chaplains also superintend the Sunday schools.

Instruction.—For the instruction of officers there is the Staff College at Sandhurst, through which all officers must pass at two very severe examinations before they are eligible for employment on the staff. The Royal Engineer establishment at Chatham is for instruction of officers and men in their professional duties. The School of Gunnery at Shoeburyness affords practical teaching to the artillery; while the Schools of Musketry at Hythe and Fleetwood do the same for the infantry. For general instruction in drill and discipline of the depots of corps on foreign service, the depots furnish ample time and force. In all corps, gymnasia have been established, to afford the men amusement, and develop their physical powers. At Netley, near Southampton, is a Military Medical School, to impart a military, surgical, and hygienic training to candidates who have already passed as qualified practitioners. The camps at Aldershot and Curragh, while being defensive points at which strong forces are concentrated, are, at the same time, great schools for tactics and manœuvring.

As regards general instruction for the men, each regiment has on its establishment a trained schoolmaster, who gives lessons gratuitously to

all soldiers who choose to attend his classes. There is also a schoolmistress, who teaches the daughters of soldiers, and the sons under eight years of age; their elder sons are taught by the regimental schoolmaster. In addition to ordinary elementary education, the schoolmistress conducts an industrial and an infant school during the afternoon. If the pupils are numerous, she is allowed pupil-teachers and monitresses to assist her. The charge is one penny a month for each soldier's child attending the school; for the child of an officer, half-a-crown must be paid monthly; and contractors and other civilians employed in connection with military works, may send their children to the school of a neighbouring regiment for a fee of 5s. each a month: the school is likewise open to the children of soldiers on foreign service or orphans of soldiers gratuitously, and to the children of pensioners residing near at 3d. a month. It is strictly forbidden that any distinction be made between these classes of children in their treatment in the school.

Punishment.—Implicit obedience and subordination are the only means of maintaining that exact discipline which distinguishes an army from an armed mob; and for securing this, summary powers are necessarily vested in commanding officers. Formerly flogging was inflicted upon slight occasion; latterly, it was had resort to only in time of war. But after much discussion and strong opposition, flogging was finally abolished in 1881, a system of other summary punishments being prescribed instead. The laws of discipline constitute martial law, and are detailed in the Articles of War. These are necessarily severe, and the penalty of death is annexed to numerous crimes which would be but lightly punished under the civil code; but it is usually only under circumstances of actual war that the full punishment is inflicted. In military life the idea of trial by the prisoner's peers has no existence; the court to which all offences are referred is a court-martial composed in nearly every case of his superiors. The powers of a military court-martial depend upon its constitution as a regimental, district, or general court; but the sentence requires confirmation by superior authority.

The punishments usually inflicted are degradation of rank, dismissal (with or without ignominy), loss of good-conduct pay, imprisonment, or extra drill. The imprisonment takes place in a military prison, of which there are several. Time spent in prison is occupied in carrying cannon-balls from one place to another, and then carrying them back again. Added to this, the prisoner is put on rations which would be called starvation in a civil jail; and yet, strange to say, nine prisoners out of ten come out of prison heavier and healthier than they went in.

Rewards.—In the punishments, the military code is severe and rapid; in rewards, it is not remiss in acknowledging merit. For officers, the rewards are brevet promotion, the Order of the Bath, and certain sinecure appointments. For men, there is good-shooting pay; extra pay for being a good swordsman, gunner, or lancer; but the principal reward for steady and continued merit is good-conduct pay, the theory of which is as follows: After two years' service, if a soldier has committed no offence of sufficient magnitude to cause his name to be entered in the Defaulter Book, he is granted an additional penny a day, and a chevron or badge on his arm. After every five years more of immunity from heavy offences, he receives a further penny and badge up to 6d. a day, which he is able to hold with his pension when he retires from the service. By misconduct he forfeits a penny at a time, and can only regain it by a period of renewed merit. For officers and men there are silver medals in commemoration of campaigns, with clasps for the battles in which they have been engaged; and, most honourable distinction of all, there is the Victoria Cross, open to all ranks for conspicuous valour in the field. For officers, this cross is unaccompanied by pension; but for men, it carries a pension of £10 a year for life. Besides the foregoing, there are rewards for meritorious service, which consist of annuities of £100 a year to officers who have served long and well; and annuities of from £5 to £20, or gratuities, accompanied by a medal, for deserving soldiers.

Appointment, Promotion, and Retirement of Officers.

Candidates for commissions in the Artillery and Engineers, now, as formerly, must pass an open competitive examination, for admission as cadets to the Royal Military Academy, Woolwich. After a course of professional study there, they pass a professional examination, and get gazetted to regiments if found duly qualified. After the candidate joins his regiment, promotion is by seniority. In the other branches of the army, admission and promotion up to the rank of lieutenant-colonel was, until lately, by purchase. A very small number of commissions were given to non-commissioned officers of high merit, and to distinguished students at the Cadets' College, Sandhurst. The rest were bought by persons desirous of becoming officers, who, if they were not graduates of universities, or promoted from the ranks for merit, passed a not very stiff examination; and if they were not 'plucked,' were gazetted to their regiment as commissioned officers. After that, promotion was by purchase—the officer buying each step in rank up to the grade of lieutenant-colonel, as vacancies occurred; and if unable to buy it, giving place to the next man below him in rank who could afford to do so. The prices varied with the rank, from £500 to £5000—and even higher, as fancy prices were often exacted. By Royal Warrant, in 1872, this system was abolished, and the Line put, as regards entrance and promotion, on the same footing as the Artillery and Engineers.

An officer may rise in his regiment to be a lieutenant-colonel (or to be a colonel in the Artillery or Engineers), and this is *substantive rank;* but after he has attained the rank of captain regimentally, he may be granted, for distinguished service, army or *brevet* promotion up to the rank of lieutenant-colonel. This does not alter his position in the regiment, but gives him higher rank in the army generally. A lieutenant-colonel must command a battalion or serve on the staff for five years, to become colonel. There is a fixed establishment of general officers; and when a vacancy occurs in it, the senior colonel who has actually served for six years as a field-officer (*i.e.* as major, lieutenant-colonel, or colonel), is promoted to the rank of major-general. He thence reaches the ranks of lieutenant-general and general by seniority as vacancies

occur, unless promoted out of his turn for distinguished service. Field-marshal is an extraordinary rank, rarely conferred, and only as a mark of the sovereign's special favour. The retirement of officers is provided for by 'retired full-pay,' which is a limited establishment attainable after thirty years' good service, and 'retired half-pay,' to which every officer has a right after twenty-five years' service. These periods are reduced if the officer be disabled by ill health or wounds.

Recruiting, Enlistment, Promotion, and Retirement of Soldiers.

The country is divided into a certain number of recruiting districts. From some central place in each, a recruiting agency, consisting of an officer and several non-commissioned officers and men, scour the district for recruits. As military service has always been voluntary in this country, it is difficult to persuade men to enlist, especially in times when wages are good, and food and work plentiful. Hence it has been the unvarying policy of the government of late to increase the inducements to enter the army. This has been done in two ways: 1st, by augmenting the pay; 2d, by shortening the service. By 33 and 34 Vict. c. 67, a recruit can now enlist either for short or long service. If he elects short service, he enlists for twelve years—the first six of which he must pass in the regular army, the other six in the 'army reserve.' After his first six years' service, he may go back to civil life, and live anywhere in the United Kingdom, and follow any trade he chooses. Whilst serving in the reserve he will get fourpence a day, and will be liable to be called out for drill occasionally, but so as to injure as little as possible his general occupation. If, however, he elects to enlist for 'long service,' he may enlist for the whole twelve years in the regular army. At the end of this time, if he has conducted himself well, and gets leave from his commanding officer, he may re-enlist, and complete his twenty-one years' service, so as to entitle him to a pension for life. Great care is taken by the law that men shall not be enlisted on false pretences, or in a state of intoxication. Every recruit is taken before a magistrate, who explains to him the step he is taking. If he does not appear, or on appearing does not assent to be enlisted, no further proceedings are taken. If he signs the declaration and takes the oath, he is enlisted; but by the Army Discipline and Regulation Act of 1879, he may at any time within three months of enlistment, be discharged on payment of ten pounds. Once established in his regiment as a private soldier, the man must look to his own steadiness and courage for promotion. The ranks of corporal and sergeant are earned in the company or troop to which the soldier may be posted; promotion from sergeant to be a staff-sergeant or sergeant-major is made by selection among all the sergeants in the regiment. A deserving sergeant or sergeant-major is usually selected for the commission of quartermaster, and a few sergeants are promoted to be sub-lieutenants. The number so advanced to commissions is not, however, large; and unless the man be still young, and of manners above his class, the boon is questionable. A sergeant promoted to a commission is thrown among men socially his superiors, and probably richer than himself. It will be difficult for him to adapt himself to this change; and, considering that a sub-lieutenant's pay is very low, still more difficult for his wife, should he be married.

The Army, as a Profession, compared with Civil Life.

In comparing the military and civil professions as a means of livelihood, and a mode of passing life, it is unnecessary to consider the liability to violent death. The devotees of any calling furnish a considerable percentage as martyrs to their pursuit. As regards the officers, the rich and aristocratic ones care little for any profit from the service, and enter for the social position, or the chances of honours and distinction. With the poor officer, the service is his means of living; to him it is a lottery. If he be fortunate, he may obtain promotion, distinction, and, in staff employ, no contemptible income; if he be in a regiment where promotion stagnates, his career is wearisome, slow, and ill-paid. Army appointments—indeed, all government appointments open to gentlemen—shew badly by the side of commerce; but they are as good in the earlier stages as the learned professions, and later on, though with less brilliant prizes, they possess more certainty, and carry with them a retiring allowance after the work of life is over. As to pay, the yearly salary of a field-marshal and general-commanding-in-chief is £5999; of a general-commanding-in-chief, £3458; of a general, £2075; of a lieutenant-general, £1383; of a major-general, £691; of a brigadier-general, £520; of a colonel, £415; of an adjutant-general and quartermaster-general, if a general, £1383—if a colonel, £1095; of a deputy-adjutant-general and deputy-quartermaster-general, £691; assistant ditto, £346; deputy-assistant-deputy ditto, £260; assistant at headquarters, £346 or £501. The regimental pay is represented in the following table (see next page):

A private in the Foot Guards gets 1s. a day; in the cavalry, 1s. 2d.; infantry, 1s. A gunner in the artillery (field), 1s. 2½d.; in the horse artillery, 1s. 4d. There is no stoppage for rations now, except in the case of groceries, which cost the soldier about 4d. a day. This rate of pay is very small. Still, it is twice as good as the pay of the French soldier; and whilst the average yearly cost of the English soldier, including pay, clothing, and food, is £78, 18s. 5d. a head, according to Colonel Sykes, that of the German is only £35, 15s.

In the present state of the labour-market, the poor pay offered the soldier is a very serious drawback to recruiting; yet, considering the class from which the army is recruited, and the advantages in the way of gratuitous education, pension, easy work, and good regular living, insured to the soldier, the army, as an occupation, is preferable to most of the occupations the same class of men in civil life would find open to them. The men who offer themselves for military service do not belong to the class of skilled workmen, as a rule. Out of every 1000 recruits, in 1871, there were 637 agricultural and unskilled labourers, only 80 skilled manufacturing artisans, 182 mechanics (smiths, masons, carpenters, &c.), 77 shopmen and clerks, and 7 belonging to professional classes. Neither are the recruits men who, even as unskilled labourers, would be worth much, for one in every three had to be rejected for physical incapacity

by the examining medical officers. They are certainly not, as a class, men of education, for out of every 1000 there were 143 who could neither read nor write, 94 who could only read, and 740 only who could both read and write. The well-behaved soldier has means of earning many extra allowances for doing extra duty, not purely military or combatant, which increase his nominal pay.

REGIMENTAL DAILY PAY.

	R. Horse Artillery.	Royal Artillery (Field).	Royal Engineers.		Household Cavalry.	Line Cavalry.	Foot Guards.	Infantry.
	s. d.	s. d.	s. d		s. d.	s. d.	s. d.	s. d.
Colonel	30 0	26 0	26 0		..	..	..	..
Lieutenant-Colonel	24 9	18 0	18 0		23 6	21 6	18 0	18 0
Major	18 6	16 0	16 0		15 6	15 0	13 7	13 7
Captain	15 0	11 7	11 7		13 6	13 0	11 7	11 7
Lieutenant	7 8	5 7	5 7		6 8	6 8	5 3	5 3
Adjutant	17 6	14 1	2 6		16 0	15 6	14 1	14 1
Riding-master	9 0	9 0	9 0		9 0	9 0	..	..
Quartermaster	10 6	9 6	9 6		10 6	10 6	9 0	9 0
			Mounted.	Dismtd.				
Sergeant (Corporal) Major	6 0	5 10	6 0	6 0	5 10	5 4	5 2	5 0
Bandmaster	6 0	6 0	..	6 0	5 6	5 6	5 0	5 0
Quartermaster-sergeant (Corporal-major)	4 4	4 2	5 3	4 6	4 2	3 10	3 8	3 6
Sergeant (Corporal) Instructor	4 2	4 0	..	..	3 3	3 3	3 3	3 3
Battery-sergeant-major, do. Q.-M.-sergeant	4 4	4 2	..	..	..	..	..	..
Armourer-sergeant (Corporal)	..	5 3	..	5 3	5 3	5 3	5 3	5 3
Troop and Company Sergt. (Corporal) Major	..	..	4 4	3 9	4 0	3 10	..	..
Farrier Quartermaster-sergeant (Corporal)	4 5	..	4 6	..	4 3	4 0	..	..
Wheeler Quartermaster-sergeant	3 11	..	..	..	..	..	..	..
Collar-maker and Saddler Q.-M.-sergt. (Corp.)	3 11	..	..	..	4 0	3 8	..	..
Orderly-room-sergeant (Corporal)	2 8	2 8	..	..	3 0	2 8	2 6	2 6
Sergeant (Corp.) Trumpeter, Sergeant Bugler	3 4	3 2	..	4 6	3 2	2 8	..	..
Sergeant (Corporal) Cook	3 4	3 2	..	3 3	3 0	2 8	2 6	2 4
Sergeant (Corp.) Farrier and Carriage-smith	3 9	3 7	3 8	..	3 4	2 10	..	..
Paymaster-sergeant (Corporal)	..	..	..	..	3 0	2 8	..	2 6
Kettle-drummer, Sergeant-drummer	..	..	..	..	2 4	..	2 6	2 4
Drill-sergeant, Colour-sergeant	..	..	..	3 3	..	..	3 2	3 0
Corporal	2 8	2 6	2 9	2 6	2 8	2 0	1 9	1 8
Bombardier, Second Corporal	2 5	2 3	2 5	2 2	..	..	..	..
Collar-maker, Wheeler, Saddler, Artificer	2 5	2 3	..	1 11	2 4	1 9½	..	..
Trumpeter, Bugler, Drummer, and Fifer	2 0	1 2½	1 4	1 1½	1 11	1 4	1 2	..
Gunner, Sapper, Private	1 4	1 2½	1 4	1 1½	1 9	1 2	1 1	1 0
Driver	1 3	1 2½	1 4	..	..	..	..	..

MATERIEL.

The materiel of an army comprises everything in connection with it which is neither human, nor a beast of burden, nor a dwelling-place, nor a fortification. The articles thus included are of almost infinite variety—military stores of all kinds, medical stores, camp equipage, food and forage, pontoon train, arms, and ammunition. The very limited space of this article will only allow a short description of the last two items.

Arms.

In all ages the sword appears to have been the principal weapon in hand-to-hand combat, or at least from the time that the club of the mere savage had been set aside. As early as the fourteenth century, fire-arms began to be employed, first as artillery, and very shortly after in the shape of the harquebus as a clumsy hand-gun.

In their earlier stages, cannon went by various names, as *bombard* (parent of mortars), *culverins*, *petronels;* later on, they were reduced to the three denominations—cannon, mortar, howitzer, of which hereafter. Small-arms were at first literally small cannon; the old harquebus being no more than a diminutive gun mounted on a rude stock, rested on a triangle or wall, and fired by a match applied at the touch-hole. Naturally, every effort was made to increase the portability of this weapon; and it passed through various stages—first, the *match-lock* of the fourteenth century, then the percussion-lock of our own day, which produces fire by the blow of a hammer on a copper cap containing detonating powder. This lock was adopted in 1840 by the British government, but it has now been superseded by the needle-gun lock, by which a sharp pin is driven through a detonating cap in the bottom of the cartridge, and thus explodes it. This was introduced with the breech-loading weapons. The smooth-bore musket, known as 'Brown Bess,' continued to be the form until from 1853 to 1856, when its place was supplied in the British service by the Enfield rifle. Meanwhile, as early as the reign of Henry VIII. large pistols had been constructed as a convenient hand-weapon. These were reduced gradually in size, and altered in shape, until the excellence of the present *revolver* was attained.

Adverting, now, to the weapons actually in use in the British army, the *rifle* owes its accuracy to certain grooves or spirals within its barrel, which cause the ball to revolve rapidly on an axis parallel to the axis of the piece, and therefore presumably to keep within very small divergence from the line of aim. The advantage of this revolution has been greatly increased by the adoption of conico-cylindrical balls, instead of the old spherical bullet. Thus provided, the Enfield rifle is tolerably certain at 900 yards, while 'Brown Bess' was considered quite harmless at 100 yards. The next improvement was effected by the invention of Mr Snider, who converted the Enfield rifle into a breech-loading weapon, which, without being comparable as an arm of delicate precision to the French Chassepot, still combines simplicity, durability, economy, and efficiency in a greater degree than any other weapon then used in warfare: 12 to 18 shots per minute can be fired from it. But the weapon now used by our army is the Henry-Martini rifle,

which has a twist in the rifling of 1 turn in 22 inches, and a calibre of ·45 of an inch. The barrel is designed by Mr Alexander Henry of Edinburgh; the breech mechanism by Mr Martini, a naturalised Swiss. The Henry-Martini or Martini-Henry rifle excels the Chassepot by its greater strength and safety of ammunition, higher penetrative power, greater accuracy and longer range, and above all, in increased rapidity of fire. In 1883, arrangements were being made for introducing into the British army improved magazine or repeating rifles. Prussia has superseded the needle-gun by the Mauser, and France has greatly improved the Chassepot.

Cannon comprise the smooth-bore gun, the rifled gun, and the shell gun. The rifled gun at present in the service is made of various calibre, from a 3-pounder for mountain, to a 700-pounder of 35 tons weight. The projectile is an elongated bolt or shell. The smaller guns, up to the 40-pounder, are breech-loading, the breech being secured by a steel vent-piece falling into a slot. Apart from the rifling, the specialty of the gun is its mode of manufacture, to insure the strength necessary to resist the explosion of the heavy charges used. The results of the Armstrong gun, the first of the spiral rifled guns introduced, were very satisfactory, a range of 5¾ miles, with very trifling aberration, having been attained. The arm is, however, somewhat delicate, more especially when made to load at the breech; and it is expensive. A cheaper modification of the Armstrong gun, invented by Mr Fraser, executive officer of the Woolwich Gun Factory, has been adopted. No system of breech-loading has been found out yet sufficiently handy, safe, and durable for the heavier guns.

Mortars are short guns of large calibre in proportion to their length, from which shells are fired with comparatively small charges, at a considerable elevation, in order that they may fall nearly vertically on the object attacked.

Howitzers are cannon of considerable bore, but small thickness of metal; they are adapted for small charges and hollow shot, and therefore are only serviceable at close quarters. In a field of battle, among masses of men, their fire is very destructive.

The cost of artillery is enormous: a 12-inch 600-pounder, 23 tons weight, costs £2627; an 11-inch 500-pounder, 25 tons weight, costs £1893; a 10-inch 400-pounder costs £1305; a 9-inch gun costs £912; and a 7-inch gun £503. Small 9-pounders cost £84 each; still smaller 6-pounders cost £78 each. In fact, comparing our modern artillery with the old cast-iron guns, we find the cost of production increased by about 400 per cent. On the other hand, the power of modern artillery has enormously increased—so much so, that one single projectile thrown from one of the 35-ton Fraser guns (700-pounder) in one of the *Devastation's* turrets, exceeds in weight a whole broadside from one of Nelson's 'old seventy-fours'—not to speak of the 81-ton gun.

Ammunition.

Ammunition includes the powder by which the projective force is produced, and the missiles themselves. Those for modern arms are as follows: For small-arms, the bullet of lead, in shape conico-cylindrical; for the smooth-bore cannon, *round shot*, varying in weight from 6 to 700 lbs. and of cast-iron; *hollow shot* of the same diameters, but less weight; *case*, *canister*, and *grape shot*, which consist of bullets and small iron balls, bound together in clusters, to disperse on being fired, and produce disastrous effects on bodies of men; *chain shot*, formed by two cannon-balls being united by a short chain, and which are destructive to the spars of shipping. For rifled guns, shells or solid shot of an elongated form; exploded by a time-fuse, burning a certain number of seconds, or by a percussion-fuse on striking any object. Solid elongated shot of steel are used against iron-plated ships. For mortars, *shells* are used, which consist of heavy hollow iron spheres, containing a charge of powder with bullets, slugs, and pieces of metal. *Grenades* are small shells of iron or glass, with a fuse, which are thrown by hand among the holders of a ditch or a scaling-party, and produce great confusion at their explosion. *Carcasses* are shells of light specific gravity, which contain combustibles capable of burning for some time, and setting fire to anything on which they fall. A *rocket* is a gun made of so light a material, that on the explosion taking place it shoots itself through the air, breech foremost, to a great distance. Rockets are made as large as 32-pounders, and become terrible weapons, especially against cavalry. *Gunpowder* varies as regards the proportion of its ingredients, but the proportions of the constituents in English government powder are saltpetre, 75; sulphur, 10; and charcoal, 15 parts in the 100. There is no powder in the world equal to that produced in the government mills at Waltham Abbey. The physical characters vary—the size of the grains ranging from the fine pistol powder, the grains of which are retained on sieves with 72 meshes to the inch, up to the 'pebble' powder for big guns, the grains or lumps of which are as large as the top of a man's thumb. *Cartridges* consist of (1) projectile, (2) powder, (3) detonating apparatus to ignite the powder. These are arranged in a case—that of the Boxer cartridge for the Snider rifle being made of brass covered with paper. The detonating apparatus is a percussion-cap, which lies in the 'cap-chamber' at the bottom of the powder, right against a small shouldered brass anvil. Ignition is effected by the cap being struck (by the striker of the rifle) against the anvil, when the flash from the detonating composition of the cap passes through the firehole at the bottom of the cap-chamber to the powder, and explodes it.

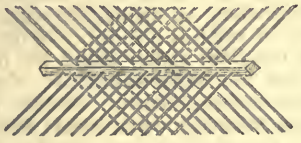
MANUFACTURING DEPARTMENTS.

There are two methods by which the vast supplies of materiel for the army can be procured—by contract with private manufacturers, or by direct manufacture in the government establishments. There is much to be said in favour of either source. It is always desirable to maintain throughout the country a sufficient number of skilled artisans, to complete the orders given on an emergency; and this can only be done by fostering the private trade in such articles. On the other hand, if such articles are manufactured exclusively by the trade, the prices are found to rise progressively, for the authorities have no criterion by which to compute the proper price, and in most warlike implements the numbers in

each branch of trade are too few to insure a healthy competition. To reconcile these difficulties, government purchases stores by contract from the private manufacturers to a greater or less extent according to circumstances, and makes the remainder it may require in its own workshops, as a check upon the prices charged.

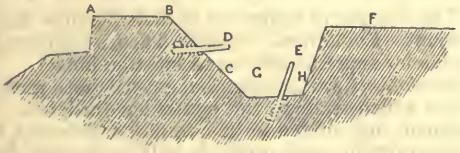
WORKS.

For defensive purposes, the strength of an army or garrison is materially augmented by the interposition of physical obstacles to an enemy's advance. If an army be in the field, it is usual to throw up some sort of breastwork to cover its front or flank, and give the men time to run to arms in the event of an unexpected attack. The simplest of all obstacles is a row of *abattis*, consisting of trees cut down, and laid in a row with their boughs outwards; the boughs may be pointed, to render them more annoying to an assailant. Next would be *chevaux-de-frise*, formed by iron or wooden



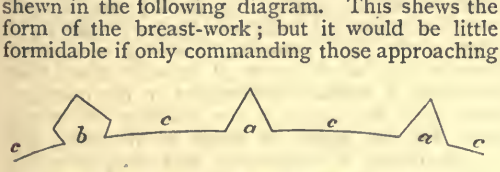
stakes set cross-wise in a strong beam, so that it will always stand, and yet be a difficult object to support.

If time allows more solid works, the simplest is a parapet, formed by digging a ditch and throwing up the earth behind it to form a mound as steep as the nature of the soil will allow. The ground before the ditch should be cut to a gentle slope, called the *glacis*, that an enemy might be fully exposed in approaching. The work can be yet more



ABC, parapet; G, ditch; F, glacis; D, fraise; E, stockade.

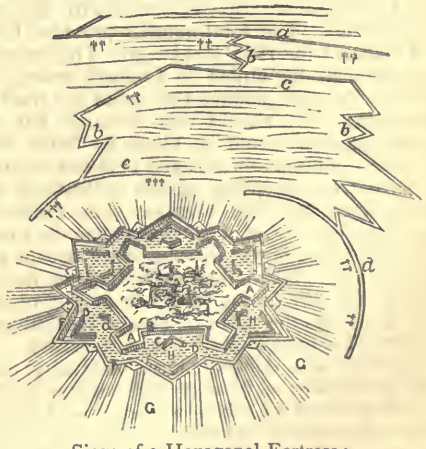
secured by adding stockades and fraises, which are stout beams sunk in the ground, and only surmountable by climbing or battering down by artillery. A section of a simple field-work is shewn in the following diagram. This shews the form of the breast-work; but it would be little formidable if only commanding those approaching



Line of Field-works: *a*, redan; *b*, bastion; *c*, curtain.

immediately in front, which is all that it would do if completely straight. To obviate this, projections are made, called *flanking defences*, within range of each other, when a fire may be opened on the enemy attacking the front of the breast-work. These projections may be simply *redans*, or the more elaborate *bastions*.

Permanent works of fortification are those by which towns and fortresses are defended. They are constructed on the principle of field-works, though of a more solid and formidable construction, having greater height, more perpendicularity, and being faced commonly with masonry or iron plates; outworks are also constructed in front of the main ditch, to constitute more than one line of defence. The circuit of the place to be defended is traced as a polygon, probably of many sides; each side of the polygon becomes a *curtain*, and at each angle is erected a bastion. A massive *rampart* is drawn on these lines, and the *parapet* is formed upon it, with *banquettes* behind for the defenders and guns to stand upon. In front of each curtain, a *redan*, *demi-lune*, or *ravelin* is made, of less elevation than the curtain, so as to be commanded by it, and not to obstruct its fire. A smaller ditch is dug in front of the ravelins, and before that, at a still smaller elevation, is the *covered-way*, which is the outmost defence, and from which the *glacis* slopes down to the country round. In fortifying a place, a skilful engineer takes advantage of all natural eminences, so that it rarely happens that the polygon is a regular one. To prevent shot from bounding along the works in a ricochet fire, and enfilading perhaps a whole battery, earthen mounds called *traverses* are erected at intervals. As a science, fortification was first brought to perfection by Vauban, and his system still continues in vogue with comparatively trifling modifications. The plan of a portion of Vauban's first system is shewn in the accompanying sketch:



Siege of a Hexagonal Fortress:

A, bastions; B, curtains; C, tenailles; D, ravelins; F, covert-way; G, glacis; H, ditch; *a*, first parallel; *b*, approaches; *c*, second parallel; *d*, third parallel, right attack; *e*, third parallel, left attack; ††, breeching batteries.

As the guns of such a work command every point around, it is only possible to approach it by trenches. These are cut zigzag, with great danger to the sappers; and when a sufficiently near point is reached, the trench is carried in a direction parallel to the walls of the place—sand-bags and the excavated earth forming a parapet before it. This line is called a parallel, and batteries are formed along it, with wide places d'armes for the troops to assemble in it. From these batteries the

defences are cannonaded, and if possible breached. Three successive parallels are usually constructed, the last very near the covered-way. From the third the final assault is made. Mines are often run from it under the ditch and ramparts, in the endeavour to blow them up; the besieged also countermine, to destroy the hostile mines and approaches. Terrible battles thus take place underground. The siege of a strong work is a very formidable undertaking; many miles of trenches and mines having frequently to be dug out, and thousands of lives sacrificed during the process.

RESERVE FORCES OF THE UNITED KINGDOM.

Army of Reserve is a small force including men discharged from the army for other cause than misconduct before having earned a pension, and the 'short-service' men who have served six years in the line, and who serve other six in the reserve, and enrolled pensioners, who, as long as they are in receipt of pension and able-bodied, are all liable to serve in this force, and undergo annual training. The number of this force in 1882–83 was 47,000; 23,000 men being in the first class, and 24,000 in the second. Over the pensioners there are, in the various districts, staff-officers, who drill them and pay them.

Militia.—The militia is the old constitutional force of the country. The acts under which it is actually constituted are of late date, the principal being 15 and 16 Vict. cap. 50. It is wholly a territorial force, each county being called upon to contribute a certain power under the command of its lord-lieutenant, as vicegerent of the crown, which by the constitution is vested with the command-in-chief. The total number provided for in the Estimates for 1883 is 143,459. This number is apportioned by Order in Council among the counties. In each county the quota is raised by volunteering; but should this resource fail, the requisite number would be taken by ballot from the whole civil population, aged between eighteen and thirty-five, excepting certain professions and classes which are held exempt. The militia in time of peace are trained for twenty-one days each year, and in time of war may be called out for permanent duty. When thus embodied, or out for training, the pay is the same as in the regular army, as is also the uniform, except that silver is substituted for gold in all the accoutrements.

Yeomanry is a domestic force of cavalry, composed principally of farmers and country gentlemen, all mounted on their own horses. They are armed and partially clothed by government, and paid at a high rate during the annual training, which must not exceed fourteen days. The numbers provided for in the Estimates for 1883 were a permanent staff of 328, and 14,458 yeomen. They are at all times liable to be called out in aid of the civil power, on occasions of riot or disturbance, and to be embodied in the event of invasion.

Volunteers.—When Napoleon threatened England with invasion in 1803, the nation ran to arms, and not less than 463,000 effective men appeared in the ranks. This force diminished when the danger vanished, and disappeared after the peace. In 1859 it was revived; government took the direction of the movement, and appointed an inspecting staff. The result has been, that the institution has taken firm root in the land, and that about 200,000 men of admirable physique and intelligence are fair soldiers and expert marksmen. Parliament grants a capitation rate in aid for every man who proves himself 'efficient.' The bulk of the volunteers is infantry; but there is a large force of artillery, well served; and there are also small numbers of light horse, mounted infantry, and engineers. They select their own officers and uniforms, subject to the approval of the crown. They are not available for preserving internal peace.

CENTRAL ADMINISTRATION.

The headquarters of the army (but not of the reserved forces) is at the *Horse-Guards*, where is the office of the *Commander-in-chief*, with his staff of high officers round him. He is responsible for the discipline of all troops and for their movements. In all other respects the entire military strength of the country is subject to the *Secretary of State for War*, who administers its finances, and is ultimately responsible to parliament for everything in connection with it. This great officer of state is a member of the Cabinet, and sits at the *War Office*, where his immediate assistants are two under-secretaries of state, and an assistant under-secretary. Besides these, the heads of the following departments form part of his office: Fortification and Works, Barracks, Divine Service, Commissariat, Medical, Purveyors, Stores, Ordnance, Surveys, Clothing, Contracts, Militia, Volunteers, Account, and Audit. Such multifarious duties, with the charge of the fourteen millions which the army, &c. annually costs, involve of necessity a large department. The total net charge for the British army for the year ending March 31, 1883, was calculated at £15,458,100.

ACTIVE OPERATIONS OF AN ARMY.

The science of command is divisible into three sections—Evolutions, Strategy, Tactics; although genius for supreme command must be innate.

Evolutions are the rules that govern those movements which strategy and tactics have ordered. A regiment may march in line, in file, in columns, in close order, in open order, in half or quarter distance, in échelon, and in other ways; and the mode of changing from one of these movements to another, or of forming square on the field of battle, belongs to evolutions. If a general, in the heat of battle, suddenly orders a large part of his army to make a new attack in a new spot, he depends on his officers to master the several evolutions that will bring the troops to the right place at the right moment. *Strategy* is a name given to the whole series of considerations that determine a military commander in his management of a war—such as the selection of strong posts for the depots or bases of his army, the establishment of magazines and hospitals, the decision whether to take the offensive by attacking fortresses and commanding roads, or the defensive by insuring a good line of retreat. To excel in strategy is to possess the highest qualities of a commander. *Tactics* denote the management of troops in actual conflict with the enemy. Strategy lays down the plan of a campaign; tactics

fight the battles. How to make different bodies of troops march from different places so as to arrive at a given spot at a given time, is itself a difficult tactical problem, since the general must take into account the nature of each detachment and the sort of ground to be got over. In short, the great object of all strategy with every general should be to make his force, however inferior on the whole, the stronger at the point of actual attack, for, as Frederick II. of Prussia wittily said: 'Providence fights with the big battalions.' To this system, Napoleon, and, on another element, Nelson, owed all their victories; their attack being to double on half the hostile line, and break it before help came from the other half; thus Napoleon well-nigh destroyed in detail the armies of Blücher and Wellington before they had united to crush him at Waterloo.

NAVAL ORGANISATION.

Before the sway of the Western emperors had ceased to be felt, the shores of Britain had been guarded for several years by a British fleet under the usurper Carausius. Alfred the Great, in the endeavour to vanquish the Norse sea-robbers, founded the English navy, consisting of galleys rowed by thirty or forty pair of oars. William the Conqueror gave privileges to the Cinque Ports, on condition of their furnishing a certain number of ships for the national service. Richard I. took a considerable fleet to Palestine. John claimed that all foreigners should strike to the English flag. The navy waxed strong under his successors, until, in 1340, it utterly defeated the French fleet, with 40,000 men on board, at Sluys. The first large British ship was

The Great Harry.

the *Great Harry*, built by Henry VII. who also was the first to maintain a fleet during peace. The modern navy may be said to have been founded by Henry VIII. who established the Admiralty, the Navy Office, the Trinity House, and the dockyards at Deptford, Woolwich, and Portsmouth; besides appointing regular salaries for officers and sailors. His most famous ship was the *Henri Grace de Dieu*. Under Elizabeth, the fleet that encountered the Spanish Armada, provided only in part by the crown, numbered 176 vessels, manned by 15,000 seamen. Under James I. the royal ships, by being built less high and narrow than before, became more efficient. The largest ship in the time of Charles I. was the *Sovereign of the Seas*, of 100 guns, and the first three-decker. Cromwell, who greatly improved the navy, was the first to place naval estimates before parliament, and to obtain a specified annual supply for that service. The royal navy under James II. comprised 173 vessels; increased at the death of Anne to 200, averaging 50 guns each. During the great French war the British navy increased rapidly: in 1793, it comprised 564 ships of various sizes; in 1803, it was 970; but the chief increase had been in small rather than large vessels. In 1820, when peace had succeeded to a long period of hostilities, the total war-ships, built and building, amounted to 127 ships of the line, and 338 under 50 guns. These numbers, in 1839, had decreased to 98 and 294 respectively.

A great epoch in naval warfare was marked by the introduction of steam-navigation. When the British government built the screw-steamer *Rattler*, of 900 tons, in 1843, as an experimental vessel for testing the relative capabilities of the paddle and screw, the latter became the recognised propeller of the service. From the time of the peace in 1815, the efforts of the royal ship-builders have tended to larger and larger vessels. In 1853, the three-deckers culminated in the *Duke of Wellington*, a splendid vessel of 4000 tons, 131 guns, and 1100 men. She was essentially on the same principle as the old line-of-battle ships, with the addition of steam and the screw. In 1859 began that reconstruction of the navy which led to our discarding the old 'wooden walls of England.' The *Warrior* was built, cased in 4½-inch iron plates, and could stand with impunity the fire of the largest naval guns then (1860) known, even though firing at 200-yard ranges. The *Northumberland*, *Agincourt*, and *Minotaur* were then built, each of 6621 tons, 1350 horse-power, 26 enormous guns, and clad in 5½-inch iron plates, with a teak backing of 20 inches, and an iron skin of 1 inch behind all. Some of these vessels were built (as the *Defence*) with the bow projecting under water, so that they might act as rams. But when the 68-pounder was replaced by 6½-ton guns, there came a change; for projectiles from these weapons could go through the *Warrior's* sides at 1200 yards. Then there was built the *Bellerophon*—known to our tars as the 'Billyruffian'—whose armour resisted 12½-ton guns at a range of 800 yards. The *Hercules* was an improvement on the *Bellerophon*, for its side-armour was proof against the 18-ton gun, firing at it within 600 yards. Now, however, a still more wonderful step has been made in bringing naval defensive armour-plating to perfection: our two latest floating monsters, the *Devastation* and *Thunderer*, can approach within 1200 yards of each other with impunity, even though they were battering each other with their 35-ton guns, loaded with 700 lb. shot, each one of which is propelled by a charge of 115 lbs. of gunpowder. The development of guns and that of armour have kept pace with each other, and the common assertion that guns are more powerful than armour now, is a delusion. The power of the old 6½-ton

gun, compared with the old 4½-inch armour in use in its day, is the same as that of the *Devastation's*

Stern view of the *Thunderer.*

35-ton gun, compared with the *Thunderer's* 14-inch armour. And the curious fact is, that though the strength of our fighting iron-clad turret-ships has increased, we have not increased the expense, as might have been anticipated. Ten years ago, our strongest ships, such as the *Minotaur*, were 400 feet long, weighed 10,500 tons or thereabouts, had armour 5½ inches thick, and cost £480,000 each. The new type of fighting ship of the *Devastation* class, with 14-inch armour, is not to be more than 285 feet long, weighs under 10,000 tons, and costs £350,000, or £130,000 less than ships of the old *Minotaur* class. Of the two classes of iron-clads—the old ones with guns mounted on broadsides, *e.g.* the *Warrior*, and the new ones with fewer guns mounted on revolving turrets—*e.g.* *Devastation*—the government have of late favoured the latter.

The *Devastation* is a mastless, sail-less sea-going monitor—made to carry the heaviest possible guns and armour, and the largest possible supply of coals. She is 285 feet long, and 62 feet 3 inches in her broadest part. Her draught forward is 25 feet 9 inches, and aft 26 feet 6 inches. She is 4406 tons burden, and carries four 35-ton 700-pounder guns in two revolving turrets, and is clad in armour of 10, 12, and 14 inch thickness. Her speed is 13 knots an hour. She is propelled by twin screws, with two sets of engines—and she carries 1600 tons of coal—enough to carry her 6000 miles. Her covering-in deck consists of 3-inch iron plating, with two thicknesses of teak planking. On this is built the elliptical breastwork between the turrets, with heavy 10-inch armour-plating, rising 24 feet above water, and with superimposed hurricane-deck, to which openings from the hold are carried with 2-inch iron plating, with two thicknesses of teak planking over all. On it the boats are stowed. Rising above this breastwork there are the two turrets or revolving circular batteries, and here the chief peculiarity of the ship is displayed. In the original American turret-ships—*e.g.* the *Miantonomah*, and *Monadnoc*—the turrets were mounted on a metal base ring, laid on the ship's deck, and were to be fought in these vessels with only two feet of freeboard, very close to the water's edge; so the base of the turret itself, always the weakest part, was freely exposed to the 'plunging' fire of an enemy's frigate with broadside guns. In the *Devastation* this defect is got over by the elliptical breastwork, for it carries a second or hurricane-deck, rising from the hull-deck proper, 24 feet

The *Devastation.*

above the water's edge; and as this breastwork is heavily clad with armour, it protects as well as incloses the bases of the turrets. The turret-guns are also in this way fought at as high an elevation above the water-line as those of the best broadside frigates, giving the *Devastation* an infinitely more sweeping range than any of the old turret-ships—its turret-gun ports being 13 feet 6 inches above the water-line. The two turrets are 24 feet 3 inches in internal diameter, and are built of fine laminal iron plating and teak planking alternately: *viz.* (1) 2⅝-inch plates; (2), six-inch horizontal teak planking, bearing (3) six-inch armour-plates; (4) nine-inch vertical teak planking; and (5) an outside armour-skin of eight-inch iron plating. Each turret carries two Fraser muzzle-loading rifled guns, of 35 tons each.

A still more formidable ship is the *Inflexible*, completed in 1881, 320 feet long, 75 feet in breadth at the water-line, with a displacement or tonnage of 11,800. The central part of the ship is a citadel 12 feet high and 110 feet long, inclosing with its rectangular wall the engines and boilers, the base of the turrets, the loading gear, and the most vulnerable parts of the whole. Its walls are 41 inches thick, consisting partly of armour-plates from 16 to 24 inches thick, partly of strong teak backing between and behind the plates. The turrets are also 12 feet high, each carrying two 81-ton guns, capable of firing 1700-lb. shot with a charge of 450 lbs. of powder. There are two iron masts with brig-rigged sails.

The navy may be divided into five classes: (1) Twelve turret-ships and barbette ships for great naval warfare at home and abroad, in

cluding the *Inflexible*, *Dreadnought*, *Devastation*, *Thunderer*, and others. (2) Ten ships for ocean warfare, but inferior in power to the first class. Most iron-clads can be used as rams, but in four of this class the ramming power is a chief point. The *Polyphemus* is a unique ship, meant for torpedo warfare, and is simply a steel tube, deeply immersed, with no masts, and with a powerful ram below and a *torpedo-port* under it, for discharging Whitehead torpedoes. (3) About twenty rigged ships for cruising (including the *Monarch*, *Hercules*, *Sultan*, &c.), with armour from 5 to 18 inches, and carrying from 9 to 16 guns (mostly from 12 to 18 ton guns). (4) About twenty partly antiquated rigged cruisers, with guns under 12 tons, and armour under 6-inch thickness. The old *Warrior* and *Black Prince* belong to this class. Their defects, as compared with the preceding, are—their unwieldy length, 'unhandiness,' and limited fighting power, rendering them almost useless, save for the protection or destruction of merchant-ships. (5) Eleven small iron-clads for coast defence—thought now to be too antiquated for much service in modern naval warfare. Several swift unarmoured vessels intended to play the part at sea of flying batteries of artillery on land, have been added to the navy, including the *Inconstant*, *Shah*, and *Raleigh*. Swifter still are the steel despatch vessels. Torpedo-boats are a recent addition to our naval defences. This fleet is scattered in squadrons all over the world, each squadron under a flag-officer; and several squadrons are sometimes united under an admiral or vice-admiral.

PERSONNEL OF THE NAVY.

Except in two instances of brief duration, when a Lord High Admiral was appointed, the government of the navy has, since 1688, been vested in the Board of Admiralty, consisting of 'Lords Commissioners for executing the Office of High Admiral.' The First Lord and parliamentary Secretary are members of the government, the former being a cabinet minister. The other lords are Senior Naval Lord, Third Lord, Junior Naval Lord, and Civil Lord. Under them is the permanent administration—and heads of departments, not changing with the government—the Controllor, Directors-general of the medical and engineering departments, Hydrographer, Superintendent of contracts, stores, &c. The First Lord has supreme authority. The Senior Naval Lord directs the movements of the fleet, and is responsible for its discipline. The Third Lord manages the dockyards, and the Junior Lord has charge of the victualling and transports. The officers are Combatant and Civil. The former includes admirals, vice-admirals, rear-admirals, and commodores, who are 'flag-officers,' and always command squadrons. A flag-officer derives his title from bearing a small flag at the mast-head of his ship. For the first three grades this is a St George's Cross—*i.e.* a red cross on a white ground. An admiral bears it at the mainmast head, a vice-admiral at the foremast head, and a rear-admiral at the mizzen. Commodores hoist a broad pennant. Commodore is only a temporary rank, conferred on the senior captain present with a squadron which is operating beyond the command of an admiral, vice-admiral, or rear-admiral. The next permanent grade to that of rear-admiral is captain, who is the commander of an individual ship (larger than a gun-vessel). He commissions his ship by hoisting a pennant at the main. His ship also bears the white or St George's ensign at the peak, whenever it is desired to shew her nationality. In vessels larger than frigates, the captain has a commander under him, who is responsible for the condition of the ship and discipline of the crew. In other vessels, this duty falls to the first-lieutenant. Besides the first-lieutenant there are other lieutenants, according to the size of the ship, who command the watches in turn, take charge of boat expeditions, &c. Junior to the lieutenants are the sub-lieutenants, whose duties are analogous to theirs. Naval cadets are young gentlemen learning their profession. As combatant officers, but specially devoted to navigating the ships, are the 'Navigating Lieutenants.'

The civil branch comprises the secretaries of flag-officers, the medical officers, the engineers, the chaplains, naval instructors and paymasters, who have charge of the money, food, and clothing stores on board. Throughout these ranks, up to captain inclusive, promotion is entirely by selection or patronage. After captain, promotion is by seniority, the senior captain, who as such has been six years at sea in command of a ship, succeeding to a vacancy among the rear-admirals. Examinations have to be passed before appointment as a naval cadet, sub-lieutenant, and lieutenant. There never was any purchase of commissions in the navy. As compared with the army, the denominations carry higher rank; for instance, a captain in the navy ranks with a colonel in the army, a lieutenant of eight years' standing with a major in the sister service.

Intermediate between the commissioned officers and the crew are the *warrant officers*, formerly rather numerous, but now limited to the gunner, boatswain, and carpenter, who all rise from before the mast (which is the technical expression for having been originally a common sailor). The junior engineers are also, on first appointment, warrant officers. The crew consists of petty officers and seamen.

The *petty officers* correspond to the non-commissioned officers in the army, and, besides certain special offices in aid of discipline, are usually the chief men in the several classes of work which the crew are called upon to form. Such are the gunner's mate, boatswain's mate, master-at-arms, ship's schoolmaster, chief stoker, armourer, calker, &c. The crew comprises *able seamen*, who are practised navigators, *ordinary seamen*, and *boys*, who are undergoing a paid apprenticeship to the ocean.

Terms of Service.

The regimental system, which forms so remarkable a feature in army organisation, has no existence in the navy. When a ship is wanted, the Admiralty designates the officers who shall serve in her; the captain hoists his pennant, and his crew is then made up of volunteers, who, either by his reputation, or the nature of the service to which the ship is destined, are desirous of forming her complement. The men engage for the period of the vessel's commission (three to five years), during which they are under martial law, and cannot be absent, except by permission, without

rendering themselves liable to the penalties for desertion. When the ship is paid off, they become free, have a run on shore, spend their money with startling rapidity, and then engage in another vessel. Of late years, however, there has been organised another class of men, called 'continuous service seamen,' who engage for a specified number of years—ten, afterwards renewable—and when their ship is paid off, have a few weeks' leave to visit their friends, then join a depot, and subsequently are drafted into another vessel, as their services may be required. As it is of importance to the Admiralty to obtain as many of these continuous service men as possible, they are paid at higher rates than other sailors. It must, however, be borne in mind, that although never exercised since the great French war ended in 1815, the power of impressment still rests with the crown. All seamen become entitled to pensions after long and faithful service.

Officers are either employed in ships or are on half-pay, the latter being a recognised condition in the navy for all officers for whom the state has no immediate necessity.

In point of pay, that of the officers is extremely low as compared with the remuneration of men of the same class in civil life; but there is honour to be obtained, the life is healthful, and neither the mental nor bodily labour oppressive. The command of a ship is, under existing rules, so expensive, that few officers can venture to undertake it unless they have private means besides their naval pay. As regards the men, the pay is tolerably liberal; though many merchant services and some foreign governments are able to outbid the royal navy. During war, prize-money adds much to the allurements of the service. Unlike the army, the navy is a perpetual establishment, its discipline maintained by a special martial code permanently sanctioned by parliament. Parliament does not, as in the case of the army, vote first the *number* of men for the navy, but merely the *wages* of the number fixed on by the government. The navy expenditure in 1879–80 was £10,586,894; number of men, 58,800; the expenditure in 1883–84 was £11,578,058, while the number of men was as follows:

FLEET.		
Seamen	35,090	
Boys	4,800	
		39,890
Marines afloat	6,200	
Marines ashore	6,200	
		12,400
Total		52,290
COASTGUARD.		
Afloat and Ashore, Officers and Men		4,000
INDIAN SERVICE.		
Officers and Men		960
Grand Total		57,250

These figures include 17 flag-officers, 30 officers superintending dockyards and naval establishments, and 2506 other commissioned officers on active service.

Dockyards.

Although recourse is had, in times of emergency, or for particular constructions, to private shipbuilders, the greater number of war-ships are built, and all are frequently repaired, in the royal dockyards. These consist of vast establishments at Portsmouth, Plymouth, Pembroke, Sheerness, Chatham, Woolwich, Cork, Malta, and the Cape, most of which are fitted with huge docks, basins, slips, and factories for manufacturing all the appliances of the vessels. The steam-engines are, however, always made by private firms, and arms are made in the army factories.

Besides the dockyards, there are victualling yards at Deptford, Gosport, and Plymouth, in which ship-biscuit, salt meat, cocoa, and other articles of food, are prepared and barreled in vast quantities.

Royal Marines.

As an auxiliary to the navy, and under the same government with it, are the Royal Marines, an amphibious and very valuable corps of soldiers for sea-service. Every ship of war has a detachment on board, where they act as sentries, are an armed guard to restrain the sailors in case of insubordination, and, during action, serve as marksmen to annoy the enemy's crews. The officers of the marines have military titles and rank, and for purposes of brevet promotion they join in seniority with the army. In their own corps, promotion is by pure seniority, and the numbers in the higher ranks being small, it is but slow. When on shore, the marines are in divisions at Portsmouth, Plymouth, Woolwich, and Chatham.

Reserve Forces.

The navy has two numerous and valuable reserves: first, the Coast Guard; second, the Royal Naval Reserve. The *Coast Guard* was originally a semi-naval organisation, partly on shore and partly in revenue cruisers, for the suppression of smuggling. Smuggling having almost disappeared, the force has been converted into a defence for our shores. The coasts of the United Kingdom are divided into eleven districts, each under a naval captain, with a block-ship for his castle. Subordinate to him are inspecting officers, in charge of sub-districts, to each of which a gun-boat or cruiser is attached. The men are old seamen of good character, living free in neat little cottages along the shore; they are liable for service in the district block-ship or cruisers whenever required, and in time of war, to service in any of Her Majesty's ships. This force comprises about 4000 men.

The *Naval Reserve* is a species of naval militia, auxiliary to the royal navy. It consists of men who have during the ten years preceding their enlistment served five years at sea, and one at least as able-bodied seamen. Unlike the former Coast Volunteers (a similar force, which has now ceased to exist, but was recruited from men in the coasting trade, or in ships often at home), the men may belong to ships making long voyages, and are liable to be called on for five years' service in case of war. Besides men, this force comprises lieutenants and sub-lieutenants, who must be certificated masters and mates of merchant-vessels. They train for twenty-eight days every year. The act recognises a force of 30,000 men; usually there are about 20,000 in the Naval Reserve, and in a state of high efficiency.

EUROPE.

REFERRING the reader for all that appertains to the general constitution of the globe to the article on PHYSICAL GEOGRAPHY (No. 4), we purpose, in this and several following sheets, to direct attention to the special features of the respective continents—describing the territories of the several states, their natural products, their commercial industry, population, laws, religion, and other topics usually comprehended under the title of POLITICAL GEOGRAPHY.

Constituting but a fragment of the Old or Eastern World, Europe, strictly speaking, is not entitled to be called an independent continent. But though the smallest of the *quarters* into which geographers have divided the globe, it is by far the most important—its inhabitants giving now, as they have long done, the tone and character to human progress. Its limits are usually comprehended within the 36th and 71st degrees of north latitude, and the 10th degree of west and 68th of east longitude; thus placing it almost wholly within the northern temperate zone. Including the islands, which contain about 317,000 square miles, the land superficies of Europe is estimated at rather more than 3,720,000 square miles; its population at nearly 328,000,000. If we count the German Empire as one state only, there are in Europe upwards of 20 states in all. The leading states, usually styled 'the Five Great Powers of Europe,' are Great Britain, Russia, Prussia (representing Germany), France, and Austria; but the vast changes that have taken place on the continent since the close of the Crimean war, have entirely altered their relative importance. Italy also might fairly claim, since its unification, a place among the leading states. Those of a secondary rank are Spain, Sweden, Denmark, Holland, Belgium, Portugal, the Swiss Confederation, and Turkey. It is no longer necessary to assign any rank to the minor states of the German Empire, since, even where not absorbed by Prussia, they have no military independence, and, therefore, no place in European politics. It is to the continental or foreign states that we now confine our description, reserving the component parts of the United Kingdom—England, Scotland, and Ireland—for treatment in the three subsequent numbers.

FRANCE.

France, one of the largest and most important of the European states, is situated between lat. 42° 20′ and 51° 5′ north, and long 8° 15′ east and 4° 54′ west. It is bounded on the north by the English Channel, Strait of Dover, Belgium, the grand duchy of Luxemburg, and the Rhenish provinces of Prussia; on the east, by the German territory of Alsace-Lorraine (annexed in 1871 at the close of the war with France), by Switzerland, and Italy; on the south, by the Mediterranean and by Spain, from which it is separated by the Pyrenees; and on the west, by the Atlantic. The greatest length of the country from north to south is 676 miles, and its greatest breadth from east to west is 494; its area, including Corsica, is a little over 204,000 square miles.

Superficially, France may be described as a flat country, the greater portion consisting of valley-like tracts or open plateaux, with low hilly ranges or swelling eminences between. The principal ranges which diversify the surface are—1. The Vosges, on the north-east, presenting rounded outlines, with gentle slopes, and affording much open pasture; the highest point over 7000 feet. 2. The Jura Mountains, lying south of the Vosges, and forming part of the boundary between France and Switzerland, the extreme height of which is about 6000 feet. 3. The Cevennes, and other portions of the long range which forms, as it were, the western brim of the valley of the Saône and Rhône: the highest points do not exceed 5800 feet. This range may be said to form the great water-shed of France, from which all the large rivers flow in a north-west direction to the Atlantic. 4. The clustering hills of Auvergne, or Central France, remarkable for their crateriform tops and recent volcanic origin, the highest of which reaches an elevation of 6200 feet. The largest and best defined *river-basins* or *valleys* are those of the Saône and Rhône on the east, which may be regarded as one; those of the Adour, Garonne, Lot, and Dordogne on the south and south-west; those of the Loire and Seine in the centre; and those of the Somme and Meuse on the north. The soil of most of these valleys is a fine deep alluvium, with a greater or less admixture of sand. There are large tracts of heath in Bretagne, Anjou, and Maine; and the Atlantic sea-board presents in many places, as in the tract called the Landes, wide expanses covered with sand-dunes.

The great *rivers* exclusively French have all a westerly flow towards the Atlantic; those flowing northward—the Scheldt, Sambre, and Meuse—have only the upper portions of their courses in France; and the Rhône, the sole large river running southward, has also a great portion of its course in another country. Of those flowing westward, the most important are the Seine, the Loire, and the Garonne.

'*Geologically*,' says one authority, 'the whole of France may be considered as one extensive basin, the circumference and centre of which consist of primitive formations, the intermediate space being filled with those of a secondary and tertiary kind.' Taking this statement as a mere proximate outline, we find primary rocks in the Ardennes on the north; in the Vosges, Jura, and Alpine ridges on the east; in the Pyrenees on the south; in Bretagne, Maine, and Normandy on the west; and, centrally, in the hilly ranges of Auvergne. Lying upon these in many places, without the intervention of the transition and older secondary strata, occur the coal-measures, the oolite

limestones and shales, and the chalk; and not unfrequently even the coal-measures are absent, and the oolitic and chalk repose immediately on the upper primaries. The tertiaries generally occupy the great river-drainage of the centre, shewing that at no very distant epoch a large portion of France was a shallow sea or estuary of deposit. The chief *minerals* are—coal, of which it possesses several considerable beds, principally in the east and north, the amount raised, however, being less than one-twelfth of that raised in Great Britain; iron largely from ten or twelve districts; gypsum, or plaster of Paris, in unlimited quantities; and abundance of building-stone of various kinds, granite, freestone, marble, slate, basalt, lava, &c. With the exception of iron, the other metals are of no great commercial importance.

Geographers have divided the *climate* of France into four regions—namely, 1. The most southerly, in which the vine, olive, mulberry, and orange flourish, bounded north and west by a line drawn from Bagnères-de-Luchon, in the Pyrenees, to Die in Drôme; 2. That through which the cultivation of the vine and maize extends, stretching as far north as a line passing from the mouth of the Garonne to the northern extremity of Alsace; 3. That region which terminates with the culture of the vine, near a line drawn from the mouth of the Loire to Mezieres in Ardennes; and 4. The remaining portion of the country, having a climate somewhat allied to that of England, and yielding rich verdant pastures and forest growth. Along the entire western coast the climate is distinguished by a greater degree of humidity than in any other district; the south and east have about a third fewer rainy days than the north and west; winter is often pretty severely felt in the north-east; snow seldom lies in the central and southern regions, yet the Mediterranean districts in particular are exposed at times to the ravages of the burning winds which have passed over the deserts of Africa, and to the destructive north-west wind known as the *mistral*, which often does great injury to the fields near the mouths of the Rhône and Var.

Of grains and vegetables largely cultivated, we may enumerate wheat, rye, oats, maize, millet, buckwheat, kidney-beans, pease, carrot, beet, melons, potatoes, flax, hemp, and tobacco; and madder, saffron, and hops on a smaller scale. Of fruit-trees, the vine, olive, orange, pistachio, fig, apple, pear, plum, peach, apricot, and cherry, with which we may also class the mulberry and caper. Of forest-trees, the oak, beech, maple, ash, chestnut, walnut, birch, poplar, larch, pine, fir, box, cornel, acacia, and cork-tree. The forest-growth of France is said to cover about one-seventh of the entire surface, an amount which is rendered necessary by the use of wood as the chief domestic fuel.

The *wild animals* are fast diminishing from the soil of France; the lynx is rarely seen, even among the higher Alpine regions; but wolves are still numerous in the mountainous districts of the central departments; while the chamois and wild-goat, as well as the marmot, ermine, and hamster, are found among the Pyrenees, Alps, and Vosges. The wild-boar, roebuck, fox, squirrel, polecat, and marten are to be met with in the woods. The red and fallow deer are scarce; hares and rabbits abound, and game generally is plentiful.

The *insects* of any economical importance are the bee, silkworm, gall-nut fly, and the blistering-fly. Respecting the breeds of the *domesticated animals*, if we except the merino sheep and poultry, it may be safely asserted that they have hitherto been inferior to those of Great Britain. A spirit of improvement, however, has of late sprung up. During the half-century, for example, from 1812 to 1862, the number of horned cattle was doubled in France.

The *fisheries* are not on a great scale, in spite of liberal help from the state. The coasts of Normandy and Brittany, however, yield large quantities of pilchards and mackerel. The Bay of Biscay has extensive oyster and mussel beds; while tunnies and anchovies are caught on the shores of the Mediterranean.

The *inhabitants* may now be arranged under four distinct heads or races: 1. The *French* proper, constituting nine-tenths of the population, and consisting of the descendants of the ancient Romanised inhabitants of Gaul, with a considerable admixture of Germanic blood infused at the overthrow of the Roman dominion; with these may be classed the Italians of Corsica; 2. The *Celtic* or Cymric race (Bretons) of Bretagne, who are simply the pure descendants of the ancient Gauls (as the modern Welsh are of the ancient Britons), their position and political fortune securing them against much external influence; 3. The *Basques* of the Low Pyrenees, a people of uncertain origin; and 4. The *Jews*, who are found in all the principal towns. There are thus four distinct languages spoken within the country—French and Italian (both of Latin origin), Celtic, and Basque; independent of several widely differing provincial dialects. In 1881, the population of France was 37,672,048.

The *Roman Catholic faith* is the predominant religion, the adherents of all the other denominations being under 2,000,000. Though it is thus the national religion, it is not exclusively associated with the state; for Catholic and Protestant, Jewish and Mussulman clergy, are paid out of the public revenue. The Roman Catholic Church has about 54,000 clergy of all ranks; while the Protestant ministers number scarce 800, and the rabbis less than 70. Public education is entirely managed by the government. The *facultés*, practically universities, are fifteen in number. There is in every department an *Académie*, or board of education, consisting of a rector and council, of which the bishop or bishops of the department and a Protestant clergyman are members. The direction of the educational matters of the department is in the hands of this board, subject to the control of the Minister of Public Instruction. Nearly every commune has one or more primary schools, the larger communes have also secondary schools, and the more important centres have institutions of a higher grade, called colleges and lyceums, which serve as preparatory to the universities. There is in general a 'normal school' or seminary for training elementary teachers in every department; while the superior Normal School of Paris trains professors for the lyceums. It is allowed on all hands that education has made great progress in France within the last generation; yet there must have been something very unsatisfactory in the methods of instruction, for in 1870-80, there were nearly eight millions of

the French population above 20 years of age who were unable to read or write, as well as 20 per cent. of those under 20 years. Perhaps the cause of this lies to some extent in the hostile attitude of the dominant church to enlightened instruction. Roman Catholic children seldom remain at school after eleven or twelve years of age, and are consequently apt to forget, in after-years, the little they may have been indifferently taught. But the quality of education varies in different parts of the country; in the east and north, it is more general and more effective than in the southern districts.

With respect to *national industry*, France may be regarded more as an agricultural than a manufacturing country. By the law of inheritance, the property of a father is divided equally among his children; and consequently, there is a progressive tendency to more minute divisions and subdivisions of the land. According to the latest official returns, the cultivated land of France, embracing an area of 90,000,000 acres, was divided into 5,550,000 distinct properties. Of these properties, over 5,000,000 were under six acres in extent, and the result is a generally mean condition of rural affairs, and a deficiency of high-class systematic agriculture. The chief agricultural product is bread-corn, chiefly wheat. The next article in importance is wine. Silk and olive-oil are largely produced in the south; and from beet-root are manufactured yearly above 300 million pounds of sugar. Poultry is a more important article of agricultural produce in France than elsewhere. In *manufactures*, France ranks next to Great Britain. The leading articles are silks, woollens, tapestry, shawls, cotton, shoes, gloves, hardware, &c. The French specially excel in articles of ornament and *mode*, wherever skill and taste are required, and the manufacturer must also be an artist. *Ship-building* is carried on at Rochefort, Brest, Cherbourg, &c.; and in engine-building and other heavy machinery, the French are beginning to attain considerable eminence. The *commerce* of France has enormously increased since the peace in 1815; the annual value of her imports and exports together, during the fifteen years from 1867 to 1881, being on an average nearly 240 millions sterling. The number of vessels that entered the harbours of France in 1881 were 35,420, with a tonnage of 11,675,750; departures, 23,373 vessels, tonnage, 7,527,000. The mercantile marine in 1880 consisted of 15,058 vessels, having a tonnage of 919,298; of these, 652 were steamers, with a tonnage of 277,760. The internal communication of the country is carried on by well-kept roads—these being classed into national, departmental, and communal, according as they are upheld by the government, or by the departments and communes to which they belong; by river-navigation, of which there is upwards of 5616 miles; by 2250 miles of canal; and by railways, of which, according to the official report of 1882, about 16,500 miles are in operation. About 10,000 miles more are arranged for.

The *government* of France has repeatedly changed its form since the first great Revolution in the end of the eighteenth century. On September 4, 1870, the Emperor Napoleon III. was declared to be no longer the head of the state, and a republic was proclaimed. At the close of 1872, the supreme power was vested in a National Assembly, with whom rests the nomination of the chief officer of the state, bearing the title of President of the French Republic. He is authorised to execute all laws and ordinances passed by the Assembly. The Assembly consists of two houses—the Chamber of Deputies with 584 members; and the Senate of 300 members. There are nine administrative departments: (1) the Ministry of Justice; (2) of Foreign Affairs; (3) of Finance; (4) of the Interior; (5) of War; (6) of Marine and Colonies; (7) of Public Instruction and Worship; (8) of Agriculture and Commerce; (9) of Public Works. In 1882, the revenue amounted to about 2,856,500,000 francs (£114,000,000), and the expenses to about 3,315,000,000 francs (£132,500,000). In the same year the public debt was about £960,000,000, one half of which was incurred in the dreadful war of 1870. The *army*, according to the government estimates of 1882, is calculated at 498,500 men; the effect of the new law of military service passed by the National Assembly in 1872, being that practically the whole French people are subjected to military drill. The *capital* is Paris, with a population (in 1881) of 2,269,023.

SPAIN AND PORTUGAL.

These two perfectly distinct and independent kingdoms belong to a region so unique in character and situation, that we shall treat them, in regard to their physical geography, as one. This region, commonly known in Britain as 'the Peninsula,' lies at the south-western extremity of the European continent, with which it is connected by an isthmus 230 miles broad, and is situated between lat. 36° and 43° 46′ north, and between long. 3° 20′ east and 9° 30′ west. It is bounded on the north by the Bay of Biscay, and by France, from which it is separated by the Pyrenees; on the east, by the Mediterranean; on the south, by the Mediterranean, the Strait of Gibraltar, and the Atlantic; and on the west, wholly by the Atlantic. The only islands geographically connected are the Balearic—an important group, exhibiting in miniature all the characteristic features of the mainland. The area thus included is computed at 231,577 square miles, of which 195,766 belong to Spain, and 35,811 to Portugal.

In *superficial character*, the Peninsula is decidedly mountainous. The interior may be considered as one vast table-land, from 2000 to 3000 feet above the level of the sea, traversed by numerous mountains, and intersected by rivers. Around this central nucleus extends a narrow belt of maritime low land, sloping gradually towards the sea, and broken into an alternation of hills and valleys, which produce a most agreeable variety of aspect, and present a pleasing contrast to the bleak and barren sameness by which the central region is characterised. The principal mountain chains, all of which run east and west across the Peninsula, are: (1) the Cantabrian Mountains and the Pyrenees, forming the most northern range; (2) the Sierra de Guadarrama; (3) the Sierra de Toledo; (4) Sierra Morena; (5) the Sierra Nevada, running parallel to the shores of the Mediterranean. Between these ranges flow the great rivers of the Peninsula—the Ebro, the Douro, the Tagus, the Guadiana, and the Guadalquivir, all of which, except the first, discharge their waters into the Atlantic, and form channels

of communication with the interior. In this respect the Guadalquivir is the most important, being navigable for vessels of 100 tons to Seville, about 80 miles from its mouth. The principal economic minerals are—granite, marble, serpentine, common limestone, coal, rock-salt, gypsum, alabaster, meerschaum, and several of the precious stones; the metals—iron, lead, silver, mercury, tin, copper, antimony, and cobalt.

The *climate*, as might be expected from the position and physical conformation of the region, is extremely diversified. All along the Mediterranean sea-board, the temperature is mild and equable, seldom sinking below 32°, and generally ranging between 55° and 60° Fahrenheit. Here snow is almost unknown, and verdure is rarely checked, unless during the occasional droughts of summer. On the central plateau, matters are quite reversed; the summer's heat is excessive, and the winter's cold, rendered keener by stormy blasts from the mountains, is equally so. In this region the winter is long, and snow covers the sierras; while the summer is short, and so hot, that verdure is often destroyed. On the northern and western sea-board the summer becomes cooler; and the winds, charged with moisture from the Atlantic, bring rains and other atmospheric diversities.

The *vegetation* of a country so diversified in surface and climate must necessarily present great variety, and thus we find within its limits the banana and palm of the tropics, and the pine of the northern regions. Besides the usual grains and fruits, the vine, olive, sugar-cane, and mulberry are largely cultivated. The *animal kingdom* presents only one or two features worthy of notice. The principal wild animals are—the bear, wolf, fox, herds of wild-boar, lynx, wild-cat, and monkey; the vulture, quail, bustard, flamingo, and some African birds; and of insects economically important, may be mentioned the bee, silkworm, gall-nut fly, and cantharides. The distinguishing features in the domesticated animals are—the horse, of Arab extraction; mules, the finest in the world; and the merino sheep.

The *inhabitants* of the Peninsula—Spaniards and Portuguese being originally one—may be arranged into three races: 1. The *Spaniards* and *Portuguese*, an admixture of Romanised Iberians with Visigoths, who constitute the great bulk of the people, and whose languages, like those of Italy and France, are merely modern forms of Latin, and are hence called Neo-Romanic; 2. The *Basques*, of Navarre and the Basque provinces; and 3. The *Gitanos*, or Gipsies, spread indiscriminately over the country, but preserving intact the individuality and peculiarities of their race. The Spaniards of the south have a considerable admixture of Moorish blood, but the *Moriscoes* proper were finally banished from the land in 1610.

The *religion* of both countries is Roman Catholic. In Spain, the whole population, with the exception of about 34,000 persons, nominally adhere to that faith; but recent political events seem to have proved that large sections of the populace are imbued with notions hostile to all forms of the Christian religion. The *Intransigentes* of Carthagena, Barcelona, and other large cities are in favour of subverting all ecclesiastical, as well as all civil organisations, and even the moderate liberals are probably sceptical in regard to the utility of the church. In 1862 Spain possessed about 40,000 clergy of all ranks, including 9 archbishops and 43 bishops. The Primate of the church is the archbishop of Toledo. *Education* at the close of last century was in a deplorable state. In 1797, less than 400,000 children were at school; but since the government undertook the superintendence of the matter, great progress has been made, and in 1880 more than 1,769,000 were attending school. *Secondary* education is given in Institutions, or middle-class schools, which prepare for the universities, of which there are ten.

Portugal has not more than 500 professed Protestants, mostly foreigners. The clergy number over 3800, and the head of the church is the 'Patriarch' of Lisbon, who is always a cardinal. There are also two archbishops and fourteen bishops. The superintendence of public instruction is under the management of a superior council of education, and is entirely free from the control of the church. The kingdom possesses one university, that of Coimbra, which has 46 professors and lecturers, and about 900 students.

The *industrial pursuits* of the two kingdoms composing the Peninsula are much of the same kind and character. Both are more agricultural than manufacturing or commercial countries; comprehending under the former term all that appertains to grain, fruits, herds, and other produce depending upon the soil. But Spain, during the last twenty years, has made more progress than Portugal, whose agriculture is particularly wretched. In *mining*, of late, considerable activity has been exhibited, principally, however, through the agency of foreign companies, in the quicksilver, lead, and iron departments. In the *arts* and *manufactures*, neither country exhibits much skill or activity. Their commerce, once the greatest in the world, fell off miserably during the 17th and 18th centuries, but is reviving again. During the ten years from 1862 to 1872, their exports to Great Britain doubled themselves. The chief exports of Spain are—wine, quicksilver, lead, wool, raisins, figs, oranges, lemons, and other fruits; olive-oil, barilla, cork-bark, honey, and occasionally wheat—the total value during the years 1877–81 averaging £20,000,000 annually: those of Portugal are wine, oranges, lemons, figs, and other fruits; cork-bark, olive-oil, sumach, wool, goats' skins, and small quantities of tallow, brandy, and other articles, valued in 1880 at nearly £5,500,000.

Railways and *telegraphs* have now been introduced into both countries. In 1880, Spain had 4000 miles of railway, and 25,000 miles of telegraph; Portugal, in 1882, had about 1000 miles of the former, and over 7000 miles of the latter. Neither the *army* nor the *navy* of Spain is in a creditable state, in spite of repeated 'reorganisations.'

The *government of Portugal* is a limited hereditary monarchy, with the succession unrestricted to sex. The parliament consists of a Chamber of Peers and a Chamber of Deputies; the executive, of a responsible cabinet, with seven portfolios. Total population, 4,160,000; annual revenue, £5,000,000; debt (1881) £97,500,000. The capital city is Lisbon, on the Tagus, with a population of 247,000.

The *government of Spain*, since the expulsion

of the Bourbons in 1868, has undergone frequent changes, was for a time a military dictatorship, then a monarchy under a prince of the reigning family of Italy. The old dynasty was restored in the person of the ex-queen's son, Alfonso XII., who died in 1885, and was succeeded by his daughter. The population is under 17,000,000; revenue, £31,000,000; debt (1881) £500,000,000. Capital, Madrid, with a population of 398,000.

SWITZERLAND.

Situated between lat. 45° and 47° 49′ north, and long. 5° 55′ and 10° 30′ east, Switzerland occupies the very centre of the Alpine development, and is consequently the most elevated and irregular of European countries. It is bounded on the north by Germany; on the east, by Austria; on the south, by Italy; and on the west, by France. Its superficies is estimated at 15,991 square miles, of which a large proportion is covered with lakes and glaciers.

The *superficial character* of the country is sufficiently indicated by the mention of its position—a region composed of mountain-ridges, radiating in every direction, with narrow and tortuous river-valleys between. The higher mountain-ridges range from 6000 to 15,700 feet above the sea; their summits, from 9600 feet and upwards, buried in perpetual snow and glaciers, and their sides broken into every imaginable diversity of crag, cliff, ravine, and water-fall, dotted at intervals with clumps of pine and fir. The valleys, on the other hand, are distinguished alike for fertility and beauty, and form a singular contrast with the rugged heights which frown above them. The tract lying between the Alps and the Jura Mountains, and in which all the great lakes, from Constance to Geneva, are situated, may be regarded as the Lowlands of Switzerland.

The *rock formations* in the higher and central districts are strictly primary, flanked by transition and the older secondaries. The equivalents of our own lias and chalks are also found at great heights overlying the older rocks, thus marking the date of the Alpine and Jura elevation; and in the low tract above described, occur alternations of soft greenish sandstones and limestones, the supposed equivalents of the Paris tertiaries. The mineral products are insignificant.

Several important European *rivers*—the Rhine, Rhône, Inn, Ticino, and Doubs—have their sources amid the glaciers of Switzerland, but the Aar is the only river of any navigable importance having its course exclusively within the territory of the Confederation. The *lakes* of Switzerland, either as regards their extent or the beauty and magnificence of their scenery, are unexcelled by any in the world. The principal are—Constance, or the Boden-see, Geneva or Leman, Neuchâtel, Zurich, and Lucerne, on this side the Alps; and portions of Maggiore, Lugano, &c. which lie on the other side of the Alps, chiefly within the confines of Italy.

With respect to *climate*, Switzerland is much colder than its latitude or its position in Europe would appear to warrant. While the mean annual temperature at London is 50·5° Fahrenheit, that at Bern, which is more than four degrees of latitude further south, is 45°; at Zurich, 48°; Geneva, 49·5°; at St Gothard, 30°. Of course, altitude is the prime cause of this deficiency. The plants of nearly all the different zones of Europe are found in Switzerland, from the vine, olive, and mulberry of the sunny valley, up to the herbaceous willow, the lichens, and mosses that struggle up to the confines of eternal snows.

The *inhabitants* are usually ranked under two races—the Germanic and the Celtic: the former comprising the German Swiss of the northern, eastern, and central cantons; the latter, the French and Italian Swiss of the western and southern parts. Of the 2,846,102 inhabitants (1880), 2,030,000 speak German, 608,000 French, and 162,000 Italian; while the language of 38,700 inhabiting the valleys of the Grisons, is derived from Latin, and called Romansch.

The *religious* statistics give the Protestants 1,667,000 of the population; the Roman Catholics, 1,160,369; other Christian sects, 11,000; and Jews, 7370. Some of the cantons (Ticino, Uri, Unterwalden, Valais, Schwytz, Lucerne, &c.) are almost exclusively Catholic; while in others (Bern, Aargau, Basel, and Geneva), Protestantism predominates.

In regard to *education*, Switzerland holds a high place in Europe. In most of the Protestant and mixed cantons, 1 in 5 of the population may be assumed as attending school, and a greater proportion of the public revenue is devoted to schools of various grades than in any European state. The Catholic states are not quite so far up. There are normal schools for teachers in most of the cantons. For higher education there are gymnasia in all the chief towns; and universities at Basel, Zurich, Bern, and Geneva, with 300 professors and teachers, and 1000 students. Several schools in Switzerland are distinguished for combining industrial training with intellectual culture.

The *productive industry* of the country is great. Although more a pastoral than agricultural country, a considerable area is under tillage, yielding excellent crops of wheat, oats, barley, and rye. Maize, beans, lentils, potatoes, turnip, hemp, and flax are also raised. It is in the management of the dairy that the Swiss chiefly excel—cattle, cheese, and butter being articles of export. The vine is cultivated in the valleys; and in some districts are large orchards of apples, pears, and cherries, for the manufacture of liqueurs. In several of the *arts* and *manufactures* the Swiss exhibit great ingenuity and taste; and many branches (watch-making, wood-carving, &c.) are carried on in the cottages of the peasants. Zurich is the chief seat of the silk and cotton manufacture. The chief industrial products for export are silk, cotton, watches, jewellery, and straw-plait. The *railway and telegraph systems* have penetrated even into Switzerland. At the end of 1882, nearly 1600 miles of railway had been laid down; and at the end of 1881, more than 4000 miles of telegraph.

In respect of *government*, Switzerland is a federative republic, composed of 22 cantons, each of which has an internal government of its own. The sovereign power of the confederation is vested in the Federal Assembly, which consists of a national council and a senate or council of state. The first is chosen for three years, by universal suffrage, one member for every 20,000 inhabitants; the senate consists of forty-four members, two from each canton. The Federal

Assembly can alone make war and peace with other countries. It chooses a federal council or ministry of seven members, who conduct the several departments of administration. At the head of this executive board is the president of the confederation, who is chosen yearly in a united sitting of the assembly. Bern, with a population, in 1880, of 44,000, is the federal capital.

The federal army, at the end of 1881, consisted of 115,700 men of all arms; besides these, the *landwehr* of the several cantons can be called out by the federal authority. The federal revenue, in 1882, was 42,000,000 francs; the expenditure, rather less; the debt is almost nominal.

ITALY.

Italy is partly a peninsular and partly an insular country, lying between lat. 36° 35′ and 46° 40′ north, and long. 6° 40′ and 18° 30′ east. It is bounded on the north by Switzerland and Austria, from which it is naturally separated by the Alps; on the east, by the Gulf of Venice; on the south, by the Mediterranean; and on the west, by the Mediterranean and France. Its area, including that of the islands, is computed at 114,290 square miles. The largest and most important of these islands are—Sicily and the Lipari group, Sardinia, and Elba.

Superficially, Italy exhibits much diversity and beauty. Guarded by the Alps, its northern fringe exhibits all the features of the Swiss landscape; but this soon changes into scenery of the most opposite description—namely, the great plain of Lombardy, which extends along the base of these mountains for more than 250 miles, with an average breadth of 50, is flat and low, but fertile and well cultivated, and watered throughout by the Po and its numerous affluents. The only other mountain development is that of the Apennines, which, branching from the Maritime Alps in Genoa, ranges southward like a backbone or spine through the centre of the peninsula, bifurcating at Venosa into two minor ridges—the one forming the heel, the other the fore-foot of the fanciful boot. From the Apennines, which, in Gran Sasso d'Italia ('The Great Rock of Italy'), attain an extreme height of 9520 feet, the country slopes on both sides, intersected by streams and valleys, and terminating near the coast in flattish land, forming the 'Maremma' of Tuscany, the Roman Campagna, the Pontine Marshes, &c.

The principal *rivers* of the country are—the Po, with its numerous Alpine tributaries, flowing through the great plain of Piedmont and Lombardy, and falling by several mouths into the Gulf of Venice; the Adige, also flowing into the Gulf of Venice; the Tiber, with its small affluents, rising in the Apennines, and falling into the Mediterranean, navigable to Rome; and the Arno in Tuscany, navigable to Florence, and connected with the Chiana, one of the tributaries of the Tiber, by means of a canal.

As regards its *geology*, granite, primary schists, and limestones occur in the Alps, in the northern extremity of the Apennines, and in their southern bifurcations. The great central range of the Apennines is said to consist chiefly of Jurassic limestones, occasionally broken through by older strata, flanked on the north by secondary rocks, and on the south, downwards to the Mediterranean, by recent tertiaries, replete with marine remains. Through these tertiary sandstones and marly limestones rise numerous volcanic hills, but lately extinct, or still in operation. This chain of volcanic action may be said to fringe the whole of the Mediterranean sea-board, from the Arno to Sicily—exhibiting numerous dormant craters, and the still active ones of Vesuvius, the Lipari Isles, and Mount Etna. The principal mineral products of the country are—iron, from Elba; the finest statuary marble, from Carrara, in Modena; sulphur, from Sicily; alum and nitre, from near Rome; alabaster, from Tuscany; puzzolana (a hydraulic cement), from Puzzuoli, near Naples; and borax.

The *climate* of Italy has been greatly extolled; but this is true only of certain localities, and under certain seasons. The temperature may be generally mild, the atmosphere of unexampled transparency, and the sky unclouded; but certain tracts—as the Maremma of Tuscany, Campagna di Roma, the Pontine Marshes, &c.—are subject to the fatal scourge of the *malaria*, while the southern shores are occasionally visited by the pestilential and enervating sirocco and simoom.

The *vegetable* productions of Northern Italy differ little from those of Southern France and the valleys of Switzerland, already described; the cultivation of rice, and the more extensive growth of the mulberry, being perhaps the main peculiarities. In Southern Italy, the products, such as the olive, the orange, the lemon, and the sugar-cane, are more analogous to those of the south of Spain—receiving greater diversity from the successive stages of the Apennines, which are clothed in many places with forest-growth to the very summit.

Even in ancient times the *inhabitants* of Italy were not *one* race. The north was Celtic; the region between the Arno and the Tiber, Etruscan; the shores of the southern half of the Peninsula, Greek; but the political predominance of the Latin race through the conquests of Rome, in the course of years obliterated all primitive distinctions, and created a practical unity among the population. The vicissitudes of history have not materially altered this. The Lombard, the Byzantine, the Arab, have left untouched the noble impress of classic antiquity, and the language of Cicero and Virgil in the modern form of Italian still rules from the Alps to the Strait of Messina.

The *Roman Catholic religion* is the national religion, and is professed by nearly the whole nation; the only exceptions being the Protestant Waldenses in Piedmont, the Greeks in the principal commercial towns, and the Jews, who are found chiefly in Rome, Leghorn, and Venice. Yet here (as in Spain) there is intense hostility to the priesthood among the educated and liberal party. Infidelity is wide-spread, and even atheism is not rare. The number of ecclesiastics is extraordinarily great; in May 1869, it was reckoned that the proportion was seven to every thousand of the population, which would give over 180,000, and that was after the law which annihilated ecclesiastical jurisdiction and the privileges of the clergy had been in operation for eight years. The confiscation of monastic property by the new Italian government has been fortunate for the cause of education. The money thus obtained has been

devoted largely to the instruction of the people. Primary schools are nearly universal, schools for training teachers are springing up, and twenty-two universities give a liberal and professional culture. But in 1881, the average number of the people above six years of age who could not read or write was 61 per cent.

The *productive industry* of Italy presents considerable variety. Lombardy is the chief corn-growing state; in Tuscany, the culture of fruit is much attended to; the central parts are mainly pastoral; and in Naples and Sicily, 'the abundance of vegetable productions is more owing to the climate and soil than to the industry of the husbandman.' The culture of silk, the vine, and olive, are important. Fish form an important article of consumption; and the tunny, anchovy, mullet, and other fisheries are conducted upon an extensive scale. The chief manufactures are those of silk fabrics, silk thread, &c. which have their principal seat in Lombardy. The commerce of Italy has largely increased of late. In 1885, the total value of her export trade was given at £47,250,238; that of the imports was a little more. There are over 5500 miles of Italian railway in use. In 1885 the revenue, shewing, contrary to custom, a surplus, was £62,428,506; the debt was over £400,000,000. The war effective of the Italian army amounts to 1,990,000 men, including militia. The *navy* has nearly 120 ships of war, of which over 20 are iron-clads, including several of the most powerful afloat. The population in 1881 amounted to 28,459,628.

Politically, Italy was long divided into a number of independent states, but since 1870, when the troops of Victor Emanuel took possession of the papal territories, it has become a single nation. The government is a limited monarchy, with two Houses, a Senate and a Chamber of Deputies; the latter elected by the people, the former, mainly nominated by the king for life. Rome, the capital, had in 1881 about 273,000 inhabitants.

ROUMANIA, SERVIA, MONTENEGRO.

The three *principalities*, Roumania, Servia, and Montenegro, formerly subject to Turkey, secured the recognition of their independence at the Berlin Congress of 1878; and since 1882, Roumania and Servia are kingdoms.

ROUMANIA, lying between the Danube and the Eastern Carpathians, which separate it from Austria, has an area of 45,000 square miles, and a population in 1880 of above 5,000,000. Both of its main divisions, Moldavia and Walachia, are fairly fertile. The inhabitants are a mixed race, descended partly from Roman colonists, and speak Roumansch, a language largely derived from Latin. The principality is a constitutional monarchy; the creed is that of the Greek Church.

SERVIA, partly highland and partly plain, lies south of the Danube; it has an area of 18,800 square miles, and a population of 1,900,000. The people are of the Slavonic race, and, speaking a pure Slavonic tongue, belong mainly to the Greek faith. The king and his council are responsible to the Senate and Assembly.

MONTENEGRO, chiefly a wild highland, just touches the Adriatic on its western border. The area is near 3550 square miles, and the population is estimated at 250,000. The people are Slavs of the Servian branch, and adhere to the Greek church. The prince is substantially an absolute monarch.

TURKEY IN EUROPE.

Turkey in Europe lies between lat. 39° and 48° north, and long. 16° and 29° east. It is bounded on the north by Austria, Servia, and Roumania; east, by the Black Sea, Sea of Marmora, and the Archipelago; south, by Greece; and west, by the Ionian and Adriatic Seas. Since the Berlin treaty of 1878, when Montenegro, Servia, and Roumania became independent, Turkey in Europe, including Bosnia and Herzegovina (now occupied by Austria), the principality of Bulgaria, and the autonomous province of Eastern Roumelia, has an area of about 130,000 square miles.

The chief mountain-range is the Balkan, the ancient Hæmus. Branching off from the Dinaric Alps, which separate the plains of Hungary from the Adriatic Gulf, it passes eastward to the Black Sea. The greatest known height is 9700 feet. North of the Balkan, Bulgaria, lying in the great valley of the Danube, consists mainly of rich alluvium. The country south of the Balkan is diversified by offsets from that range; and a branch known in ancient times as the Pindus range is sent off southward into Greece. Between these southern offshoots of the Balkan are inclosed valleys and plains, often of great beauty and fertility. The *minerals* of economical importance are marble; iron, copper, lead, and silver ore; magnesia, meerschaum, and whetstones; but mining, unless in Bosnia, is little attended to.

As to *climate*, the flat provinces in the north have a hot and sultry summer; the winter, on the other hand, is severe, and snow lies for fully five months on the mountains. South of the Balkan, the seasons are less marked, and the climate of the valleys is delightful. In Bosnia and the adjoining provinces, the cereals and other cultivated crops can be raised in any quantities on the plains, while the mountain-slopes are clad with forests of oak, elm, and pine. South of the Balkan, the country is covered with forests of the sycamore, plane, carob, box, and cypress; gardens of roses, jasmine, and lilac; vineyards and orchards of nearly all kinds of fruit-trees. In Thessaly—the garden of European Turkey—the olive, vine, fig, pomegranate, walnut, almond, orange, lemon, citron, cotton, tobacco, silk, &c. are reared in perfection.

The *ruling people* of the country are the Ottoman Turks or Osmanlis, an offshoot from the Tatars of Central Asia, who, between 1390 and 1470, conquered that part of the country lying within the confines of Europe. They form, however, but a small minority in the European portion of their empire. Of the 9 million inhabitants, they numbered, in 1880, only about 2 millions, the rest being Slavs, Albanians, Greeks, Armenians, and Jews. They have, however, imposed their Mussulman religion on 3½ millions of the inhabitants, although the adherents of the Greek Church are nearly twice as numerous. There is some *education* of a kind, but it is almost restricted to the reading of the Koran and its commentaries.

Every branch of *industry* is in a backward state in Turkey. *Agriculture* is in a very rude and even declining condition. Were the Turkish farmers and herdsmen secure from plunder and

extortion, the produce of the country might be ten times what it is; still, so great is the fertility, that there is a surplus of corn for exportation. The grains chiefly cultivated are—maize, wheat, rye, barley, oats, and buckwheat; the vine is grown in most of the provinces; and flax, hemp, saffron, cotton, tobacco, madder, &c. chiefly in the south. *Manufactures*, of late years, have been depressed by foreign competition; and the domestic weaving of cotton stuff for family use, and some silks at Constantinople and Salonica, are now almost the only branches of consequence. Commerce is carried on chiefly with Italy, Britain, Austria, Greece, and Russia, and centres in Constantinople.

During the war with Russia in 1877–78, Turkey called into the ranks of its army no less than 752,000 men, including reserves and irregular troops. In 1880, a partial re-organisation of the shattered military system had been carried through; and the Turkish army was estimated to comprise 150,000 available men. The navy has been seriously crippled; it counted in 1880 only some 18 vessels (formerly 80). The financial condition of Turkey has for years been on the verge of utter bankruptcy.

The *government* is an absolute monarchy or despotism, hereditary in the family of Osman, but restricted to males. The sultan, as calif, or successor of the prophet Mohammed, unites the highest spiritual dignity with the supreme secular power. The only limit to his will is the Koran, or Book of Mohammed (see MOHAMMEDANISM), which he is bound by his oath of office to observe; and this is in reality the source of all civil, political, or criminal law. The legislative and executive authority is exercised under the supreme direction of the Sultan by two high dignitaries, the *Sadr-azam*, or Grand Vizier, the head of the temporal government, and the *Sheik-ul-Islam*, or Head of the Church. Both are appointed by the sovereign, the latter with the nominal concurrence of the *Ulema*, a body comprising the clergy and chief functionaries of the law. The *Divan*, or Ministerial Council, has eight portfolios. All offices of state are open to the humblest subjects. Since 1856, religious toleration has been the law of the land. Capital, Constantinople, with a population of perhaps 450,000.

GREECE.

This country, whose ancient history is so intimately associated with much that is refined and noble in human progress, occupies the south-east extremity of Europe, commonly distinguished as the Hellenic Peninsula. It is surrounded by the Mediterranean, except on the north, where it is bounded by Turkey, of which, till 1821, it formed one of the component sections. Its area, with the recent additions, is about 25,000 square miles, of which about three-fifths are cultivable.

The *physical aspect* of the country is decidedly mountainous and rugged; its hills, though seldom rising above 5500 feet (Guiona, the culminating point of Greece, is 8783 feet; Parnassus, 8068 feet; and St Elias—anc. Taÿgetus—in the Morea, 7900 feet), being so abrupt and craggy as to assume an appearance more majestic and imposing than many others of double the altitude. Rising and radiating in every direction, the hills occupy fully three-fifths of the surface, leaving the remainder in narrow defiles, glens, and basin-shaped valleys, which severally formed the sites of the numerous petty states into which ancient Greece was divided. The mineral products are—marble of various colours, porphyry, slate, coal, gypsum, sulphur, alum, asphalt, zinc, lead, iron, gold, silver, copper, manganese, and cobalt; none of which, however, are obtained in important quantities.

Considerable *diversity of climate* is experienced, in consequence of the varied altitude of the country, and the manner in which it is intersected by bays, gulfs, hills, and valleys. No portion reaches the snow-line, but snow annually falls on the higher hills, where it often lies for weeks together. The vegetable and animal products of continental Greece are quite analogous to those of Southern Italy and Turkish Thessaly, already described.

The *dominant people* are the Hellenes or Greeks, who chiefly inhabit the eastern and central parts, and who boast of descent from the Greeks of classic times. Their language is the Romaic, a modernised form of the ancient Greek, to which it bears a much closer resemblance than the Italian does to the Latin. The other inhabitants are Albanians, occupying the greater part of Livadia and part of the Morea; and Walachs, descended from a colony from Walachia. The established or national religion is that of the 'Orthodox Oriental Apostolic,' or Greek Church, having the sovereign for its head, and governed (since 1833) by a holy synod, consisting of five members annually elected by the dignitaries from their own number. The only other ritual observed to any extent is that of the Roman Catholic, and this more especially in the Ionian Islands and the Cyclades. *Educationally*, Greece is still in a backward state, but the government is doing a good deal to improve it. The public schools are of four grades—the *communal*, the *ancient Greek*, the *gymnasium*, and the *university*. In 1880, the educational returns gave 1200 teachers, with 91,000 pupils. Besides the schools already mentioned, there are schools of medicine, and theological, military, and naval academies. The two universities are those of Athens and Corfu. Athens possesses a university, with a numerous staff of professors and a library, and also a Polytechnic School.

The *productive industry* of the country differs little from that of the southern parts of Turkey, already described. The vine and currant-grape are extensively cultivated; the latter, indeed, forms the staple article of export. In 1881, the value of the currant trade with Great Britain amounted to £1,656,000. The other fruits are more the gift of nature than the results of culture. The manufactures are mostly domestic and quite inconsiderable; fishing is largely carried on. The Greeks are remarkable for commercial enterprise; and a great part of the Mediterranean trade is in their hands. Their commercial fleet numbered in 1882, 6790 vessels, of a burden of near 300,000 tons. The *railway system* embraces short lines from Athens to the Piræus and in Thessaly; and others are in progress.

Greece formed a part of the Turkish empire till 1821, when the people revolted, and after a long and severe struggle, succeeded, with the aid of

England, France, and Russia, in achieving their independence. The country was accordingly formed into the new kingdom of Hellas, and Otho, a prince of Bavaria, appointed king. Otho abdicated in 1862, and was succeeded by Prince George of Denmark. The *government* is a constitutional monarchy, the legislature consisting of a senate and chamber of representatives. The administration is corrupt and inefficient, and brigandage is prevalent. During King George's reign, the average duration of ministries is less than a year. The population, according to the census of 1879, amounted to 1,979,423; the revenue is about two millions; debt, 15 millions sterling; army, 30,000 men; navy, 15 vessels (2 iron-clads) manned by 2700 men. Capital, Athens, with a population, in 1884, of 84,000.

AUSTRO-HUNGARY.

The Austro-Hungarian Empire occupies a large portion of Central Europe, and consists of an aggregation of kingdoms, principalities, and duchies, acquired at various times by treaty or by conquest; but though composed of a heterogeneous assemblage of tribes and nations, it lies compactly together, and is situated between lat. 42° and 51° north, and long. 9° 41′ and 26° 30′ east. Its area is estimated at 240,000 square miles.

The *natural features* of the empire exhibit wide and well-marked diversity of hill and plain. Of the former, the principal are—the Alpine development of the Tyrol, which, under the title of the Carnic, Julian, and other ridges, diverges into Illyria and Styria; the eastern and western Carpathians, which encircle the whole of Hungary and Transylvania north of the Danube; and lastly, the Riesengebirge, Erzgebirge, and Böhmerwald ranges, which, inclosing Bohemia, form the boundary with Saxony and Bavaria. In the western or Germanic provinces of the empire, there are a number of fine valleys, watered by such rivers as the Inn, Enns, Moldau, March, Muhr, and Drave; while in Galicia and Hungary expand some of those vast plains which give character to this region of Europe.

The country abounds in *minerals*, and mining has long been practised and encouraged by the government. Gold and silver are mined in Hungary and Transylvania; quicksilver at Idria in Carniola; iron, lead, tin, and copper are abundant; calamine, zinc, cobalt, antimony, bismuth, manganese, and almost every other metal can be procured. There are also abundant supplies of rock-salt, as at Wieliczka; marble, coal, alum, saltpetre, and sulphur.

In point of *climate*, the country is generally divided into three regions. 1. The southern, extending from lat. 42° to 46° north, where are found the fig-tree, olive, mulberry, and myrtle. 2. The middle region, from lat. 46° to 49° north, where the olive is not found, but where maize and vines thrive in favourable situations. 3. The northern zone, extending from lat. 49° to 51° north, where winter is severe, and lasts fully five months; where vines and maize are no longer met with, but wheat, barley, oats, and rye form the usual crops. The forests of Austria are very extensive, forming about a fourth part of the surface, and comprising all the timber-trees known in England.

The *population* of Austria, amounting, in 1880, to 37,900,000, embraces a great variety of peoples distinct in origin and language. The most numerous are the *Slaves*, stated at 16,200,000. They form the bulk of the population of Bohemia, Moravia, Carniola, Dalmatia, Croatia, Slavonia, the Military Frontiers, the north of Hungary and Galicia. The *Germans* number 9,840,000, or one-fifth of the whole. They are more dispersed over the empire than any other race; but they occupy in greater numbers the Duchy of Austria, Salzburg, Tyrol, Styria, Carinthia, and the west of Hungary. The *Roumans*—speaking languages derived from that of ancient Rome—amount to 3½ millions. They consist of the Italians of Istria and Dalmatia; the *Ladins*, occupying some valleys in the Tyrol; and the Vallaks or Walachians of Transylvania, &c. The *Magyars* or Hungarians proper, 6,430,000 in number, are located chiefly in Hungary and Transylvania. Besides these leading races, there are Armenians, Albanians, Gipsies, Jews, whose combined numbers are estimated at 1,350,000.

In respect of *religion*, 24½ millions of the inhabitants (66 per cent.) belong to the dominant church, the Roman Catholic; the Greek and Armenian churches, including those Greeks who acknowledge the supremacy of the pope, 7 millions; the Protestants, 3½ millions; and Jews, 1,600,000. The extensive powers formerly secured to the Roman Catholic clergy by a special concordat (1855) with the pontifical government, were all swept away by the Reichsrath in 1867–68, and at present throughout the empire the law recognises the perfect equality of all religious creeds. In 1880, the Catholic Church in Austria had 11 archbishops, 51 bishops, and more than 30,000 secular priests.

Of late years, since the rapid growth of liberal opinion in Austria, education has made great progress. Naturally, the German provinces stand foremost in this honourable work. Primary education is universal and compulsory, but the variety of languages spoken in the country embarrasses and impedes the operation of the law. Sometimes three or four are required in one school. There are 9 universities—Vienna, Prague, Pesth, Gratz, Innsbrück, Cracow, and 3 minor ones.

Industrially, Austria is more an agricultural and pastoral than a manufacturing country. It furnishes wheat and other bread-corns in abundance; fruits, wine, hops, hemp, flax, tobacco, saffron, and dye-stuffs; hides, horns, wax, honey, silk, and other animal produce. Bohemia and Moravia have long been celebrated for their manufactures in woollens, linens, cottons, leather, glass, hardware, and fire-arms. The *mineral* produce has been already adverted to; and, *commercially*, Trieste is a place of great importance. Austria possesses magnificently constructed roads, leading throughout the chief provinces; has several well-kept canals of considerable length; and in 1872, 7530 miles of railway, and 22,700 miles of telegraph, besides its great navigable rivers, the Maros, Theiss, Drave, Po, and Danube, on the last of which, passengers and goods are conveyed by steam between Ulm and Galatz, and on to Constantinople.

Since 1867, the Austro-Hungarian empire has formed a double state, consisting of a German or 'Cisleithan' (so called from the river Leitha, which runs near the Hungarian border), and a Hungarian or 'Transleithan' monarchy. Each country has

its own parliament, ministers, and government, and is so far self-regulative; but there is also a higher parliament, composed of delegates from both parts of the empire, whose decisions are final on imperial questions, such as foreign diplomacy, war, &c. The form of government is now essentially *constitutional*, and, as far as liberal reforms can give solid unity to a heterogeneous mass of peoples, the thing is being done in Austria.

In 1881, the revenue of the empire, and of Austria and of Hungary, was nearly £90,000,000; and its expenditure, £80,000,000. The debt in the same year amounted to £470,000,000. The *army* in 1882 numbered 268,470 on the peace, and 1,031,700 on the war footing. The *navy* consisted of 50 steamers (13 iron-clads), and 10 sailing-vessels. Pola and Trieste are the two Austrian war-harbours. Capital, Vienna, with 1,103,000 inhabitants (in 1880).

GERMANY.

Germany, so called from the Latin *Germania*, is the English name of the country which the natives call Deutschland, and the French, L'Allemagne. The word is sometimes employed to denote the whole area of the European continent within which the Germanic race and language are dominant. In this broad sense, it includes, besides Germany proper, parts of Austria, Switzerland, and perhaps even of the Netherlands; but using the word here to denote the territory belonging to the new Germanic empire of 1871, it may be said that Germany occupies the central portions of Europe, and extends from 6° to 22° 40′ east longitude; and from 49° 7′ to 55° 50′ north latitude. It is bounded on the north by the Danish peninsula, the German Ocean, and the Baltic; on the east, by Russia and Austria; on the south, by Austria, Italy, and Switzerland; and on the west, by France, Belgium, and the Netherlands. Its area is estimated at 208,000 square miles, and its population, in 1880, at 45,234,000.

With regard to physical configuration, Germany presents two very distinct formations: 1. A range of high table-land, occupying the centre and southern parts of the country, interspersed with numerous ranges and groups of mountains, the most important of which are, the Harz and Teutoburgerwald, in the north; the Taunus and Thuringerwald, in the middle; and the Schwarzwald and Rauhe Alps, in the south; and containing an area, including Alsace and Lorraine, of 110,000 square miles. 2. A vast sandy plain, which extends from the centre of the empire north to the German Ocean, and the boundaries of Jütland, and including Slesvig-Holstein, contains an area of 98,000 square miles. This great plain, stretching from the Russian frontier on the east, to the Netherlands on the west, is varied by two terrace-like elevations. The one stretches from the Vistula into Mecklenburg, at no great distance from the coast of the Baltic, and has a mean elevation of 500 to 600 feet, rising in one point near Danzig to 1020 feet; the other line of elevations begins in Silesia, and terminates in the moorlands of Lüneburg in Hanover, its course being marked by several summits from 500 to 800 feet in height. A large part of this sandy tract is interspersed with deposits of peat; but other parts are moderately fertile, and admit of successful cultivation. In respect of drainage, the surface of Germany belongs to three different basins—(1.) The Danube, from its source in the Black Forest to the borders of Austria, belongs to Germany, and through this channel the waters of the greater part of Bavaria are poured into the Black Sea; thus opening up communication with the East. (2.) The North Sea. (3.) The Baltic. The chief German streams flowing into the North Sea are the Rhine, the Weser, and the Elbe; into the Baltic, the Oder and the Vistula. The most important of the numerous canals which connect together the great river systems of Germany are Ludwig's Canal in Bavaria, which unites the Danube and Main, and thus opens a communication between the Black Sea and German Ocean; the Finow and Friedrich-Wilhelm's Canals in Brandenburg; the Plaue Canal, which connects the Elbe and the Havel; and the Kiel and Eyder Canal, uniting the Baltic and German Ocean. Numerous lakes occur both in the table-land of Southern Germany and in the lowlands of the northern districts, but few of them are of any great size. Germany abounds in swamps and marsh lands, which are especially numerous in the low northern districts. Its mineral springs occur principally in Nassau, Würtemberg, Baden, Bavaria, and Rhenish Prussia. Many of these springs have retained their high reputation from the earliest ages.

The *climate* of Germany is said to be 'less variable than the nature of its mountain-system, and the ranges of latitude within which it lies, would lead us to imagine; and its vegetation resembles in its general character that of England or the north of France.' Germany is rich in mineral products, among which the most important are silver, found in the Harz Mountains; iron in numerous mountain ranges; salt in many parts of the country; coal in Rhenish Prussia and Silesia. Cobalt, arsenic, sulphur, saltpetre, alum, gypsum, bismuth, pumice-stone, tripoli-slate, kaolin, emery, ochre, and vitriol are all among the exports of Germany. The vegetable products comprise a very large proportion of European flora. All the ordinary cereals are extensively cultivated in the north, and largely exported; hemp and flax, madder, woad, and saffron grow well in the central districts, where the vine, the cultivation of which extends in suitable localities as far north as 51°, is brought to great perfection—the best wine-producing districts being the valleys of the Danube, Rhine, Main, Neckar, and Moselle, which are, moreover, noted for the excellence of their fruits and vegetables. Tobacco is grown in sufficient quantities for extensive exportation on the Upper Rhine, Werra, and Oder. The hops of Bavaria have a high reputation, and the chicory grown in that country, and in the district between the Elbe and the Weser, finds its way all over Europe as a substitute for coffee. The most extensive forests are found in Central Germany, and in some parts of Prussia, while the north-western parts of the great plain are deficient in wood, the place of which is in some degree supplied by the abundance of turf yielded by the marshy lands. Germany has long been noted for its good breed of horses, while Saxony, Silesia, and Brandenburg have an equal reputation for their sheep-flocks, and the fine quality of their wool. The rich alluvial flats of Mecklenburg and

Hanover are celebrated for their cattle; the forests abound in swine and small game, while the Bavarian Alps afford shelter to the larger animals, as the chamois, red-deer, wild goat, fox, marten, and wolf; and in all the plains of the north, storks, wild geese, and ducks are abundant. Germany stands next to Great Britain in regard to the care and success with which its agricultural, mining, and other natural capabilities have been cultivated.

The *people* are mainly of Germanic (Deutsch) origin, speaking various dialects of High and Low German; but using the former as a written medium. Other races are—French and Walloons, on the Rhine and in Lorraine; Slaves (including Poles, Wends, and Czechs) in the east; Danes in the north; and a number of Jews in the principal cities. Lutheran and Calvinistic Protestantism, with Roman Catholicism, divide among them the great bulk of the people—the former having 28 millions of adherents; the latter, 16 millions; the rest are Jews, Moravian Brethren, &c. *Education* is more generally diffused in Germany than in any other country of Europe, and is cultivated with an earnest and systematic devotion not met with to an equal extent among other nations. The elementary schools are so general, that none but the wilfully ignorant, or those of imperfect faculties, can be unacquainted with reading, writing, and the first rules of arithmetic. The schools for classical instruction, denominated gymnasiums, pedagogiums, and lyceums, are found in almost every large town, and dispense learning at a very cheap rate. The universities are numerous (twenty-one within the new Germanic empire), and provide the most liberal and various instruction in the higher branches of knowledge.

Industrially, the Germans are a thrifty, plodding people. Their agriculture and husbandry are of a tidy and domestic character. Their *mines* have been long conducted upon correct and scientific principles. The principal *manufactures* are those of linen, in Silesia, Lusatia, and Westphalia; woollen, in Saxony, Rhenish Prussia, Pomerania, and Bavaria; cotton, in Saxony and Rhenish Prussia; toys, in the hilly districts of Saxony, Bavaria, and the Black Forest; glass, in Silesia; porcelain, at Berlin and Meissen; clocks, in the Black Forest; tobacco, at Hamburg and Bremen, &c. Germany exports grain, wood, cattle, horses, wax, wine, beer, woollen, linen, and cotton goods, glass, hardware, &c.; and imports sugar, coffee, tea, rice, cotton, &c. Internal communication is carried on by navigable rivers, canals, and roads. In 1882, there were over 22,000 miles of railway within the Germanic empire, and 45,000 miles of telegraphic lines.

Since 1871, Germany has been an empire, composed of a confederation of German states, but welded together, for national purposes, into one great power, governed by the king of Prussia, who is hereditary German emperor; and represented by two legislative bodies—the *Bundesrath*, or Federal Council, the members of which are annually appointed by the governments of the various states; and the *Reichstag*, or Imperial Diet, the members of which are elected by universal suffrage and ballot for a period of three years. With the consent of these two bodies, the German emperor can declare war, make peace, enter into treaties with foreign nations, and appoint and receive ambassadors. The empire comprises four kingdoms (Prussia, Bavaria, Saxony, and Würtemberg), six grand-duchies, five duchies, seven principalities, three free cities, and the imperial territory of Alsace-Lorraine.

The revenue of the empire, apart from the revenues of the several states which comprise it, was in 1882 nearly £30,000,000, and the debt £18,000,000. The army had then on the peace-footing a strength of 450,000 men, and on the war-footing 1,500,000. The navy, formed under Prussian auspices, has grown rapidly, till in 1882 it comprised 24 iron-clads, 58 other steamers, besides some sailing-vessels. The total imports of Germany in 1877 had a value of £193,350,000, and in 1878, £186,150,000; the exports in 1877, £134,760,000, and in 1878, £145,820,000. Between 1872 and 1879, the annual imports from Great Britain ranged in value from £19,500,000 to £31,618,000, the greatest value being in 1872; the exports to Great Britain ranged in annual value during the same years from £19,230,000 to £26,270,000, the greatest value of exports being in 1877. The mercantile navy of Germany comprised, in 1879, 4804 sea-going ships, of 1,129,129 tons burden—351 of them being steamers, with a tonnage of 179,662 tons.

HOLLAND, OR THE NETHERLANDS.

This is one of the secondary kingdoms of Europe, lying along the south-eastern shores of the German Sea, which, from their uniformly low and level character, are generally known to geographers as the Netherlands. Its area is estimated at 12,650 square miles.

Superficially, the whole country, saving some slight elevations in Gelderland, Utrecht, and Overyssel, forms one unbroken flat, without forests, or, except in the south part, running waters; the land consisting mainly of moor, marsh, and meadow land, traversed by numerous canals, which, while they are absolutely necessary to drain it, and render it fit for cultivation, answer for the most part the purposes of roads—many of them being navigable for large vessels. In many places, the level of the surface actually falls from twenty to forty feet below that of the sea, against which it is protected partly, as in Zealand, Friesland, and Gelderland, by enormous dikes, and partly, as between the Helder and the Hook of Holland, by sandhills or *dunes*, cast up by the ocean upon the shores.

The *climate*, as might be expected from the situation and lowness of the country, as well as from the number of water-courses which intersect its surface, is generally moist and foggy. In winter, Holland experiences a much lower temperature than the opposite coast of England—the river-mouths and canals being covered with ice often for three months together.

The natural *vegetation* is of the scantiest description: there are no forests, and only a few plantations of oak, beech, and elm, clumps of pine on the links or sand-drift, and rows of willow and poplar along the banks of the canals. The principal cultivated plants are—wheat, oats, and barley; buckwheat, and the leguminous crops in smaller quantities; potatoes to a great, and flax, hemp, tobacco to a considerable extent; madder, rape-seed, chicory, mustard, and beet; tulips,

hyacinths, lilies, dahlias, and other garden flowers, for which the country around Haarlem has long been celebrated.

Of the *inhabitants*, about three-fourths are Hollanders or Dutch, speaking that dialect of Low-German which, of all modern Teutonic tongues, has retained most of the primitive characteristics; the Frisians, also a Low-German race, whose speech was anciently spread over almost the whole country, but is now confined to parts of North Friesland; the High-Germans in Luxemburg and Limburg, and Walloons in Limburg. As to *religion*, the majority of the people are Calvinistic Protestants; the minority consisting mainly of Roman Catholics, Lutherans, and Jews. There is, however, no dominant sect in the country: all forms of faith and ritual are alike tolerated; the clergy are indiscriminately maintained by the state; the universities are upheld in the same manner, and these are open to students of all sects, whose theological studies are conducted under professors of their own creed. Education is spreading rapidly throughout the kingdom, through the operation of the Primary Instruction Law of 1857, but even yet it is calculated that in the rural districts one-fourth of the men and one-third of the women can neither read nor write. According to the government returns in 1880, the number of pupils in the public schools amounted to 408,000, and in the private schools to 137,000. There are about 100 secondary schools. A new university has been founded at Amsterdam; and the universities of Leyden, Utrecht, and Groningen, once famous, are again attracting the notice of Europe by the liberality and learning of their professors.

Industrially and *commercially* the Dutch have long been celebrated. The nature of their *agricultural* produce has been already adverted to; and the careful, cleanly style in which they cultivate the soil and manage their dairies, as well as the manner in which they embank and drain their low plots or *polders*, are beyond all praise. The chief *manufactures* are those of woollen, in Leyden and Utrecht; silks, in Utrecht, Haarlem, and Amsterdam; calicoes, shirtings, drills, tablecloths, and dimities, in the town of Overyssel; tobacco-pipes at Gouda; and paper, leather, sugar-refining, painters' colours, and cordage, at various other places. The distilling of gin is extensively conducted at Schiedam. Delft, and Rotterdam; and ship-building at the ports of Rotterdam and Amsterdam. The trade of the Netherlands is chiefly carried on with Germany and Great Britain, and is rapidly increasing year by year. In 1867, its imports were valued at £44,500,000, and its exports at £36,400,000; in 1880, they had risen respectively to over £69,000,000 and £52,000,000.

The *government*, since the establishment of peace in 1815, has been a constitutional hereditary monarchy. The legislative power is vested in the sovereign and the States-general, which consists of two chambers—the first, of thirty-nine members, elected by the provincial assemblies; the second, of a representative for every 45,000 inhabitants, which, in 1881, gave 86 members, all of whom are paid. Population in 1881, 4,114,000; the revenue of late years has averaged about £9,000,000; the expenditure has generally been a little less. In 1882, the national debt was £78,500,000; the army at the same date was 62,000; the navy consisted of 103 steamers, of which 17 were ironclads. Capital, Amsterdam, with (1885) a population of 366,000.

BELGIUM.

Belgium, another of the lesser kingdoms of Europe, is situated between lat. 49° 27′ and 51° 31′ north, and long. 2° 33′ and 6° 5′ east; and is bounded on the north by Holland; east, by Rhenish Prussia, Dutch Limburg, and Luxemburg; south, by France and Germany; and west, by the German Ocean. Area, 11,372 square miles.

Superficially, the northern and western provinces of Belgium, in their flatness, fertility, dikes, and canals, may be regarded as a continuation of Holland—with this difference, that in no part does the surface fall beneath the level of the sea. The south and east provinces have an opposite character; they are generally more thinly peopled, less cultivated, and exhibit an irregular hilly surface, with tracts of marshy land and extensive forests. The country is intersected by numerous streams—the affluents of the navigable rivers Meuse, Sambre, Dender, Scheldt, Lys, &c. The chief mineral products of Liege, Namur, Hainault, and Luxemburg are—coal, iron, lead, copper, and zinc; besides which may be mentioned manganese, calamine, alum, various kinds of stone, slate, marble, whet-hones, and porcelain clay. Of the *mineral springs* arising from these formations, the most celebrated are those of Spa.

The *climate* resembles that of the south-east of England, but is, on the whole, more humid and variable; some districts, moreover, as Flanders, being at certain seasons rendered unhealthy by noxious exhalations from the water-courses and low polder-lands. The *vegetation*, both natural and cultivated, is the same as that of England and the north of France.

Of the *inhabitants*, about two-thirds, inhabiting the northern provinces, are Flemings, an offshoot of the great Teutonic stem, and speaking a language resembling Dutch. The south-eastern provinces are inhabited by Walloons, who are Celts like the French, and speak dialects (Walloon and Picard) of the French language. French is the language of the educated classes. In regard to *religion*, nineteen-twentieths of the people are Roman Catholics. There are not more than 15,000 Protestants, and perhaps about 3000 Jews.

Education is almost entirely in the hands of the Jesuits. The colleges of that order have more pupils than the royal athenæums and other upper and middle class schools; while the Roman Catholic university of Louvain has twice as many students as the two state universities put together. Elementary education is not yet generally diffused, but is growing.

At present, the *industry* of Belgium is happily distributed between agriculture, mining, and manufactures. The Belgian or Flemish system of agriculture is well known over Europe for its minute and careful management; and no people understand better the method of collecting and preparing every species of manure, without which much of their sandy soil would be next to worthless. Half the surface of the country is under tillage. The mines of Belgium are an important source of

wealth. The amount of coal raised annually is about 16,000,000 tons, and the number of men employed is over 100,000. The most important *manufactures* are—woollen cloths, at Verviers, Liege, Ypres; carpets, at Tournay; linens, at Bruges, Courtray, Ghent, Termonde, &c.; cotton goods, at Ghent, Bruges, Courtray, Mechlin, Louvain, Tournay, Mons, and Antwerp; superb lace, at Brussels and Mechlin; ribbons, at Antwerp, Tournay, Ypres; metallurgy, at Charleroi, Liege, Namur, &c.; steam-engines, fire-arms, and machinery, at Liege; hardwares and cutlery in various localities; porcelain, at Brussels, &c.; glass, at Namur, Liege, and Charleroi. The internal communication of the country is carried on by means of the rivers, already noticed, a number of well-kept canals, good macadamised roads, and a partly national system of railways, which in 1882 had a length of 2600 miles.

The *government*, as established in 1831, is a constitutional, hereditary monarchy. The legislative power is exercised collectively by the king, senate, and house of representatives—the members of both of these chambers being elected by all citizens who pay a small amount of direct taxes. The executive is exercised by the sovereign, assisted by responsible ministers. Population, 5,520,000; revenue (in 1882), £12,000,000; debt, £72,000,000; imports (in 1881), £112,000,000, and exports, £98,500,000; army, on the war-footing, 100,000—on peace-footing, 40,000. Capital, Brussels, with a population (including its 8 suburbs) of 395,000.

DENMARK.

This small but ancient kingdom occupies the greater part of that peninsular and insular portion of Europe betwixt the German Ocean and the entrance to the Baltic Sea; and lies between lat. 54° 35′ and 57° 42′ north, and long. 8° 5′ and 12° 45′ east. The Danish dominions consist of the kingdom of Denmark proper, which includes the peninsula of Jütland, with the islands of Sjaeland or Zealand, Funen, Laaland, Falster, Möen, Langland, &c. The area is 14,740 square miles.

Superficially, both the peninsular and insular portions are low and flat; in many places rising little above the sea, and requiring the protection of mounds and dikes; and in no portion exceeding an altitude of 1200 feet. In the north and west of Jütland, large sandy tracts are prevalent, partially covered with bent, heath, and juniper, and utterly unavailable for culture. The soil of the islands is composed of calcareous sand and clay, and is, upon the whole, of average quality.

The *climate*, in consequence of the low-lying nature of the land, and the proximity of the surrounding seas to its most central portions, is, on the whole, much milder than the latitude would indicate. The distinguishing characteristics are humidity and changeableness. All the common grasses, rye, wheat, oats, potatoes, hemp, flax, and rape-seed, are raised; and in several of the islands are large orchard-growths of apples, pears, cherries, and hazel-nuts.

The *people* belong to the Scandinavian branch of the great Teutonic family, and speak a modern form of the old Norse, which is much simpler in structure, and more musical in sound than its venerable parent. Lutheranism is the established *religion* of the state, and according to the census of 1880 was professed by all but 17,000 of the people. Elementary education is widely diffused, attendance at school being obligatory from the age of seven to fourteen. Almost every one can read and write. Besides the university of Copenhagen, there are thirteen gymnasia in Denmark, where classics are taught, and a large number of what the Germans call *real-schulen*. The parish or elementary schools are nearly 3000 in number.

Industrially, Denmark is more an agricultural and pastoral than a manufacturing country. Its commerce consists almost exclusively in barley, wheat and oats, cattle and butter. The total value of the exports in 1880 was £12,650,000. They consist mainly of butter, grain, and cattle; and nearly half go to Great Britain.

The *government* is a hereditary monarchy. The constitution of 1849 gives an elective parliament, or *Rigsdag*, for the whole kingdom, consisting of two houses, a Folkething and a Landsthing, the latter forming a Senate or Upper House. Since 1866, Slesvig and Holstein have ceased to be Danish provinces, and now form part of Prussia. Population (in 1880), 1,969,000; revenue (in 1881), £2,875,000; debt (in 1882) £11,203,000; army, 38,000; navy, 41 vessels, of which 8 were ironclads. Capital, Copenhagen, with 273,000 inhabitants.

SWEDEN.

This country occupies the eastern and more important section of the Scandinavian peninsula, and is situated between lat. 55° 20′ and 69° north, and long. 11° 10′ and 24° east. Its extreme length is about 965 miles, and its average breadth 188: the area is computed at 172,000 square miles.

Physically, the country presents several districts of very different aspect; the whole, however, declining from the Kjölen and Dofrine ranges towards the basin of the Baltic. Starting with these, which have the character of an irregular table-land, about 20 or 25 miles across, and only at intervals studded with mountains of more than 5000 feet high, we find the general elevation between 2000 and 2800 feet, covered with straggling forests of pine and birch. From this tract the country descends by steps or terraces. Throughout the whole of these, the rivers which rise in the mountain-plateau hold on their course, presenting numerous rapids and water-falls; only a few of them, as the Angermans, being navigable during the lower stages of their descent. Such is the superficial character of Nordland. As we travel southward through Svealand, the face of the country becomes flat, or only diversified by the insignificant ridges which inclose the great lakes Wener, Wetter, &c. South of the lakes, the greater part of Gothland presents the same low and sandy character as the opposite coast of Denmark. The most important *mineral products* are—iron (the best in Europe), copper, and lead in abundance; cobalt, zinc, antimony, gold, and silver in minor quantities.

Respecting *climate*, Nordland, part of which lies within the Arctic Circle, has from five to six months of winter; snow and ice then covering the mountains and rivers, and locking up the waters of the Gulf of Bothnia. On the other hand, the summer is sudden and short, but excessively

warm; at midsummer, the sun never falls beneath the horizon north of Tornea; and the crops of oats and barley come to maturity in six or eight weeks. In the central parts, winter lasts only about four months, but is severe enough in most seasons to lock up the Baltic; and in the southern level tracts, the climate is very similar to that of Northern Germany.

The *vegetable productions*, as might be expected from the high latitude and natural poverty of the soil, are by no means abundant. In the forests, pines, firs, alders, and birches are prevalent in the north; these, with oak, elm, and ash in the central districts; and the beech, chestnut, mulberry, &c. only in the south. Apples, pears, and other garden-fruits are grown in Gothland. The cultivated products consist chiefly of rye, barley, oats, wheat, potatoes, peas, hemp and flax, buckwheat, madder, hops, and woad, in the south; but as we proceed northward, most of these disappear, and oats, barley, maslin (a mixture of barley and oats), and potatoes, are alone cultivated—oats ripening so far as 66° north, and a coarse variety of barley even to the limits of the pine-woods in 69° 30′. The principal *wild animals* are—the bear, wolf, wolverine, fox, lynx, badger, otter, squirrel, lemming, and other small rodents; with a few scattered members of the beaver family. Game-birds are everywhere rife, from the partridge to the capercailzie; and aquatic birds appear in great abundance. Seals and porpoises are found in the Baltic, whose waters also furnish plentiful supplies of cod, sole, turbot, pilchard, herring, stremming, mackerel, oysters, &c.; while in the rivers and lakes are sturgeon, salmon, trout, pike, and perch.

The *inhabitants*, with the exception of a few Finns and Laplanders, belong (like the Danes) to the Scandinavian branch of the great Teutonic family, and speak a variety or dialect of the old Norse. The *religion* of the state, and that to which the whole population, with the exception of some 7000, adhere, is the Lutheran, administered by 1 archbishop, 11 bishops, and over 3000 inferior clergy. Education in Sweden is both free and compulsory. In 1881, 97 per cent. of all the children between eight and fifteen attended school. High schools or gymnasia exist in all the provincial capitals; and there are two universities—namely, those of Upsala and Lund.

Industrially, the Swedes are a busy, hardy, clear-headed, and progressive people. The staple exports are timber, bar-iron, and corn; and the staple imports, textile fabrics, coal, colonial merchandise, and machinery. In 1880, the total value of all Swedish exports amounted to £12,500,000, and of all Swedish imports to £16,000,000, an increase of more than 100 per cent. in ten years. The *manufactures* are chiefly domestic, the peasantry supplying themselves, as winter employment, with nearly all the coarse woollens, linens, and cottons they require. There is now a considerable network of railways in Sweden, partly belonging to the state, and partly to private companies.

The *government* is a limited monarchy, hereditary in the male line, and restricted to the Lutheran creed. The legislative power is vested in the king and representative Diet, consisting of two chambers—both elected by the people. The executive is managed by the king and a state council.

Population in 1881, 4,572,000; revenue in 1882, £4,375,000; debt, £12,000,000; army, 184,000; navy, 130 vessels, of which 14 are iron-clads. Capital, Stockholm; pop. (1881) 176,700.

NORWAY.

Norway occupies the western section of the Scandinavian peninsula; extends from lat. 58° to 71° 10′ north, and from long. 5° to 31° east; and is bounded on the west and north by the Northern Ocean; east, by Russian Lapland and Sweden; and south, by the Skagerrack. Its greatest length is upwards of 1100 miles, and average breadth 50; area, 120,000 square miles.

The *general aspect* of the country is bleak, rugged, and sterile; the shores are rocky and precipitous, and, on the west, fenced by numerous small islands, and indented by *fiords*. The interior consists chiefly of the mountain masses of the Kjölen and Dovre-fjeld, rising in the north almost from the water's edge, and in the south spread out in plateaux, or *fielle* (*i.e.* fields), intersected by narrow valleys susceptible of a scanty culture, or by steep ravines, down which impetuous rivers cleave their way by rapids and water-falls. The lowest tracts, and those to which cultivation is chiefly limited, occur round Christiania fiord, and the adjoining shores of the Skagerrack, or to the south and east of the Bay of Trondhjem. The geology of the country is primary, and yields, like the contiguous parts of Sweden, iron, copper, cobalt, zinc, marble, and slate.

The *climate* is milder, but more variable than that of Sweden under the same parallels. The cause is supposed to be the warmth of the Gulf Stream. At Christiania, winter lasts from the middle of September to the middle of May, and summer is short and warm; in Lapland, winter endures from August till May, and for many weeks the sun is invisible (the aurora borealis and stars being the only natural lights); while summer is short and fervid, the sun never sinking beneath the horizon.

The *inhabitants*, with the exception of the Laplanders, are members of the Teutonic race, and immediately descended from the old Scandinavian Norsemen—a dialect of whose language they employ. According to the census of 1865, the whole population, except some 5000, were Lutherans in *religion*. In *educational* matters, Norway occupies a high position: elementary instruction is compulsory between the ages of seven and fourteen, and is provided for partly by stationary parish schools, partly, on account of the scattered state of the population, by ambulatory teachers; and the higher departments by 13 *laerd skole* (learned schools) in the principal towns. The subjects taught in these higher schools are theology, Latin, Greek, Norwegian, German, French, English, mathematics, history, and geography. There is a university at Christiania.

The *industry* of Norway is chiefly limited to her *forests*, which yield excellent timber, bark, and tar; to her *fisheries* of cod, lubfish, herrings, lobsters, salmon, anchovies, &c.; to her *mines* and foundries of iron, copper, and cobalt; and to *shipping*, much of which is employed in the carrying-trade of other countries. *Agriculture* is improving; the manufactures are almost wholly domestic. During the years 1877–81, the average

value (annually) of the imports into Norway was £8,963,000; and of the exports, £5,684,000.

With respect to *government*, Norway was an appanage of the Danish crown until 1814, when, by the convention of Kiel, it was placed under that of Sweden. It still, however, retains its own representative body or *Storthing* (which is essentially democratic); and is, in reality, no more connected with Swedish rule than Hanover was formerly with Britain. The *Storthing*, when assembled, divides itself into *two* houses, the *Lagthing* and the *Odelsthing*. The executive is vested in a council of state at Christiania. Population in 1876, 1,806,900; public revenue (1881–82), £2,313,000; debt, 6 millions; army, 40,000; navy, 37 steamers, of which 4 were iron-clads, carrying 152 guns. Capital, Christiania, with 128,000 inhabitants.

PRUSSIA.

Prussia, the most powerful state in Germany, and, since the wars of 1866 and 1871, one of the most powerful in Europe, occupies the northern half of the imperial territory, from 49° 6′ to 55° 35′ N. lat. and from 6° to 22° 15′ E. long. Its area amounts to 134,380 square miles.

Its *physical aspect, geology, climate, vegetation,* and *animal* productions are identical with those already described under the north and west of Germany.

The *people* of Prussia belong principally to the great Teutonic and Slavonic families—the Germans forming seven-eighths of the whole. The *religion* of the majority (five-eighths) is Protestantism (Lutherans and Calvinists), while rather less than three-eighths are Roman Catholics. These enjoy equal civil rights. The recently formed secession from the Roman Catholic Church, under the title of 'Old Catholics,' is now recognised by the state. 'In no other country is the *system of education* so complete; and in none is the instruction of all classes so carefully provided for. The law imposes upon parents the strict obligation of sending their children to school, unless they can prove that they are giving them a proper education at home; and care is everywhere taken to furnish the poor with the means of complying with this law, by providing their children with the things necessary. Every parish is bound to have an elementary school, and every town one *bürgerschule* ('citizen-school') or more, according to the population. Above these are gymnasia, and in these institutions classical learning is pursued preparatory to admission into the universities, of which there are eight—in the cities of Berlin, Göttingen, Breslau, Halle, Bonn, Königsberg, Greifswalde, and Kiel.' Besides these, there are normal schools for the training of teachers, establishments for instruction in particular arts, and collections of natural history, philosophical apparatus, and public libraries, accessible to any person who chooses to avail himself of their assistance. The whole of this admirable system is upheld partly by the respective towns and provinces, and partly by the state, and partly also by fees; the whole being under the strict and unremitting surveillance of government functionaries.

The *national industries* have been already mentioned under the head of Germany. Prussia is well provided with means of communication in navigable rivers and roads; and in 1882 had 13,000 miles of railway.

The government, until 1847, was an absolute monarchy; since then, a modified constitutionalism has been introduced, though the king still declines to be a mere cipher, and appoints his own ministers, irrespective of parliamentary majorities; and there is therefore always the risk of a collision between him and his parliament. But the vigorous and triumphant *national* policy pursued of late years by the monarch, under the bold and sagacious guidance of Prince Bismarck, has hitherto prevented any quarrel. Both in the *Herrenhaus* ('House of Lords') and the *Abgeordnetenhaus* ('House of Deputies') the majorities are in sympathy with the policy of the king and his ministry. Population (1880), 27,279,000; revenue (1881), £45,500,000; debt, £103,000,000. The army of Prussia is the most important section of the army of the German Empire, and the imperial navy is wholly due to the initiative of Prussia. The Prussian troops number 350,000 in peace, and 900,000 in war. Capital, Berlin, with (1880) a population of 1,122,330.

RUSSIA.

Russia, the largest country in Europe, is bounded on the north by the Arctic Ocean; east, by the Ural Mountains and the Caspian; south, by the Caucasian range and the Black Sea; and west, by Turkey, Austria, Prussia, and the Baltic. The area is estimated at 2,059,000 square miles.

Superficially, the territory may be regarded as one vast plain, with a slight elevation running diagonally across the interior, and forming the great water-shed which diverts the rivers to the Arctic Ocean on the one hand, and to the Caspian and Black Seas on the other. If we except the Uralian Mountains on its eastern border, and a hilly tract in the Crimea, there is no portion of the country which rises more than 1100 feet above the sea, and that only near Valdai in the central plateau. 'The northern section, which sensibly declines,' says a native author, 'towards the White and Frozen Seas, is covered with vast forests, abounds in marshes and lakes, and is but little fit for cultivation. The other, and more southerly portion of the plain includes the whole district along the Volga as far as the sandy steppes or deserts between the Caspian and the Sea of Azov, and constitutes the finest part of Russia; generally, it has a fertile soil, the arable and pasture land preponderating over the woods and marshes.'

The chief economic *minerals* of Russia are—gold, platina, silver, lead, and copper from the Ural; copper and tin in Finland; iron from the central elevation of Valdai, &c.; coal, in Poland, Tula, and Ekaterinoslav, but of little importance; rock-salt and brine-springs in Poland, Taurida, Perm, and other places; lime, alabaster, gypsum, and amber.

The *climate* of Russia is much colder than that of other European countries in the same latitude; and the farther we proceed eastward, the temperature becomes still lower, in consequence of the uncultivated state of the surface, distance from the tempering influences of the ocean, and the frequency of easterly and northerly winds

from the icy regions of the Arctic Ocean. In the northern section, the winter is severe, and lasts from eight to nine months; summer, on the other hand, is short and hot; and there is, generally speaking, neither spring nor autumn. In the central region, winter is also severe, but shorter; there is something like spring and autumn, and summer is still warmer. In the south, winter continues only for about five months; and summer is often fervid and oppressive. The provinces bordering on the Baltic have a wet and variable climate, and this feature extends to the elevated tract which borders the upper basin of the Volga.

The *vegetable* and *animal productions* present less variety than might be expected from a region lying between the 45th and 70th parallels. The most remarkable feature in the former is the vast expanse of forest growth, covering about two-fifths of the entire superficies. Among the cultivated plants, we may notice rye all over the country; barley to 67° north; oats to 62° north; wheat in the fertile tracts along the southern rivers, but also pretty far north; millet along the Don; hemp and flax in the west and centre; tobacco in the Ukraine; cranberries in the marshes of the north, fruit in the south-east; the vine in the Crimea and Caucasian provinces; and variously, potatoes, rape, rhubarb, poppy, &c. The characteristic wild *animals* are—the polar bear, the black and brown bears of the forest, the reindeer, elk, urus, wild-horse of the Ukraine, wolf, blue fox, lynx, beaver, sable, ermine, lemming, &c.; game, but not abundantly; the sturgeon, salmon, trout, carp, pike, mackerel, and a variety of other fishes in the rivers; and the bee, whose honey and wax form valuable products of consumption and export.

The *population* of the country, amounting in 1881 to more than 83,000,000, is composed of a vast variety of races, differing in language, religion, manners. The chief are: the *Slavonic*, including the Russians proper, the Poles, Bulgarians, and Servians; the *Finns* of Finland, Lapland, and Esthonia; the *Lettish* tribes of the Baltic provinces; the Tatars of the Caucasus, Astrakhan, Kazan, the Crimea, &c.; the *Germans* in Riga, Revel, and the Baltic provinces generally; the *Swedes* of Finland; and in lesser numbers, Jews and Greeks, with some French and English traders. The settled inhabitants are ranked in four classes—nobles, clergy (along with whom are classed government officials, artists and professional men generally), merchants, and peasants. Each of these classes either possesses special privileges, or is subject to special obligations; on the other hand, each enjoys, to a certain extent, the right of self-administration in its own affairs. Each apportions its taxes, and chooses some of its own functionaries. In 1861, serfdom was abolished, and 20,000,000 peasants became freemen.

All forms of *religious faith* are tolerated; but that of the orthodox Greek Church, which has 54,000,000 adherents, is the established religion of the empire, and is professed by the Russians, Servians, &c. The Roman Catholic faith is that of the Poles and Lithuanians; the Swedes, Danes, Finns, and most of the Germans are Lutherans; Calvinism reckons but a small number of Poles and Germans; Islamism is the creed of the Tatar tribes. In Russia there are nearly 500 cathedrals, and about 29,000 churches, with 70,000 parish clergy belonging to the established faith. Besides, there are about 550 convents. The emperor is the Head of the Church, and appoints to every office in it, but he does not possess the power to decide questions of doctrine. The ecclesiastical chief is the archbishop of Moscow. *Educationally*, the country is in a very backward state. In 1882, 19 out of every 100 of the inhabitants could read and write. The number of primary schools was only 28,000, and the number of pupils 1,539,975, but this is an immense advance on 1860. In the same year, there were 456 secondary schools for boys, and 384 for girls, and 8 universities.

The *industrial operations* of the country are rapidly increasing. *Agriculture* is in its first stage, and yet, owing to the excellency of the soil and comparatively small home-demand, large supplies are annually exported. Of late years, *manufactures*, under high protective duties, have risen to some consideration, and the country now possesses a number of establishments for the preparation of woollen goods, silk, cotton, linen, and metal wares. The chief seats of these are the governments of Moscow, Novgorod, Vladimir, Saratov, Tula, and St Petersburg. The Russians excel in the manufacture of leather; and from their advantages in respect to raw material, their canvas, strong linens, cordage, felt, mats, potash, soap, candles, caviare, and isinglass are quite as good as those made elsewhere. During the ten years from 1861 to 1871, the trade of Russia with foreign countries more than doubled itself; the imports in 1870—1880, varied from 54 to 91 millions, the exports from 55 to 96 millions. The internal commerce has, of late years, been immensely extended by the introduction of the railway system; and in 1883 nearly 15,000 miles of railway were open for traffic; and in 1882, nearly 60,000 miles of telegraph.

The *government* is an absolute hereditary monarchy; all power emanates from the czar, emperor, or autocrat, whose authority is without limit or control. He is the central point of the administration, the head of the church, as well as of the state, and to his decision, or for his sanction, all important measures must be submitted. His authority is delegated to four great boards, the members of which are of his own appointment; and to these respectively are committed the ordering and execution of all legislative, judicial, civil, religious, financial, and other affairs. Population (1881) of Russia in Europe, 83,000,000, and of the empire, 98,000,000; revenue, £93,000,000; debt, £640,000,000; army, on the peace-footing, 840,000, the war-footing, 2,264,000; navy, 224 vessels, of which 31 are iron-clads. Capital, St Petersburg, with 876,500 inhabitants.

ENGLAND AND WALES.

ENGLAND, comprehending Wales, is bounded on the north by Scotland, from which it is chiefly separated by the Solway Firth, the Cheviot Hills, and the river Tweed; on the east, by the German Ocean; on the south, by the English Channel; on the west, by St George's Channel and the Irish Sea. The space thus included is rather irregular in form, and lies between lat. 50° and 55° 45′ north, and between long. 5° 41′ west and 1° 46′ east. Measuring along the second meridian, from St Alban's Head on the south to Berwick on the north, its length is 362 miles; its breadth, from Land's End to North Foreland, in Kent, 330 miles; from St David's Head, in Pembroke, to Lowestoft, in Suffolk, 300; from Lancaster Bay to Bridlington Bay, in Yorkshire, 110; and from the Solway Firth to Tynemouth, only 64 miles.

SUPERFICIAL FEATURES.

Northern Division.—If we draw a line from the mouth of the Mersey, by the Peak of Derby, to the mouth of the Humber, the country between this line and the Scottish border may be properly called the northern division of England. This district is traversed towards the west coast by the range of hills called the Pennine chain, which, starting from the Cheviots, runs south for about 180 miles, and ends with the Peak of Derby. It forms the water-shed between the east and the west of the north of England. The chief rivers on the west are the Ribble and the Mersey, in Lancashire; on the east, the Tyne, the Wear, the Tees, the Ouse, and the Humber. The Cumberland Hills are an offshoot of this range. To the east of the Pennine chain, from the Tees to Doncaster, a length of 180 miles, lies the fertile *Plain of York.*

Western Division.—A line drawn from the mouth of the Dee, by the eastern border of the English counties of Shropshire, Herefordshire, and Monmouth, to the mouth of the Severn, will mark the natural border of this division of England. It is traversed by the Cambrian range of hills, running, like the Pennine, north and south, and keeping still nearer than it does to the western shore. The summits of Snowdon, Cader Idris, and Plinlimmon mark its course. Snowdon (3557 feet) is the highest mountain in England. It is said that Scotland can be seen from the top. Plinlimmon is the boundary rock between North and South Wales. On the west of the Cambrian range, there is nothing that can be called a river. On the east are the Wye and the Usk, running into the Bristol Channel. The Malvern Hills, dividing Herefordshire from Worcestershire, form a water-shed between the Wye and the Severn, which has its source in Plinlimmon, and also flows into the Bristol Channel. Wales, the whole of which is comprehended in this division, is generally rugged and mountainous like the Scotch Highlands. Its population and dialect are Celtic.

Eastern Division.—It extends from the mouth of the Humber to the mouth of the Thames, comprising four littoral counties and Cambridgeshire; or, at least, it may be fairly held to comprehend the greater part of this county. It is a low plain, the most level part of which is the Fen district, on the west and south of the Wash. A large part of this tract is called the Bedford Level, having been drained at the instance of the Duke of Bedford, in the reign of Charles I. The rivers in this district are inconsiderable, and almost stagnant. The chief ones are the Witham, Welland, Nen, and Great Ouse, flowing into the Wash; and the Yare, with its branches, the Wensum and Waveney, in Norfolk. This is the district of England most advanced in agriculture. Norfolk produces the best barley, and Essex competes with Kent in producing the best wheat in England.

Midland Division.—It extends from Middlesex to Cheshire, embracing both of these counties. It is bounded on the south by the Thames, and in other quarters by the boundary-lines of the other divisions, as already indicated. It is an undulating plain, with an average elevation of from 200 to 400 feet. There is no hill in it 1000 feet high. In Leicestershire, near the centre of the district, is Bardon Hill, 850 above the level of the sea, and not more than 200 above the level of the surrounding country, yet it commands a view of Lincoln Cathedral, the Derbyshire Peak, of the Wrekin near Shrewsbury, and of the Malvern Hills; the whole comprising nearly one quarter of England. The Trent and the Severn are the principal rivers by which this district is drained.

Southern Division.—This comprises all the country south of the Thames and the estuary of the Severn. In Cornwall and Devon, the inland districts are mountainous and rocky. The Downs, North and South, are elevated tracts, covered with turf or short grass, stretching from Devonshire to Sussex. The highest point, 930 feet above the sea, is in Dorsetshire. Between the termination of the Downs and the borders of Kent, lies the Weald, a flat and fertile tract. Gloucestershire is traversed by the Cotswold Hills, which form the water-shed between the Severn and the Thames. A branch of the range, called the Mendip Hills, traverses Somersetshire. Salisbury Plain, which lies chiefly in the south of Wiltshire, is a bare tract of country, with a general elevation of about 500 feet. Its extent is about 20 miles by 15. The peninsula between the Bristol and English Channels is generally a hilly country. Dartmoor, in Devonshire, is a granite table-land, with an area of 100,000 acres, covered in a great part by marsh and peat. The highest summits on this moor are upwards of 2000 feet. The rivers of the southern district are small. The Medway, in Kent, and the Avon—to be distinguished from the Upper Avon at Tewkesbury, and the Lower Avon at Bristol—in Wiltshire, are the most considerable.

The growth of hops in England is almost wholly confined to this district, Worcestershire and Herefordshire being the only counties north of the Thames in which they are cultivated.

GEOLOGY.

The geology of England is best understood by taking the island of Great Britain as a whole; and, for the sake of space, it is more convenient to bring it in under the head of Scotland, in the next sheet.

CLIMATE.

The general characteristics of the English climate, compared with those of the west of Europe, between the forty-fifth and fifty-fifth parallels of latitude, are, its milder winters, cooler summers, greater humidity, and greater variability. But England has a variety of climates, and these change relatively, according to the season of the year. The mean temperature of January in London, and on the south-east coast generally, is 38°, which is 1° below that of Cape Wrath, in the north of Scotland, and the same as that of the Faröe Islands, in 62° N. lat. Going west along the south coast, the winter temperature rises rapidly; the mean of January at Portsmouth being 39°, at the Isle of Wight 40°, at Exeter 42°, at Plymouth 43°, and at Land's End 45°, which is but 2° below that of Nice (47·1°, according to the Scottish Meteorological Society), and 4·5° above that of Pau (40·5° according to the same authority). It is necessary, however, to keep in mind that this high mean temperature of the south-west coast of England, in winter, arises chiefly during the night, and during westerly winds, whose moisture, imbibed from the Atlantic, is condensed into cloud on reaching land, at this season many degrees colder than the sea, and nocturnal radiation is thus impeded. Still, there can be no doubt that the south coasts of Devon and Cornwall possess the best stations in England for those who require a high winter temperature. The advance of temperature is, however, much slower on the west than on the east coast. In March, London and Bristol have both a mean of 43°, Land's End of 46°; and during June, July, and August, the warmest part of Great Britain is embraced in a circle, whose centre is about half-way between London and Bath, with Cambridge for the northern limit. Broadly, we may say that the temperature of Great Britain is determined by longitude from November to March, and by latitude from March to November. The mean July temperature of London is 64°, which is equal to that of Nice and of the French Riviera generally, in May. It falls rapidly going north, being but 60° at York, and 59° at Newcastle. The following table, taken from Sir James Clark's valuable work, shews the mean monthly and annual rainfall at one or two places in England, and also, for the sake of contrast, at one or two places elsewhere:

Names of Places.	Mean Annual Rainfall in Inches.	Average No. of Days on which Rain falls.	Mean Monthly Quantities of Rain.												Name of Observer and Period of Observation.
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
London.....	20·686	178	1·464	1·250	1·172	1·279	1·636	1·738	2·448	1·807	1·842	2·092	2·222	1·736	Dalton, 40 years.
Edinburgh..	23·500	..	1·090	1·360	·880	·990	1·94	2·030	·860	1·690	2·230	3·460	4·140	2·830	Adie.
Kendal.....	53·944	176	5·299	5·126	3·151	2·986	3·480	2·722	4·959	5·039	4·874	5·439	4·785	6·084	Dalton, 25 years.
Liverpool...	34·121	..	2·177	1·847	1·523	2·104	2·573	2·816	3·663	3·311	3·654	3·724	3·441	3·288	Dalton, 18 years.
Bristol.....	32·560	160	2·120	2·770	2·120	2·040	1·530	3·020	3·480	2·940	2·730	2·880	3·390	3·540	Bristol Institution.
Helstone...	37·105	165	3·300	3·305	3·500	1·970	2·800	2·100	1·800	2·830	3·030	3·800	4·000	4·670	Mr Moyle, 8 years.
Paris.....	18·694	..	1·228	1·232	1·190	1·185	1·767	1·697	1·800	1·900	1·550	1·780	1·720	1·600	Dalton, 15 years.

GOVERNMENT—ADMINISTRATION.

Respecting the political constitution, laws, religion, and education of England, the reader is referred to the article on the CONSTITUTION AND RESOURCES OF THE BRITISH EMPIRE, in which he will find statistics and details, which we do not think it expedient here to repeat.

For administrative purposes England is divided into fifty-two counties, twelve of which are in Wales. The Channel Islands and the Isle of Man are under peculiar jurisdiction.

The table on next page shews the areas of the counties, their population in 1871 and 1881, and the number of their inhabited houses at the former date.

POPULATION.

Ethnology.—The constituent elements of the English population are to be traced in the history of the country. The first inhabitants were Britons, probably a mixed Celtic race, who, during the time of the possession of the country by the Romans, must have become slightly changed by the admixture of that race. Upon a scattered population of Romanised Britons came the great wave of the Saxon invasion in the 5th and 6th centuries. After this, the predominant element of English society was undoubtedly Saxon; the Norman conquest only adding to it a French aristocracy, which had little effect on the bulk of the population. The English therefore, exclusive of the Welsh, who are almost purely British, may be regarded as mainly a Teutonic people; the British element diminishing as we recede from Wales and approach the east coast, where the people are nearly pure Teutonic.

English Character.—It has been said that if a suggestion of action were made to a Frenchman, a Scotchman, and an Englishman, the first would ask if it would bring him glory; the second, if it was reasonable; and the third, if it would 'pay.' Frenchmen and Scotchmen probably value money as much as an Englishman does, but—of course we talk of the general rule—they place less value on lavish expenditure, at least the Scotchman certainly does. It is the

social weight incident to possession and to being supposed to be living prudently as regards money, that a Scotchmen chiefly values; while the mainspring of the Englishman's action is his

ENGLAND.

Counties.	Area in Stat. Acres.	Inhabited Houses, 1871.	Population 1871.	Population 1881.
Bedford	295,582	30,508	146,256	149,473
Berks	451,210	39,612	196,445	218,363
Buckingham	466,932	37,162	175,870	176,323
Cambridge	525,182	40,091	186,363	185,594
Chester	707,078	110,743	561,131	644,037
Cornwall	873,600	73,956	362,098	330,686
Cumberland	1,001,273	44,069	220,245	250,647
Derby	658,803	78,530	380,538	461,914
Devon	1,657,180	105,175	600,814	603,595
Dorset	632,025	39,404	195,544	191,028
Durham	622,476	114,658	685,045	867,258
Essex	1,060,549	92,359	466,427	576,434
Gloucester	805,102	102,347	534,320	572,433
Hereford	534,823	26,380	125,364	121,062
Hertford	391,141	39,330	192,725	203,069
Huntingdon	229,544	14,031	63,672	59,491
Kent	1,039,419	151,171	847,507	977,706
Lancaster	1,219,221	530,431	2,818,904	3,454,441
Leicester	514,164	58,559	268,764	321,258
Lincoln	1,775,457	94,119	436,163	469,919
Middlesex	180,136	321,021	2,538,882	2,920,485
Monmouth	368,399	35,488	195,391	211,267
Norfolk	1,354,301	99,599	438,511	444,749
Northampton	630,358	51,970	243,896	272,555
Northumberland	1,249,299	62,415	386,959	434,086
Nottingham	526,076	68,604	319,956	391,815
Oxford	472,717	37,837	177,956	179,559
Rutland	95,805	4,772	22,070	21,434
Salop	826,055	50,766	248,064	248,014
Somerset	1,047,220	92,105	463,412	469,109
Southampton	1,070,216	98,172	543,837	593,470
Stafford	728,468	167,487	857,333	981,013
Suffolk	947,681	76,496	348,479	356,893
Surrey	478,792	168,109	1,090,270	1,436,899
Sussex	936,911	75,200	417,407	490,505
Warwick	563,946	131,775	633,902	737,339
Westmoreland	485,432	12,674	65,005	64,191
Wilts	865,092	54,821	257,202	258,965
Worcester	472,165	70,034	338,848	380,283
York, E. Riding	768,419	56,430	269,505	315,460
" City	2,720	9,141	43,796	49,530
" N. Riding	1,350,121	58,539	291,589	346,260
" W. Riding	1,709,307	382,787	1,831,223	2,175,314
Total of England	32,590,397	4,008,877	21,487,688	24,613,926

WALES.

Counties.	Area in Stat. Acres.	Inhabited Houses, 1871.	Population 1871.	Population 1881.
Anglesey	193,453	12,175	50,919	51,416
Brecon	460,158	12,644	59,904	57,746
Cardigan	443,387	16,482	73,488	70,270
Caermarthen	606,331	24,603	116,944	124,864
Caernarvon	370,273	23,303	106,122	119,349
Denbigh	386,052	22,309	104,266	111,740
Flint	184,905	16,626	76,245	80,587
Glamorgan	547,494	73,409	396,010	511,433
Merioneth	385,291	10,159	47,369	52,038
Montgomery	483,323	13,936	67,789	65,718
Pembroke	401,691	19,568	91,936	91,824
Radnor	272,128	4,941	25,428	23,528
Total of Wales	4,734,486	250,155	1,216,420	1,360,513

intense dread of the world believing him unable to afford to live in pecuniary ease relatively to his social position. The expression which this social dread takes may often be vulgar, yet it is a mighty social force inciting to labour and enterprise. Burke has said of the money-loving Englishman, that 'his desk is his altar, his ledger is his Bible, his business is his religion, and money is his god.' That there is truth in this, can hardly be denied; yet it is this same determination to acquire wealth —this horror of falling behind in the race for gold —which has made England the mart of the world, and sent her people to colonise the globe. Less subtle than the Scotch or the German—troubling itself less with the mysteries of the universe—the English intellect is probably more politically efficient than either; being less prone than the Scotch to fall in early life into the error of supposing that mankind may be efficiently worked on by mere force of reason. A contempt for logic in political arrangements, and a respect for the majority, are, as applied to these, its essential characteristics. A French political party is defeated—it retires in a rage to hatch a revolution. If he cannot change the law, the Englishman obeys and growls. It may be very bad, in his opinion, but he reveres the British constitution, and he has a wholesome horror of revolutions.

A contempt for all expression of emotion—especially of anger or affection—is a noteworthy feature of difference between British and French character. A member of the House of Commons may be as insolent to another member as one man can be to another, if he takes care not to be 'unparliamentary' in his language; but if it is seen that he is indulging temper at the expense of policy, he will never rise into power. Frenchmen kiss each other when they have been parted for a week. An Englishman nods to his brother whom he has not seen for ten years, and says: 'How do you do, Jack?' In Scotland, social grades melt into each other, so that you can hardly say where one begins and another ends. In England, the lines between them are clearly and firmly drawn; and in no other country are the dread of falling, and the desire to rise in the social scale, so intense as in England. In no other country will the member of the lower grade so abase himself to gain admission into the higher. But let us here do the Englishman the justice to say that he is aware of this weakness, which the great English satirist of our time has called 'snobbishness;' that he satirises himself unsparingly; and on this, as on other social points, allows the foreigner to do so, with invincible—on which account, perhaps, provoking—good-temper. The Frenchman and Frenchwoman are kindly to dependents and servants, treating them as part of the family, and as having an interest in its affairs. The Englishman, or rather let us say the English lady, while never rude to her servants, widens the social gulf between them with a haughty and exacting reserve; and lives in a state of chronic surprise that she does not meet with fidelity and personal attachment.

These observations on English character refer to the manifestation of it in the middle and upper classes of society; but the essential elements are probably much the same in all classes. In all, there is the same love of political liberty, with a heartfelt veneration for social rank. Frugality—a distinguishing virtue of Scotch and French character—is certainly not an English virtue in any class; indeed, the average Englishman despises it. An English working-man will spend half-a-crown on his dinner, while the Scotchman with the same wages will dine for sixpence. And in every respect the lower classes in England are more self-indulgent than the Scotch or than the continental. Love of domestic order and cleanliness are eminently virtues of the lower classes of England—an

English village shewing, in these respects, a beauty not to be easily found elsewhere. The peasantry of the south of England are courteous in manner, more so than the peasantry in the north; but those in the north are shrewder, and in intellect more like their Scotch brethren.

If the Englishman is semi-maniacal in pursuit of wealth, it must be conceded that he makes a free and generous use of it when acquired. His fortune made, he does not wish his sons to tread the same path of drudgery over which he has manfully toiled—he gives them a liberal education, sends them to Oxford or Cambridge, and hopes to see them dignitaries of the bar, the church, or the state. In no other country are the minutiæ of social culture held so essential as in England to admission to the society of the well-born and well-educated. An Englishman may be rich, clever, handsome, and generally socially attractive, yet, if he calls a house 'an 'ouse,' or uses a knife when a fork is the proper implement, he may as well try to climb to the moon, as to scale the barrier between him and cultivated society in England. One of the most distinctive characteristics of the Englishman is his fondness for the privity and sanctity of his *home*—a name which has hardly an equivalent in any other language. This feeling finds expression in the following verses of Mrs Hemans:

The stately homes of England,
How beautiful they stand,
Amidst their tall ancestral trees,
O'er all the pleasant land!
The deer across their greensward bound,
Through shade and sunny gleam;
And the swan glides by them with the sound
Of some rejoicing stream.

The merry homes of England,
Around their hearths by night,
What gladsome looks of household love
Meet in the ruddy light!
The blessed homes of England,
How softly on their bowers,
Is laid the holy quietness
That breathes from Sabbath hours!

The cottage homes of England,
By thousands on her plains,
They are smiling o'er the silvery brooks,
And round the hamlet fanes.
Through glowing orchards forth they peep,
Each from its nook of leaves;
And fearless there the lowly sleep,
As the bird beneath their eaves.

The free, fair homes of England,
Long, long, in hut and hall,
May hearts of native proof be reared
To guard each hallowed wall.
And green for ever be the groves,
And bright the flowery sod,
Where first the child's glad spirit loves
Its country and its God.

Increase of Population.—The population of England in the time of the Plantagenet sovereigns is believed to have been little more than two millions. It has been estimated at 5,500,000 in 1696. The progress during the greater part of the eighteenth century was slow; the amount in 1760 is supposed to have been about 6,500,000. In 1801, for the first time, a regular census was taken; and this has been repeated once in ten years ever since, giving the following results:

1801	9,156,171	1841	16,035,198
1811	10,454,529	1851	18,054,170
1821	12,172,664	1861	20,066,224
1831	14,051,986	1871	22,712,266

The increase of the population has been much greater in the towns than in the country; and this tide, setting from the country to the towns, still continues. Thus the sixty-one principal cities of England and Wales, which in 1801 contained rather less than a fourth of the entire population, contained in 1851 above a third of the entire population. In 1851, the whole town and country populations of England were almost exactly equal; in 1861, the town population was not far from being three-fifths of the entire population; while, in 1871, it bore to that of the country the ratio of 62 to 38. In the last of these years, the 103 principal towns contained more inhabitants than the whole of England and Wales together in 1801.

NATIONAL INDUSTRY AND GENERAL WEALTH.

No country in the world probably gives to its people greater natural advantages for the getting of wealth than England does. Its soil and climate give it luxuriant pasturage and abundant harvests; its rivers and harbours, its vast mineral wealth, and compactness of resource, enable it to take the lead in commerce; while the climate incites to labour, by rendering an indolent life—enjoyable perhaps under brighter skies—intolerable. Railways and free-trade, added to these causes, have created a commerce and a wealth such as have never before been known in the world. Referring the reader for further detail to the article CONSTITUTION AND RESOURCES OF THE BRITISH EMPIRE, we here give the following as illustrative of this subject:

Agriculture.—According to parliamentary papers, the total number of returns for separate holdings of agricultural land, exclusive of allotments, obtained in 1873, amounted to 422,655 for England, 57,517 for Wales, and 80,857 for Scotland, and to 561,029 for the whole of Great Britain. 'The total acreage,' says the Report, 'under crops, fallow, and grass, in 1873, divided by the total number of returns obtained, shews that the average extent of land for each holding was 56 acres in England, 46 acres in Wales, 56 acres in Scotland.' In Ireland, it was 26 acres. 'The return,' continues the Report, 'shews that there were, in 1873, as many as 246,000 allotments of land in Great Britain, of which 242,000 were in England, 1700 in Wales, and 2100 in Scotland. . . . The total extent of land let in garden allotments in Great Britain, in 1873, was 59,631 acres, which shews almost exactly an average of one quarter of an acre for each allotment; and the average for England is the same.' By the table No. 1, the total acreage, 'under all kinds of crops, bare fallow, and grass,' in 1873, was, in England, 23,893,558; in Wales, 2,647,080; corn crops (including pease and beans), 7,501,713 and 536,786; green crops, 2,749,318 and 133,232; bare fallow, 649,374 and 34,730; grass, clover, &c. under rotation, 2,678,311 and 360,555; and permanent pasture, 10,237,814 and 1,581,585. The 'acreage of orchards, or of arable or grass land used also for

fruit-trees,' was 143,295 and 3052. The 'acreage of woods, coppices, and plantations,' was 1,325,765 and 126,823. The number of horses was 979,012 and 120,273; of cattle, 4,173,635 and 642,857; of sheep, 19,169,851 and 2,966,862; of pigs, 2,141,417 and 211,174. The total uncultivated area of England (woods being considered cultivated) is 7,378,000; of which 2,745,000 is in the counties of Northumberland, Cumberland, Westmoreland, the North and West Ridings of Yorkshire, and in Devon. The total area of England is 50,933 square miles, or 32,597,398 acres; of Wales, 7378 square miles, or 4,721,823 acres.

Mines.—The total value of coal raised in the United Kingdom, according to evidence laid before a Committee of the House of Commons, was, in 1872, £123,386,758, of which value there was used in the manufacture of iron £38,228,875. The total iron produced in the United Kingdom was, in 1871, 16,334,884 tons—of which Scotland produced 3,000,000; Ireland, 107,734; England, 13,227,150. The total value was £7,670,572. Tin is produced from only two counties, Cornwall and Devon. In 1868, the total value was £901,400; total weight, 9300 tons. Copper comes principally from the same counties. In 1868, the yield of pure metal was 157,335 tons; value, £761,602. The total value of the mineral produce of Great Britain in 1868 was £43,525,524.

Trade.—The value of imports into the United Kingdom was, in 1862, £225,716,976; in 1872, £354,693,624: of exports, in 1862, £166,168,134; in 1872, £314,588,834. The parliamentary returns do not enable us to assign their shares in these vast totals to each division of the United Kingdom, but readers may form an estimate from the fact, that the total amount of custom-duties paid by England, for the year ending 31st December 1872, was £16,095,678; by Scotland, £2,498,805; and by Ireland, £1,944,065; England's proportion relatively to that of Scotland, as 6·44 is to 1; and relatively to that of Ireland, as 8·27 is to 1. Of the English total, £9,785,126 was collected in London, £3,030,843 in Liverpool, and £1,027,769 in Bristol. The total number of trading-vessels belonging to England, at 31st December 1872, was 20,097; the total tonnage, 4,510,556; number of the crew, 193,506. The number belonging to the United Kingdom, at same date, was 25,083; tonnage, 5,681,963; crew, 244,994. Some notion of the enormous increase of one or two of the leading branches of British commerce, in recent years, may be got from the following facts. In 1857, the declared value of cotton yarn exported was £8,700,589; and of cotton manufactures, £30,372,831. In 1871, these values were respectively £15,054,742 and £57,635,570. In 1857, the declared value of woollen yarn was £2,752,386; of woollen and worsted manufactures, £10,706,023; of iron and steel, £15,133,388. In 1871, these values were respectively £6,101,777, £27,184,704, and £26,149,136.

Summary for 1880.—The total acreage of land under crops, bare fallow, and grass throughout the United Kingdom in the year 1880 was 47,586,700 acres (47,646,112 in 1881). The total acreage under wheat was 3,065,895 acres. The total value of the mineral produce of the United Kingdom for 1880 was £74,094,638 (£62,395,000 being for coal). The total value of imports in 1880 was £411,229,565 (in 1881, £397,022,489); the value of exports in 1880 was £286,414,466 (in 1881, £297,082,775). Cotton manufactures were exported to the value of £75,560,000; woollen manufactures, £20,600,000. The total value of real property assessed under the property and income tax in 1880 was £152,553,738 in England and Wales; £19,582,445 in Scotland; and £13,241,587 in Ireland. The railway capital of the United Kingdom in 1881 was £831,127,312.

ENGLISH SCENERY.

English scenery has many features which give it a poetic beauty of its own. We do not refer, in so saying, to the specially noted landscapes of England—to those of Wales or of Cumberland—but to those of the low and fertile midland and southern districts, and of the Plain of York; whether these be green with their dense summer foliage, golden with harvests, ruddy with orchards, or dark and grimy as that of the Black Country itself. 'With unabated bounty,' says Thomas Carlyle, 'the land of England blooms and grows; waving with yellow harvests; thick studded with workshops, industrial implements, with fifteen millions of workers, understood to be the strongest, the cunningest, and the willingest our earth ever had.' Of the Black Country, Mr W. White (*All Round the Wrekin*), writes: 'The name is eminently descriptive, for blackness everywhere prevails; the ground is black, the atmosphere is black, and the underground is honeycombed by mining galleries, stretching in utter blackness for many a league. The scene is marvellous, and to one who beholds it for the first time by night, terrific. Then the roaring furnaces are seen for miles around, pouring forth their fierce throbbing flames like volcanoes; then the hundreds of chimneys of iron-works display their blazing crests or sheafs of fiery tongues; then the dull gleam of heaps of roasting ironstone makes you fancy that the old globe itself is here smouldering away; overhead, dense clouds of smoke reflect a lurid light, rolling fitfully before the wind; while the hissing and rushing of steam, the clang and clatter of machinery, the roaring blasts, and the shock of ponderous hammer-strokes, all intensified by the presence of night, complete an effect which amazes alike the eye and the ear. By day, as the train speeds across, you hear the same noises, and see fires divested of their nightly terrors, yet find it difficult to believe that a scene of so much havoc represents prosperous industry, and one of the most important departments of British trade. Perhaps for the first time you become aware of the omnipotence of coal and iron. You catch glimpses of smoking heaps, of muddy canals, complications of locks, bridges, tramways; boats moving, trains rolling, of coal-pits where the iron arm projects from the little engine-house, working busily up and down, while the whimseys creak as the long rope passes over; of abandoned workings, where office and engine-house are in ruin, and scraps of ragged hedgerow look very miserable, and the tall posts stand up skeleton-like, and fragments of machinery lie about devoured by rust. . . . And amid all this are the cottages of artisans and miners; English homes, whence sun and stars are seen darkly, situate in a region devoid of repose and beauty, which look as if smitten by desolation, notwithstanding that here and there grow patches of wheat and plots of potato. And

so it continues for thirteen miles, all the way from Birmingham to Wolverhampton.' Pursuing his journey, our author continues: 'The country appeared more and more rural as I pursued my north-westerly route; the sound of distant chimes came floating on the breeze, and the very air seemed glad with the music of larks. . . . The view, made up of broad rolling fields, and a glimpse of blue uplands in the distance between the trees, feasts the eye with verdure and good cultivation; and though not at all romantic, holds a charm in its pretty lanes and inviting footpaths, and soothing quietness. . . . Then there were the timbered houses, relics of the olden time, that seem impregnate with domestic histories of the days of the Shropshire worthies — Baxter, Wycherley, and stout old Benbow, or, peradventure, with reminiscences of the civil wars. If outward signs may be trusted, that one with pretty spires to the dormer windows, and with such a wealth of roses, sweet brier, and hollyhocks in the front garden, such magnificent lilies and peonies, is the happiest of all. Another, partly overhung with ivy, has checkered panels, black and white being the prevailing style. . . . Not a mile of the way but shews signs of prosperity, and fertility is manifest by the timber as well as by the crops. . . . Then more sycamores and large oaks, and clumps of walnuts, and more gray gables and thatched roofs; then a lane, along which runs a green strip between the wheel-tracks, where the hedges, furlong after furlong, are a maze of ferns, roses, and honeysuckle; where the oak branches meet overhead, and ivy enwraps the stems; where from time to time a half-concealed pool almost startles you by its sunken shadows, and there seems something mysterious in the bird that darts suddenly from the covert, and flits silently across the sleeping water.'

A noteworthy and harmonious feature of English scenery is the country town, replete with historic association as it often is. 'The narrow declivitous thoroughfare of Water Lane,' says Mr White, describing Shrewsbury, 'shews us where the parliamentary troops were secretly admitted while besieging the town in 1644-45. The Butter Cross suggests an earlier time, for it stands on the place where David of Wales was tortured to death by order of Edward I.; and where certain noble and knightly prisoners, captured at the battle of Shrewsbury, lost their heads. Under the graceful spire of St Alkmunds, or Stalkmuns, as the natives have it, we are reminded of Ethelfleda, who built a church on the spot in the tenth century—of the stately edifice that followed, which the parishioners pulled down in a panic because St Chads fell; in which church, as the chronicler tells, writing in 1533, "This yere upon twelffe daye in Shrousbury, the Dyvyll appearyd in Saint Alkmonds' Churche there, when the preest was at high masse, with great tempeste and darknesse, so that as he passyd through he mountyd up the steeple in the sayde churche, tering the wyers of the clocke, and put the print of his clawes upon the 4th bell, and took one of the pynnacles awaye with hym, and for the tyme stayed all the bells in the churches within the sayde towne that they could neyther toll nor ringe." And so,' continues Mr White, 'while passing hither and thither, our thought flits to and fro among the centuries. The castle grounds, approached by a lofty arched gateway, contain vestiges of our old acquaintance Roger de Montgomery's stronghold, and the keep and round towers built by Edward I. We can imagine its history from the glimpses we have had of the olden time in our wanderings through the country. Near the bridge stand a few houses of the reign of Henry VII. At Ludlow, we saw the lodgings of the two young princes; at Bridgenorth, we were not far from the place where the Duke of Buckingham, riding one day in a discontented mood, met by accident the Lady Margaret, Countess of Richmond, and, as he relates, "communed with her a little concernynge her sonne;" and here we are in the streets through which the Earl of Richmond marched on his way from Milford-Haven, to victory and vengeance at Bosworth Field.' These extracts, we think, convey forcibly and truly a sense of the poetic spirit of English landscape—tame and uninteresting it will doubtless seem to many, who can fully appreciate the awful grandeur of Glencoe. Its peculiar charm—for charm to some it certainly has—lies, it seems to us, in the blending of august historic association—of a sense of the warfare and long-spent fury of bygone ages—with a feeling of the wealth, activity, security, and peace of the present.

ANTIQUITIES, ETC.

Perhaps the earliest objects of antiquity in England are the barrows or *tumuli* with which the Britons, like so many other uncivilised nations, were accustomed to cover the remains of the dead. Several specimens of these still exist, but many more have been destroyed and levelled with the soil. Their construction, contents, and other peculiarities are noticed under ARCHÆOLOGY.

With tumuli may be classed the *dolmen* (Celt. *daul*, a table; *maen*, a stone—table-stone) which consists of a large slab of stone placed flatwise, or in a sloping position, upon two upright ones. These structures were at one time believed to be altars for human sacrifices; but numerous excavations have demonstrated them to be sepulchral monuments. *Cromlechs*, or stone circles, are more complicated. They usually consist of circles of huge stones placed on end, with, in some instances, connected lines or rows of similar stones, the whole forming objects at once rude and imposing. From a once prevalent belief that they were the temples of the Druids, they are often called Druidical circles. The most remarkable Druidical circle is that of *Abury*, six miles from Marlborough, in Wiltshire. While the diameter of the outer circle of stones at Stonehenge is about 100 feet, that of Abury is nearly 1300. The position of 650 stones at Abury has been ascertained, but not above 20 of these are now standing. With a deplorable Vandalism, the rest have been broken up to build the modern village, which stands within the inclosure. The structure of Abury was in some respects peculiar. The whole was surrounded by a huge rampart, and, inside of it, a deep ditch; the slope from the bottom of the ditch to the top of the mound measures even yet, in some places, from 70 to 80 feet. The circular area thus inclosed contains upwards of 28 acres. Around the edge of this area stood a hundred massive unhewn pillars, 27 feet apart, and from 14 to 17 feet high. Within this outer circle were two other smaller circles, standing side by side;

each was composed of a double ring of stones, the outer ring having a diameter of 270 feet, and consisting of 30 stones, the inner ring a diameter of 166 feet, and 12 stones. In the centre of one of the small circles stood a stone upwards of 20 feet high; and in the other, three such pillars with a flat stone on the ground in front of them, which is generally held to have been the altar. From this great inclosure there proceeded two stone avenues with gentle curves, one towards the south-east, the other towards the south-west. They were upwards of a mile long each, with a breadth of 45 feet; one of them, which terminated in a double oval, had 258 stones; the other appeared to terminate in a single stone. Another Druidical circle of great note is that of *Stonehenge*, upon Salisbury Plain, a district also presenting many tumuli and other vestiges of the Britons. The Stonehenge temple, in its perfection, consisted of 140 stones, arranged in two concentric circles, the outermost 108 feet in diameter, with similar stones laid flatwise along the tops of the upright stones. The blocks which remain are from 18 to 20 feet high, and about 7 feet broad. Within the inner circle are two oval ranges, supposed to have formed the cell, and which consist of stones about 30 feet in height.

Roman remains are now rare, and nearly obliterated. The roads formed by this people have, in some instances, been changed into our present comparatively broad and well-formed ways; in other cases, slight traces of their original pavement, which generally consisted of large stones forming a causeway, are to be found. Between Newcastle and Carlisle are the remains of the two walls built respectively by the Emperors Adrian and Severus in 120 and 210, to keep out the northern barbarians: the first being a high mound of earth, and the second a rampart of stone, 68½ miles long, running parallel to the first. All the towns the names of which terminate in *chester* or *cester*, are considered as having been originally Roman stations. Near St Albans are the remains of the walls which once surrounded the Roman town of *Verulamium*, the site of the town itself having long been subjected to the plough. In making excavations in London and other places, remains of Roman buildings—temples, baths, &c.—are frequently brought to light, proving that Roman civilisation had made considerable progress in our island. In Uriconium—the British Pompeii, as it is named—the most important of the excavations extend southward from the wall called in the neighbourhood the 'Old Wall,' which is built of small squared stones, with a layer of red tiles at intervals, in a similar style to that which is found in the Roman city of Silchester. It is on the southern side of the Old Wall that the principal discoveries have been made—discoveries which shew to us the arts and customs of the days of Constantine. We see the pillars of the hypocausts, the marks on the walls of the flue-tiles through which the heat ascended, and even the soot left by the fires. Coins and skeletons have been found, with other evidence indicative of the manner in which the city was destroyed—being supposed to have been burnt by Scandinavian pirates.

Several of the small churches built soon after the introduction of Christianity still exist, and continue to be used as parish churches. The larger churches connected with monastic establishments, and the cathedrals which were the seats of bishops, took their rise at a later period, chiefly during the twelfth and thirteenth centuries. This was a time when an enthusiasm existed for founding and endowing monasteries and churches. To it we are indebted for many superb minsters, the solemn beauty of which continues to be a proud possession of our land. Westminster Abbey, York Minster, and the cathedrals of Winchester, Lincoln, Gloucester, Canterbury, Lichfield, and Salisbury, may be instanced as particularly august specimens of the Gothic style, in which all ecclesiastical structures were then built. There are also many ruinous remains of the great abbeys of the middle ages: those of Tintern, near Monmouth; Glastonbury, near Wells; and Bury St Edmunds, are of famed beauty. A kindred class of structures exist in what are called *crosses*, which consist generally of an elegant tapering Gothic erection with a small shrine below, and were in most instances erected to hallow the spot on which the remains of venerated persons rested on their way to the tomb.

Of the huge castles built by the Norman nobility and by the sovereigns during the first few centuries after the Conquest, many specimens still exist, but few which are not in ruins. Conway and Caernarvon Castles, which, with several others, were raised to overawe the then independent principality of Wales, are noble specimens.

CITIES—TOWNS—PORTS.

The Metropolis.—London, the capital of the British empire, stands on both banks of the Thames, about 60 miles from the sea. The dome of St Paul's is in latitude 51° 30′ 48″ N. and in longitude 5′ 48″ W. The decennial returns of the present century give the progress of the population of London as follows:

1801	864,845	1831	1,474,069
1811	1,009,546	1841	1,870,727
1821	1,225,694	1851	2,362,236

In 1861, it was 2,719,126; in 1871, it had increased to 3,132,599. At the census in April 1881, the figures (revised and corrected) were as follow: City of London, 50,652; Registrar-general's London, 3,816,483; Local Management London, as also School-board London, 3,834,354; Police London, 4,716,009.

For *parliamentary* purposes, London is divided into the City of London and 29 parliamentary boroughs, returning together 62 members to parliament. Before the Act of 1885 there were only nine boroughs besides the City. For *poor-law* purposes, London is divided into forty unions. The 'Metropolitan Buildings Act' of 1855 divides it into 56 districts. The City of London—spoken of by Londoners simply as *the City*—is the heart of the mighty commerce of England's capital—indeed, it may fairly be said to be the centre of the finance operations and trade of the world. The bustle and traffic of its streets are wholly inconceivable by any one who has not seen them. While it is estimated that nearly 700,000 persons enter the City every day, not more than a tenth of this number remain in it over the night, and this proportion is decreasing, from the conversion of dwelling-houses into commercial establishments. It is

divided into 25 wards, each represented by an alderman in the *Common Council*, which consists of 206 members. The Council, of which the Lord Mayor is the chief, forms a kind of parliament for the management of City affairs. Westminster and Southwark are each under local authorities, but only in minor matters. The Mansion House and Guildhall are the chief buildings for the transaction of corporate business; the Bank of England and the Stock Exchange for financial affairs. Nearly all the drainage and sewage of London now enters the Thames about 12 miles below London Bridge. A new system of drains has been introduced of recent years, the expense of which has come to nearly £5,000,000. London is the seat of a bishopric, which comprises about 320 benefices. St Paul's is the cathedral for the diocese. It was built by Sir Christopher Wren (1675–1710), at a cost of £748,000. It is 514 feet long by 286 wide. The cross over the ball above the dome is 356 feet above the pavement. Plans are in progress for an extensive restoration of the interior. *Westminster Abbey* is 530 feet in outer length by 203 in width. The west towers are 225 feet high. It is said to have been founded by Sebert, king of the East Saxons (*circa* 616). It was enlarged by King Edward the Confessor, and rebuilt nearly as we now see it by Henry III. and Edward I. Here the kings and queens of England have been crowned from Edward the Confessor to Queen Victoria, and here many of them are buried; here also are interred many of England's most famous men. Men of world-wide renown in war, literature, and politics, whose span of life was divided by centuries, are here assembled in death. Here lie the conquerors of Agincourt, Blenheim, and Waterloo; here those whose genius has charmed the world, from Shakspeare to Dickens; whose brain has ruled the destiny of nations, from cunning Burleigh and Elizabeth to genial Palmerston. It is quite impossible, within necessary limits, to give even a sketch of the chief buildings and spectacles of London, and merely to make a list of them would be neither useful nor amusing. The stranger who may wish to form an idea of its magnitude and wealth, would do well, after seeing Westminster Abbey and the Houses of Parliament, to walk or drive into the City by the Strand, Temple Bar, and Fleet Street; let him then cross into Oxford Street, and so reach Hyde Park about five o'clock in the afternoon. Having seen the commercial, he will then see the fashionable world of London at full-tide; and certainly, if the sight of splendid equipages, horses and chariots, dress, beauty, and boundless wealth, has any charm for him, he ought to be fully gratified. Covent Garden Market is also well worthy of a visit early in the morning, as conveying an idea of the immense requirements of the great city—surely the greatest and most wonderful which the world has ever seen.

Liverpool, a town in Lancashire, on the north bank of the Mersey, is, taken with Birkenhead, on the opposite side, the most important town in England, next to London, in a maritime point of view. The rise of the port has been very remarkable. In the middle of the 14th century, it was but a village, with a population under 1000. It was not till 1647 that it was made a free port, having down to that date been subject to the Chester officers. Its individuality as a parish was not declared till 1697, when its population was estimated at 5000, its shipping at 80 vessels. In 1700, its first regular dock was built, on the site where the Custom-house stands at the present day. From 1760 to 1800, the population advanced from 25,700 to 77,700; the shipping from 1200 to 5000 vessels; and the amount of dock dues from £2300 to £28,300; nearly two-thirds of the increase taking place during the last 15 years of the period. The progress of the cotton-trade was the chief cause of this rapid improvement. Simultaneously with the mechanical revolution brought about by the inventions of Hargreaves, Arkwright, and others, there came an increased foreign trade, and owing to the opening of the Bridgewater Canal in 1773, inland business was also augmented. The following statement shews how far Liverpool was benefited by the cotton-trade in the end of last century:

Years.	Raw Cotton.		Cotton Manufactures.	Population.	Vessels.	Dock Duties Collected.
	Imported.	Exported.	Exported.			
	lbs.	lbs.	£		No.	£
1781.....	5,198,778	96,788	355,000	35,000	2300	5,000
1791.....	31,447,605	363,442	1,875,000	50,000	4200	10,000
1800.....	43,378,278	4,416,610	6,040,000	77,000	5000	28,000

The rapid growth of Liverpool, and of its trade, will be seen from the following table:

Years.	Population.	Vessels.	Tonnage.	Dock Dues.
1801.....	77,708	5,060	459,719	£28,365
1831.....	205,572	12,537	1,592,436	183,455
1861.....	443,938	21,095	4,977,272	444,417
1871.....	493,346	20,121	6,131,745	562,953

The next table shews the importance of the export trade of Liverpool relative to that of other British ports.

DECLARED REAL VALUE OF EXPORTS AND IMPORTS AT LIVERPOOL IN 1880.

	Exports.	Imports.
Liverpool.....	£84,029,651	£107,460,187
London.....	52,600,929	141,442,907
Hull.....	18,572,005	17,600,430
Grimsby.....	7,236,471	3,906,321
Glasgow.....	11,828,729	12,564,978
All others.....	48,792,661	128,254,742
	£223,060,446	£411,229,565

This gigantic trade has given being to the magnificent system of docks extending five miles along the river, containing 54 docks and basins,

covering an area of over 260 acres, and having nearly 19 miles of quay space. The whole of these docks have, with the exception of the Salthouse, King's, part of the George's, and part of the Queen's, been built since 1812. They were erected chiefly under the superintendence of the late Jesse Hartley, Esq. and are held to be one of the greatest engineering triumphs of the present century. Several of the docks are inclosed by large warehouses; the erection of those round the Albert Dock cost £358,000, and the dock itself £141,000. The architecture of the town has been wonderfully improved within the last 40 years. Liverpool is connected with Birkenhead by railway below the bed of the Mersey. The population of Liverpool, excluding Birkenhead, was, in 1871, 493,405; in 1881, 552,508. Since 1885, Liverpool returns nine members to parliament.

Manchester, a city, municipal and parliamentary borough of Lancashire, and the great centre of the cotton manufacture of the north-west of England, stands on the Irwell, 32 miles east-north-east of Liverpool, and 188 miles north-north-west of London by railway. In 1881 the population of the parliamentary borough was 393,585, whereas in 1871 it was 383,843. In the adjoining borough of Salford, the population in 1881 was 176,235. The Seats Act of 1885 gave Manchester six, and Salford three members of parliament. Water for the supply of Manchester is collected on Blackstone Edge, and conducted from a series of reservoirs through iron pipes nearly 20 miles to the borough. Powers were obtained in 1879 to secure a supply of water from Lake Thirlmere, in Cumberland. The water-works, in which are invested about £3,750,000, and the gas-works, involving about £450,000, belong to the corporation. From the sale of gas, there accrues an annual profit of about £50,000, which is devoted to improving the borough. In 1845–46, 3 parks, of about 30 acres each, were acquired by public subscription; and a fourth, of about 60, has since been acquired by the corporation. Manchester was the first borough to take advantage of the Free Libraries Act, which allows an assessment of a penny per pound on the local rates for parks, libraries, and museums; here also was established the first free lending library in England. The ratable value of municipal Manchester in 1873 was £1,760,000, and of Salford, £484,000. The celebrated Bridgewater Canal connects Manchester with Liverpool, and access is also obtained for heavy barges by the rivers Irwell and Mersey. The chief trade is cotton-spinning. Respecting this branch of industry, an article in the *Daily Advertiser* of September 5, 1739, copied into the *Gentleman's Magazine*, says: 'The manufacture of cotton mixed and plain is arrived at so great perfection within these 20 years, that we not only make enough for our own consumption, but supply our colonies and many of the nations of Europe. The benefits arising from this branch are such as to enable the manufacturers of Manchester alone to lay out above £30,000 a year for many years past on additional buildings. It is computed that 2000 new houses have been built in that industrious town within these 20 years.' 'In a rapidly advancing country,' says Edward Baines, writing in 1835 (*History of the Cotton Manufacture of Great Britain*), 'the great things of our age are insignificant in the eyes of the succeeding age. Thus, the period of 1739, whose prosperity was so much vaunted, is now looked back upon as the mere feeble infancy of the cotton manufacture.' Mr Baines then cites figures shewing the growth of the cotton-trade during last century. From these it appears that, in 1701, the total declared value of British cotton goods exported was £23,253; in 1764, it was £200,353. In 1833, according to Mr Baines, the imports of cotton wool were 303,726,199 lbs., and the declared value of exports, £18,486,400. In 1871, the quantity of raw cotton imported was 15,876,248 cwt., the declared value £55,767,545; the declared value of cotton yarn exported was £15,054,742; and of manufactured cotton, it was £57,635,570. There are now ordinarily employed in the cotton-mills of Manchester about 60,000 persons, who earn about £30,000 a week in wages. There are at least 7000 skilled mechanics constantly engaged in the production of steam-engines, spinning-mules, looms, and other machinery, chiefly for the production of the various textile fabrics, whose wages average about 32s. each per week, and who need some 1500 labourers to assist them. In 1846, John Owens, a Manchester merchant, left £100,000 to found a college for secular instruction. It has now a large staff of professors, magnificent chemical and physical laboratories, and about 800 students. According to the School-board returns of 1873, the number of day scholars in Manchester was 38,500 in actual attendance; and in evening schools and literary institutions, there are from 4000 to 5000 pupils. In Manchester originated the agitation which ended by rendering practical the theories of Adam Smith regarding free-trade. The parish of Manchester covers a large area, reaching to Stockport, Oldham, and Ashton-under-Lyne.

Birmingham, the chief town in Britain for metallic manufactures, and supplying much of the world with hardware, is in the north-west of Warwickshire, with suburbs extending into Staffordshire and Worcestershire, 112 miles north-west of London. Built on the east slope of three undulating hills, on the Rea and the Tame, on a gravelly foundation, overlying clay and new red sandstone, and supplied with plenty of water, it is one of the best drained towns in England. The older part of the town is crowded with workshops and warehouses; but the modern is open and well built. The architecture and general appearance of Birmingham present some striking contrasts. Many of the streets are handsome, but the older parts of the town are mean and squalid. The suburbs would be pleasant but for the atmosphere, which is generally darkened with smoke, belched forth by a forest of tall chimney-stalks, which form one of the main features of the town and neighbouring landscape. The manufacture of guns and articles pertaining to them, and of steel pens, are the chief industrial branches of Birmingham. In visiting the manufactories, one is struck by the extraordinary dexterity of finger which long practice has given to those employed in them. This is, we believe, especially true of the young girls employed in the works. Their tidiness and generally cheerful looks are also noteworthy. You see countless small pasteboard boxes to be filled with so many hooks and eyes. It would seem hardly credible, having regard to the rapidity of the operation, that its result should be accurate, yet we believe that errors are few

and unimportant. The steel for the manufacture of pens is first cut into thin strips, then rolled and re-rolled through a machine, from which it comes out perforated by a double row of blanks—the pieces so cut out forming the pens. The employment is an easy one, and one especially suited for women and girls. The population of Birmingham was in 1690, 4000; in 1801, 60,822; in 1861, 296,076; in 1871, 343,787; in 1881, 400,774. It produces upwards of £5,000,000 yearly. It returns seven members to parliament.

Leeds, the first town in Yorkshire, and fifth in England in point of population, is a parliamentary and municipal borough, returning five members to the House of Commons. It is in the north-west of the West Riding of Yorkshire, in the valley of the Aire. Roundhay Park, one of the most beautiful demesnes in England, two miles from the town, was bought by the corporation in 1872, at a cost of £140,000, and converted into a public recreation-ground. It covers 733 acres, and contains a lake with an area of 33 acres. Leeds is the chief cloth manufacturing town of England. The extent of this and of the other industrial pursuits of the town may be estimated from the following statistics taken in 1871:

Employments.	No of Works.	Persons employed.
Textile fabrics and wearing apparel	1198	26,134
Metals	461	15,272
Leather	78	2,194
Chemicals	27	700
Food, &c.	73	331
Building	440	3,360
Paper	6	565
Tobacco	7	210
Earthenware	41	1,472
Printing	47	848
Miscellaneous	178	1,656

There are 30 churches in Leeds, 5 Roman Catholic and about 60 dissenting places of worship. The chief church is St Peter's, which is in Kirkgate, and was rebuilt in 1838 at a cost of £29,770. It is 180 feet long by 86 feet wide; the tower is 139 feet high, and contains a peal of 13 bells. It is a very noble edifice. The principal windows are of beautiful stained glass. It also contains some fine statues, one of which was erected in memory of those natives of Leeds who fell in the Crimea; the church has a good choir. The most interesting church in the town is St John's, New Briggate, consecrated by Archbishop Neale, 1634 A.D., an almost unique example of a 'Laudian' church, and still retaining the original fittings. The other principal buildings are chiefly of recent erection, and are as follows: The Town-hall is 250 feet long, 200 feet broad, and the tower is 225 feet high. It covers 5600 square yards. The great hall is 161 feet long, 72 feet wide, and 75 feet high. It is richly decorated, and contains one of the largest and most powerful organs in Europe, also statues of Edward Baines and Robert Hall, formerly members for the borough. There is also a colossal statue of the Queen in the vestibule, and of Wellington in the front of the building. Kirkstall Abbey, about three miles from Leeds, was founded between 1147 and 1153 by Henry de Lacie for the Cistercian order of monks. It is a fine old ruin, remarkable for its simple grandeur and unity of design. Adel Church, about four miles from Leeds, is an interesting building, erected 1140. Near it was a Roman station, where several antiquities have been found. The General Infirmary was erected in 1868 from designs by Sir G. G. Scott, at a cost of £100,000, and contains accommodation for 300 in-patients. The Mechanics' Institute, erected in 1867, at a cost of £25,000, contains a lecture-hall accommodating 1700 persons. The Free Library, established in 1870 (under the Free Libraries Act), contains 30,000 volumes. The Grammar-school was built in 1859, at a cost of £13,000; it is built in the shape of a cross in the Gothic style, Decorated period. The Yorkshire College of Science at Leeds is a thriving and well-endowed institution. The borough jail is a large castellated building at Armley. The Corn Exchange, a handsome building of an oval form; the Post-office, formerly the Court-house, near which is a statue of Sir Robert Peel; the Queen's Hotel, recently erected by the Midland Railway Company; the Philosophical Hall, built in the Doric order of architecture, and having a fine museum; the Wesleyan Training College, in the Gothic style, erected in 1868; Turkish Baths (cost £14,000); Beckett's Bank, a fine work by Sir G. G. Scott; &c. There is also a library of 30,000 volumes, founded by Priestley in 1768. The population of Leeds, in 1871, was 259,212; in 1881, 309,119.

Sheffield, an important manufacturing town and parliamentary borough in the West Riding of Yorkshire, and capital of an independent district called Hallamshire, is picturesquely situated on several hills that slope towards the confluence of the rivers Sheaf and Don. It is 162½ miles north-north-west of London, by the Great Northern Railway. The town generally is well built, although, on account of the smoke, its appearance is dingy as contrasted with the surrounding beautiful scenery. The place is of considerable historical interest. Here, in a mansion built by George, the fourth earl, Wolsey lodged before his death at Leicester; and here Mary, Queen of Scots, was imprisoned for twelve or fourteen years in Sheffield Manor-house, about two miles from the town. Of Sheffield Castle nothing now remains. As far back as the time of Chaucer, Sheffield was noted for the manufacture of cutlery; and at the present day, besides cutlery, endless varieties of articles in brass, iron, and steel are produced at the many manufactories with which the town abounds. Among the new branches of trade are electro-plating in gold and silver, and the manufacture of iron plates for the armour-plating of ships of war. The conversion of iron into steel, by both the old and new processes, is one of the largest and most lucrative of the branches of the trade of Sheffield. The river Don, navigable to within 3 miles of the town, and the canal in connection with it, along with several important lines of railway, afford ample means of developing its resources. It possesses many handsome and interesting public buildings. There is the parish church, supposed to have been built in the reign of Henry I.; the Cutlers' Hall; the new Market Hall. The Mark Firth College was opened in 1879. The borough was incorporated in 1843, and returns five members to parliament. The population in 1871, was 239,947; in 1881, 284,508.

York, the capital of Yorkshire, is situated at the junction of the rivers Ouse and Foss, the three Ridings of the county meeting at the same place. It is nearly equidistant from London and Edinburgh. It is the seat of an archbishopric, a

county in itself, and a municipal and parliamentary borough, returning two members to parliament. The government is vested in 12 aldermen and 36 councillors, the chief of whom is the Lord Mayor. The population in 1871 was 43,796; and in 1881, 60,343. York is among the most ancient of British cities. Before the Roman invasion, it was one of the chief towns of the Brigantes, the most numerous and powerful of British tribes. It was constituted a Roman station, under the name of Eboracum, by Agricola, about 79 A.D.; and it very soon became the principal seat of Roman power in the north. Here Hadrian lived, and Severus died. Here, too, died Constantine Chlorus, the father of Constantine the Great. Little is known concerning the city for a century after the Romans had left it, which they did about 409 A.D.; but it suffered much during the long conflict between the Britons and the Picts. It afterwards became the capital of Northumbria. The first metropolitan church in England was built here by Edwin, the Northumbrian king, whom Paulinus baptised; and here also Edgar, the first monarch of all England, held, in the year 966, the Witena-gemót. William the Conqueror was long unable to overcome this stronghold of the north. One Norman garrison of 3000 men was put to the sword in 1069; but William took severe revenge in the following year, when he laid waste the whole country between York and Durham. The first English parliament was held at York in 1160 by Henry II. and for 500 years afterwards, parliaments were occasionally summoned to the ancient city. Under Henry III. the courts of King's Bench and Exchequer sat at York for seven years. During the insurrections consequent upon the dissolution of the monasteries by Henry VIII. York was seized by the insurgents of the 'Pilgrimage of Grace;' and in the immediate neighbourhood, Fairfax, in 1644, conquered Prince Rupert on Marston Moor. In the city are many remains of Roman towers and temples, and of the earliest British churches. One of the most magnificent of the Anglo-Saxon churches was here erected in the 8th century; this was burned, and a new building placed on its site. This, enlarged and changed from time to time, is now known as York Minster. A portion of the original church was disinterred during the excavations which followed the latest burning of the minster in 1829. The present building ranks with the finest specimens of Gothic architecture in the world. It was mainly built in the 13th and 14th centuries. Its length, from base to base of the buttress, is 524 feet, and its extreme breadth 250 feet; being 24 feet longer than St Paul's Cathedral, and 149 feet longer than Westminster Abbey. The magnificent east window is 75 feet high, and 32 feet broad; and contains about 200 compartments, each a yard square, representing scriptural subjects. War and fire have conspired to deform this splendid cathedral. During the Commonwealth, much damage was done by war and wantonness, and many of its old monuments were mutilated or broken. In 1829, it was set on fire by Jonathan Martin, a maniac, and the roof of the choir, 222 feet long, with all the woodwork on each side, was destroyed. While this damage was being repaired, a workman's candle was carelessly left burning one night in 1840, and again a terrible fire broke out, destroying the south-western tower, with its splendid peal of bells, and the roof of the nave. The cost of the repairs exceeded £100,000. Whatever the trade of York may have been in ancient times—and old writers speak of it in glowing terms—it is now small. The making of leathern gloves, combs, glass, &c. occupies many. Of late, the construction of railway carriages has become part of the city industry.

Newcastle-upon-Tyne, the chief town of Northumberland, stands partly on an elevated platform, and partly upon the north bank of the river. The more ancient houses are chiefly built of timber, the upper stories projecting beyond the lower; dormer windows and gable ends appearing in the roof. It has the privileges of a county of itself. Gateshead, on the opposite side of the river, though in a different county, and having a separate jurisdiction, is virtually a part of Newcastle. According to the census of 1881, the population of the latter was 145,359, of Gateshead 65,803; together, 211,162. Gateshead sends one member to parliament, Newcastle two. The Romans had a stationary camp here, called Pons Allii—one of the chain of forts by which the wall of Hadrian was fortified. On the withdrawal of the Romans, the town became the residence of a colony of monks, and the town was called Monkchester. Robert, Duke of Normandy, a son of the Conqueror, hastily built a castle here in the lifetime of his father. Hence the modern name of Newcastle. William Rufus rebuilt his brother's castle, surrounded the town with a wall, and gave the inhabitants peculiar privileges. The present castle, which shews better than any other in England the genius of Norman military architecture, was erected by Henry II. between the years 1172 and 1177. Newcastle having been the rendezvous of the vast armaments which the first three Edwards led into Scotland, it was in their time surrounded with new walls of unusual strength and magnitude. Portions of them yet remain.

Chiefly owing to one man of humble origin, Richard Grainger, Newcastle has, in modern times, received the addition of many streets, squares, and public buildings, which, in point of architectural effect, are scarcely to be excelled by any in the kingdom. An extensive conflagration in 1854 led to more recent improvements. The river is crossed by three bridges—the High-level Bridge, the Redheugh Bridge, and a swing bridge (completed in 1874), one of the largest structures of the kind in the world. The High-level Bridge is one of the engineering triumphs of Robert Stephenson. It consists of six cast-iron arches, supported upon piers of masonry. The length of the viaduct is 1337 feet, and the height of the railway above high-water mark, 112. Below the railway, this gigantic structure carries a carriage-way for ordinary traffic, by which the precipitous streets on both sides of the river are avoided. All the railways entering the town terminate in a large station near its centre. Upwards of 250 passenger trains arrive and depart daily. The trade of Newcastle consists chiefly in coal and in those articles which great heat is required to produce. Its coal-trade began in the reign of Henry III. The trade is not now confined to Newcastle, but is spread over the greater part of the sea-board of Northumberland, and the whole of Durham. Upwards of thirty millions of tons of coal were

raised in the northern coal-field in 1872, giving direct employment to about 80,000 persons. Until recently, very little iron was smelted on the Tyne, but since the discovery of the Cleveland ironstone, the manufacture has increased prodigiously. The make in 1872 was about 800,000 tons. On the Tyne the yearly produce of steel is 3000 tons. Large quantities of lead from the mines of Alston Moor and Weardale are brought to Newcastle for shipment. Here, too, the silver is extracted, and the lead is rolled into sheets and pipes, or converted into shot, litharge, red and white lead. Copper, too, to the value of £200,000 is annually got from the copper pyrites used at the chemical works of the Tyne. At Newcastle, locomotive and engineering establishments are found upon a great scale. The ordnance works of Sir William Armstrong at Elswick, a western suburb, are well known.

Bristol is an important maritime city in the west of England (long. 2° 35′ 28″ W., lat. 51° 27′ 6″ N.), upon the rivers Frome and Avon, partly in Gloucestershire, and partly in Somersetshire. It is joined to the former for ecclesiastical and military purposes, but otherwise it is a city and county in itself. The population of Bristol proper was, in 1871, 62,662, and of the suburban districts, 141,378; total, 204,040, steadily increasing; total in municipal boundary, (1881) 206,876. It returns four members to the House of Commons. It has extensive manufactures of shoes, of chocolate, and of soap. The town ranks fourth amongst English sea-ports in respect of the customs-duties received. There were entered in 1880, 9412 vessels, of 1,083,886 tons; cleared, 9408 vessels of 1,215,082 tons. In 1872, the total entrances were 9103 vessels, and 1,025,264 tons. The clearances outward for the same year shew 4618 vessels, and 538,209 tons. The custom-duties on imports produced £1,026,516. The chief trade is with Canada and the United States, West Indies, and South America, Portugal, the Mediterranean, Russia, Mauritius, Turkey, France, and west coast of Africa. The annual value of exports is about £400,000. The old part of Bristol consists almost wholly of shops, warehouses, and other commercial buildings. The streets are, with few exceptions, narrow and irregular, but great improvements have recently been effected. The modern portions of Bristol are almost wholly suburban; Clifton, Cotham, and Redland are the principal ones. They consist of handsome residences, in squares, terraces, crescents, and detached villas. At Clifton there is a remarkable suspension-bridge over the Avon, 702 feet in span, and 245 feet above high-water. These suburbs of Bristol, with their breezy down, fertile and prettily wooded neighbourhood, are very attractive as places of summer residence; but in winter or spring they are, for the most part, unsheltered from the high and cold winds which often prevail during these seasons over the district. When they blow, the residents call the weather they produce *Channel* weather; thus apparently attributing the obnoxious character of the wind to the influence of the Bristol Channel.

The first records of the history of Bristol speak of it under the ancient British name of Caer-oder. It became a stronghold of the Romans, on whose departure it was again occupied by the Britons. In 584 they were driven out by the Saxons, who gave it the name of Brightstowe or Bricstowe, making it a thriving place of trade—aboriginal slaves being a principal item in the commerce. It was sacked by the Danes. During the civil wars it was alternately taken by the Royalists and by the Parliamentarians; by the latter, the castle and fortifications were raised. It afterwards became the principal port for trade with the West Indies, carrying on a flourishing business in negro slaves. In 1793, the 'Bridge Riots' occurred. In 1804 the docks were begun, and in 1809 they were opened to shipping. In 1831, the 'Reform Bill Riots' resulted in the destruction of the Bishop's Palace, Custom-house, and other public buildings, besides a number of private residences. The bill, by the addition of Clifton, &c. gave the city its present municipal boundaries. Among the names of note identified with the history of Bristol are those of William of Worcester, Sebastian Cabot the navigator (said to have anticipated the discovery of America by Columbus), Chatterton the poet, Lawrence and Baily, artists, Robert Hall, Hannah More, and Sydney Smith.

Oxford, an ancient and famous city, and seat of learning, the chief town in the county of Oxford, is situated on the north-east bank of the Isis, a tributary of the Thames, a little above the point where it is met by the Cherwell. Both streams are crossed by numerous bridges. Latitude of the city, 51° 45′ 55″ N., long. 1° 15′ 29″ W., 55 miles from London. Population in 1881, 40,837. Oxford is on an undulating site, is surrounded by rich and wooded meadows, and presents to the eye of the visitor, on approaching it, a scene of great architectural magnificence, spires, and towers, and domes rising as thickly as chimney-stalks in the manufacturing towns of Lancashire or Yorkshire. The western half of the town is the most uninteresting; and it is unfortunate that the railway stations are placed here, as travellers on arriving are thus first introduced to the meanest parts of the city. The county courts and jail, and the remains of the castle from which the Empress Maud escaped, will be observed in passing. There is one good street in this part—namely, Beaumont Street, built on the site of the ancient Beaumont Palace, where Richard I. was born. At the end of this street is Worcester College. In St Aldate's Street is Christ Church College, the entrance tower of which contains the great bell, 'Tom of Oxford,' weighing upwards of 17,000 lbs. The other colleges and important buildings connected with the university lie back from the principal streets. Though there is nothing remarkable about their architecture, regarded individually, yet the number of the structures, and variety of their style, form an imposing and effective whole; the effect being greatly strengthened by the interspersion of gardens, meadows, and venerable trees. Christ Church is celebrated for its magnificent hall, picture-gallery, and library, as well as for its extensive grounds; its chapel, the cathedral church of Oxford, is Norman in style. It is smaller, and less beautiful, than many other English cathedrals. Merton College is situated a little to the south of the High Street. It retains the original chapel, and part of the other buildings erected by Walter de Merton in the 13th century. Magdalen College retains its celebrated cloister and tower of the 15th century, and the buildings there are more ample than

those of any other college in Oxford. Oriel College, a comparatively modern structure, is very picturesque. New College ranks among the noblest buildings in the city—'the chapel, the hall, the cloisters, the groined gateways, and some original doors and windows, remain in their exterior at least as they came from the hand of their master architect,' William of Wykeham, 500 years ago. Queen's College is Grecian in its style of architecture. It has a spacious and handsome chapel, and good library. Trinity College is also Grecian in its style of architecture. University College is a mixture of Gothic and Italian. Exeter College has a splendid frontage to the west, and its chapel (built 1857–58), in the Gothic style, is the finest modern building in the city. It has also an excellent hall and a beautiful library. Balliol College has a remarkably fine chapel, built a few years ago. The chief buildings connected with the university, besides the Bodleian and the Ashmolean Museum, are—the Radcliffe Library, a circular structure, adorned with Corinthian columns, and surmounted by a dome; the Radcliffe Observatory, crowned by an octagonal tower, in imitation of the Temple of the Winds at Athens; the University Printing-office; and the Taylor Institution, founded 'for the teaching the European languages,' an exceedingly handsome and extensive range of buildings. The Botanic Gardens are not far from the Cherwell, and nearly opposite Magdalen College. Oxford is a municipal and parliamentary borough, but its magistrates have no authority over the university. The city sends, since 1885, only one member; the university sends two members to parliament. Oxford, by the Saxons called Oxnaford, and in Domesday Book, Oxeneford—probably from its having been originally a ford for the passage of oxen—is of great antiquity. The date of its origin is unknown, but as early as the eighth century, there was a nunnery established there; and in 802, an Act of Confirmation by Pope Martin II. describes it as an ancient seat of learning. It is said to have been a residence of King Alfred, and also of Canute, who held several parliaments within its walls. The townsmen closed their gates against William the Conqueror, who stormed the town in 1067, and gave it to one of his followers, Robert D'Oyley, who built a castle there, to overawe the disaffected Saxons, some ruins of which are still to be seen. The paction which ended the strife between Henry II. and Stephen was drawn up at Oxford. In the reign of Edward III. the preaching of Wicliffe excited great commotion among the students, and threatened the dissolution of the university. In the reign of 'Bloody Mary,' Oxford saw the martyrdoms of Ridley, Latimer, and Cranmer. During the great civil war of the 17th century, it was for a while the headquarters of the royalist forces, and was conspicuous for its adherence to Charles I. Since that period, it—at least its university—has been characterised by an extreme devotion to 'the church' and the 'king.' The university is erroneously said to have been founded by King Alfred; but it is certain that, from very early times, students resorted to Oxford to attend lectures there delivered by learned men, and that they lived in the houses of the townspeople. Sometimes the students combined so as to secure the services of a common teacher, with whom they lived in a large tenement called an inn, hostel, or hall. The residence of the students with the townspeople gradually ceased; and by Queen Elizabeth's time, it had become obligatory on the undergraduates to reside in some college or hall, for their first twelve terms at least. But now undergraduates may in most colleges live in lodgings from the beginning of their course. The colleges were founded at various periods from the end of the 13th century to the beginning of the 18th. Fourteen out of the nineteen were founded before the Reformation. Under a statute passed in 1868, any man may now become a member of the university without becoming a member of a college or hall, provided he satisfies certain disciplinary requirements; for which purpose, those unattached students are under the control of a Board of Delegates, but no special provision is made for their instruction. In Worcester College and the halls, there is still a class of fellow-commoners who pay more than the ordinary fees and enjoy certain privileges. They consist mainly of men above the usual age of undergraduates, who wish to have the intellectual advantages of the university without being subject to the common routine of discipline. All other formal distinctions between wealth, or position, and poverty, are almost wholly abolished. Special privileges are no longer given to peers; nor is any regard now had to the poverty of candidates, as it was formerly in the case of certain scholarships. The cost of tuition varies at different colleges, but an average of £65 may be given as paid by the undergraduate during his whole career. This payment is at some colleges distributed over three, at others, over four years. Private tuition has grown to be an institution in Oxford, though not formally recognised. Many of the ablest young men, after taking their degree, remain in Oxford a year or two, taking private pupils. Private tutors usually charge £10 a term for three hours a week. There are four terms in each year. With regard to the expenses of Oxford, it is impossible to be definite. They vary at different colleges, not only indirectly, from the tone of the society, but even directly, from the charges made for necessaries. A man should be exceedingly comfortable at Oxford with £200 a year; with £150, he can do, with economy. Many young men could not with prudence be exposed to the difficulty of living in Oxford on less than the latter sum. There have, indeed, been instances of men passing creditably through the university course on £100 a year; and returns procured by the delegates for unattached students, cover their board, lodging, and tuition for about £45 a year. The *necessary* expenses do not exceed that sum. The habits of the young men cause a great part of the expense.

Cambridge, the chief town of the county so named, takes its name from the river Cam, anciently called the Granta. By the Saxons, Cambridge appears to have been known as Grantabrygge. The population of the municipal borough in 1881 was 35,363; that of the parliamentary borough, 40,878. The town sends one and the university two members to parliament. The town is not generally pretty or picturesque; but the gardens at the back of the college, by the Cam, are exceedingly beautiful in summer. The history

of the university may be said to begin early in the 12th century—about which time it began to be the resort of students, who attended lectures delivered by learned monks. When Alfred of Beverley was a student there—namely, 1129 A.D.—there were no public halls or hostels, but each one lived in his own hired lodgings. The first regular society of students was that of Peterhouse, founded in 1257. These societies gradually increased; the hostels in which the students lived together, under a principal, being generally named after some saint or adjoining church. It was between the latter part of the 13th and the close of the 16th century, that these foundations, which now constitute the university, were endowed. Hugh de Balsham has the honour of being the first benefactor in this way. Michael House was founded by Hervey de Stanton, in 1324; and King's Hall, by Edward III. in 1332. These were both merged into Trinity College under Henry VIII. in 1546. Clare Hall, as it used to be called, one of the earliest colleges in Cambridge, was founded by the Countess of Clare in 1326. King's College was founded by Henry VI.; and his queen, Margaret, began the foundation of Queen's College, which was added to by Elizabeth Woodville, queen of Edward IV. Lady Margaret, Countess of Richmond and Derby, mother of Henry VII. founded Christ College, and St John's, in the beginning of the 16th century, and also the Divinity professorship named after her. Henry VIII. appropriated part of the spoils of the monasteries to the foundation of Trinity College; and Queen Mary augmented the endowment. The five Regius professorships were endowed by Henry VIII.

In 1643, Cromwell took possession of the town, and the most eminent royalists were expelled from the university. From that time no new college was added, until the founding of Downing College in 1800. The present university statutes were confirmed by Queen Victoria, by Order in Council of 31st July 1858. The governing body is the Senate, and the building where they meet is called the Senate House. All university laws are approved by an elected body called the Council, before they are submitted to the Senate. The executive powers are intrusted to a Chancellor, High Steward, Vice-chancellor, and Assessor. There are four classes of students—*Fellow-commoners* and *Noblemen*, *Pensioners*, *Sizars*, and the more distinguished students, who are elected *Scholars* on the foundation of their college. The first class are so called from their dining at the Fellows' table. They wear silk or embroidered gowns, and pay heavier fees. The Pensioners are the great body of students who are not on the foundation, and who pay for their own commons—namely, dinners in hall, &c. and for their chambers. The Sizars are the poorer students, who are admitted at lower charges than the Pensioners, but wear the same dress, and are no longer subject to the performance of menial offices, as they once were. The Scholars are elected by examination from the Pensioners and Sizars; they are on the foundation of the college, have rooms and commons free, and other emoluments. The Fellows are subsequently elected from the Scholars and the students who have distinguished themselves in the Tripos examinations. Vacancies are, as a rule, filled up from members of the college, but many fellowships are open to the competition of the whole university. The usual age of admission is from 17 to 20. The great prizes of the university are the Fellowships, of which there are about 360 open to all candidates, without restriction; but conditions of tenure as to marriage and holy orders vary at different colleges. Their value varies from £100 to £300 per annum, and many of the Senior Fellowships are over £500 a year. The office of Tutor is one of great honour and emolument. The Chancellor gives annually two gold medals to the two *commencing* bachelors, who, having taken a *senior optime's* degree in mathematics, shew themselves the greatest proficients in classical learning. The members of parliament for the university give annually four prizes for the best dissertations in Latin prose. There are numerous other university distinctions, for an accurate account of which the *Cambridge Calendar* should be consulted.

Winchester, a famous historical city, the chief town of Hampshire, is situated in the middle of the county, on the right bank of the Itchin, 67 miles south-west of London by railway. Population in 1881, 17,780. The Castle Hill is the site of the old castle built in the 13th century by Henry III. and of a magnificent hall, of which the only remaining portion is used as the county court. About a mile from the town is the famous hospital of St Cross, founded in 1136 by Henry de Blois, bishop of Winchester, for thirteen poor men 'decayed and past their strength.' It was at one time munificently endowed, but its sources of income have, in course of time, been narrowed. Its ancient charters and grants were destroyed in the 13th century. The city cross in the High Street, dating from the 15th century, is very beautiful in design. The college of Winchester, called originally 'Seinte Marie College of Wynchestre,' now St Mary's or Winchester College, was founded by William of Wykeham, bishop of Winchester, in 1387, and the buildings were finished in 1393. The charter of the school, which is in existence, was granted by Richard II. in 1396, and confirmed by all the subsequent sovereigns, Mary excepted, down to Charles II. The endowment at present amounts to about £15,500 a year. The pupils of the school are of two classes, foundation scholars and commoners. The scholars are elected between 12 and 15 years of age by competitive examination; the average annual number of vacancies being 12, and the number of candidates 100. The scholars are well boarded, lodged, and educated at the expense of the foundation; having to pay for incidental charges only £21 a year. Many of the quaint old customs of the school are still retained. The average number of commoners has of late been about 300. They generally enter between 12 and 15 years of age, and stay 3 or 4 years. Those who are not on the foundation are boarded in the houses of the masters, at a total cost of about £112, including expense of tuition, pocket-money, and cost of travelling. Winchester possesses 70 scholarships tenable at school for foundationers, and 8 exhibitions for commoners; also 4 exhibitions yearly of £50 for 4 years, tenable after leaving, and 6 scholarships annually at New College, Oxford. *Fagging* is permitted to the 18 chief boys, who are called 'Prefects.' The monitorial system was first established in this college. The cathedral is

520 feet long, which is longer than any other English cathedral, except those of Ely, 560 feet, and Canterbury, 525 feet. Its breadth at the transepts is 208 feet; the length of the nave is 351 feet; its height 86 feet; and the low central Norman tower is 150 feet high. The exterior is somewhat disappointing; but the interior is magnificent, and contains many objects of great interest. There is the tomb of William Rufus; the golden shrine of St Swithin—which famous saint was bishop of Winchester—the tomb of Edmund, the son of King Alfred; and the tomb of Izaak Walton.

The noteworthy architectural styles are: Early Norman in the crypt and transepts; Early English in the eastern aisles and chapels behind the presbytery; and Perpendicular in the nave, which for beauty and grandeur is only rivalled by York. Besides the cathedral, there are some churches of interest in the Transition, Norman, and Perpendicular styles.

Canterbury, the seat of the metropolitan see of all England, is situated on the river Stour. It is 81 miles from London by the South-eastern Railway, and about 60 by the London, Chatham, and Dover. Population in 1881, 21,704. The glory of Canterbury is its *cathedral*. When St Augustine became archbishop of Canterbury, 597 A.D. he consecrated, under the name Christ's Church, a church said to have been formerly used by Roman Christians. Cuthbert, the eleventh archbishop, 740 A.D. added a church to the east of this. Among those who helped to repair, enlarge, and rebuild it, were Archbishops Odo (940 A.D.), Lanfranc (1070), and Anselm (1093). In 1174 the choir was destroyed by fire, and to rebuild it, a number of French and English artificers were summoned. Among the former was William of Sens, and to him, a man of real genius, the work was intrusted. The church was rich in relics: Plegemund had brought hither the body of the martyr Blasius from Rome; there were the relics of St Wilfred, St Dunstan, and St Elfege; the murder of Thomas Becket had recently added a still more popular name to the list of martyrs. The offerings at these shrines, especially the last, contributed to defray the expenses of the work. William of Sens did not, however, live to see its completion. He was succeeded by another William, an Englishman, and to him we owe the completion of the existing unique and beautiful choir, terminated by the corona or circular chapel called Becket's Crown. Gervasius, a monk, who witnessed the fire of 1174, tells us that the parts of Lanfranc's church which remained in his time were the nave, the central and western towers, the western transepts, and their eastern chapels. In the 14th century, the nave and transepts were transformed into the Perpendicular style of that period. The central tower, called the Angel Steeple, was carried up (1486–1504) to about double its original height, also in the Perpendicular style; it is 234 feet high, and 35 feet in diameter. The north-west tower was taken down in 1834; it was 113 feet high, and divided into five stories. The Norman plinth still remains on each side of the nave in the side aisles, and portions of Norman ashlaring may be seen about the transepts, outside the west wall, and on the east piers of the great tower. The indiscriminate use of the 'Round' or 'Norman,' and the 'Pointed' or 'Early English' arch, is also a striking feature in the eastern part of the building. The Lady Chapel, now called the Dean's Chapel, stands on the north side of the church, and was built in 1468; the roof is a fan-vault. The north transept is called the Martyrdom, for here took place the murder of Becket, on Tuesday, December 29, 1170. Fifty years later, his remains were translated from the crypt to a shrine in the newly erected Trinity Chapel, eastward of the choir. About the year 1500, the yearly offerings at this shrine amounted to £4000; but they had then declined much in value. A mosaic pavement still remains in front of the place where the shrine stood, and the stone steps which lead up to it are worn by the knees of countless pilgrims; but the shrine itself was demolished in 1538, and the bones of the saint burned, by order of Henry VIII. In 1643, the building was further 'purified,' as it was called, by order of parliament. Still many interesting monuments remain—such as the tombs of Stephen Langton; that which is commonly, but wrongly, supposed to be the tomb of Archbishop Theobald; with those of the Black Prince, of Henry IV. of Archbishops Maphan, Peckham, Chicheley, Courtenay, Sudbury, Stratford, Kemp, Bourchier, Warham, and of Cardinal Pole. The exterior length of the cathedral is 545 feet, by 156 in breadth at the eastern transept. The crypt is of greater extent and loftier than any other in England.

The archbishop of Canterbury is primate of all England, metropolitan, and first peer of the realm. He ranks next to royalty, and crowns the sovereign. His ecclesiastical province includes all England except the six northern counties. Among his privileges, he can confer degrees in divinity, law, music, and medicine. His seats are at Lambeth and Addington Park. He is patron of 149 livings, and has an income of £15,000 a year.

Brighton, originally Brighthelmstone, is a town and watering-place on the east coast of Sussex, fifty and a half miles south of London. The writings of Dr Russel, a physician of George II.'s time, first drew public attention to Brighton as an eligible watering-place; and the discovery of a chalybeate spring in the neighbourhood increased its popularity. The real discoverer of Brighton was, however, George, Prince of Wales, in 1782. His subsequent yearly visits attracted crowds of visitors from the world of fashion. The settled population in 1881 was 107,546. Near the centre of the town is the Pavilion, or Marine Palace, a fantastic oriental structure with domes, minarets, and pinnacles, and Moorish stables, begun for the Prince of Wales in 1784, and finished in 1827. It is now the property of the corporation of Brighton, and with its beautiful pleasure-ground of above seven acres is given for public recreation. It is in the Steyne, an open space between the east and west parts of the town. The Marine Parade extends about a mile along the margin of the cliff. Westward, there is a similar promenade in front of the more modern part of the town. A rational attraction has recently been added to the place, by the acquisition of an Aquarium—the largest in England, and probably in the world.

Portsmouth, the chief naval arsenal of Great Britain, and an important sea-port, in the south of Hampshire, stands on the south-west shore of Portsea Island, at the entrance to Portsmouth

harbour, and opposite the town of Gosport, with which it communicates by means of a steam bridge. It is seventy-four miles south-west of London by the London and South-western Railway. The population of the borough with its suburbs, was, in 1881, 127,989. The fortress is considered the strongest in Britain. Formidable batteries defend the harbour, and bastioned ramparts inclose the town. Portsea, about a mile to the north, is similarly fortified, the line of its land-defences being distinct from that of Portsmouth. The 12 docks vary from 22 to 36 feet deep. One of the building-slips, roofed and covered in, is so large that three or four vessels can be in process of construction under it at the same time. The Wood Mills contain a number of ingenious block-making machines, the invention of Sir Isambard Brunel, in which rough timber, introduced at one end, is cut, squared, drilled, bored, and turned into the required shape. About 150,000 blocks are made annually, and the machines require the attendance of only four men. Portsmouth harbour, about 420 yards wide at its entrance, expands into a spacious basin, extending inland for about four miles. The breadth along the northern shore is three miles. Large war-vessels can enter and lie at anchor in all states of the tide. The position of this harbour is highly favourable. It is situated in the middle of the Channel, close to the magnificent anchorage of Spithead, where 1000 ships of the line can lie without inconvenience, and it is under the shelter of the Isle of Wight. In 1880, 1903 vessels, of 185,943 tons, entered; and 2020, of 206,729, left the port.

This port only began to be considered valuable in the reign of Henry VIII. Its defences were strengthened by Elizabeth, and afterwards more thoroughly by William III. In a house that still remains in the High Street, then an inn called the *Spotted Dog*, the Duke of Buckingham, the 'Steenie' of King James, was assassinated by John Felton, in 1628. And in Portsmouth harbour, on August 29, 1782, when its commander, Admiral Kempenfeldt, was writing in his cabin, the *Royal George* sank with 800 men on board.

Eight hundred of the brave,
Whose courage well was tried,
Had made the vessel heel,
And laid her on her side.

A land-breeze shook the shrouds,
And she was overset;
Down went the *Royal George*
With all her crew complete. . . .

It was not in the battle—
No tempest gave the shock—
She sprang no fatal leak—
She ran upon no rock.

His sword was in its sheath,
His fingers held the pen,
When Kempenfeldt went down
With twice four hundred men.

Plymouth is an English sea-port and market-town, and a parliamentary and municipal borough in the south-west of Devonshire, 246 miles west-south-west of London. It stands in the bight of Plymouth Sound, between the estuaries of the Plym and Tamar. To the west of it is Stonehouse, a township and coast-guard station; and still further west is Devonport, the great naval and military station. Plymouth proper and Stonehouse having become united by a continuous line of houses, they, along with Devonport, are now generally considered as one town. Devonport is walled, fortified, and surrounded by a moat. Mill Bay and Sutton Pool are two small inlets of the Sound, in which lie all the merchant-vessels bound for Plymouth proper. Between these inlets and running along the shore is the eminence or high plateau of land called the Hoe. From this ridge it is said that the Spanish Armada was first seen from England. It commands a magnificent view by land and sea. On its eastern end stands the citadel, a fortress equipped with 150 guns, commanding the entrance to the Cutwater—the lower estuary of the Plym—and of Sutton Pool. Mill Bay, on the west, is so deep that vessels of 3000 tons can lie at the pier at low-water. There are the important Great Western Docks, covering an area of 14 acres, and having a depth of 22 feet, constructed about the years 1855–58. Close to these docks, and connected with them by a tramline, are the termini of the South Devon, Tavistock, and Cornwall railways. In the year 1880, 3401 vessels of 653,437 tons entered the port. Commerce is carried on to a considerable extent with the Cape of Good Hope, the West Indies, and the Mediterranean. The coasting-trade is also important, and the fisheries are productive. The population in 1881 was 76,080.

Plymouth, described by Leland as being in the reign of Henry II. a 'mene thing, an inhabitation of fishers,' was called by the Saxons Tameorworth—town on the Tamar; and it was not till the reign of Henry VI. that it received the name of Plymouth. During the 14th and 15th centuries, it was frequently attacked and set on fire by the French; and in 1512 an act was passed for the strengthening of its defences. Now, the whole shores of the Sound are well defended by cannon; and a cordon of inland forts has been of late years constructed, at immense cost, surrounding the three towns, at a distance of from two to three miles. Plymouth Sound claims to be the most beautiful estuary on the English coast. It is two and a half miles wide, and extends inland for three miles. It penetrates into the country by the harbours of Hamoaze and Cutwater, the estuaries of the Tamar and Plym respectively. On its west side is Cawsand Bay. The shores, which present many beautiful views, rise in hills of from 100 to 400 feet high, and are dotted over with woods and with villages, and bound by coasts which are generally rocky and abrupt. Mount Edgecombe Park, the beautiful seat of the Earl of Mount Edgecombe, occupies the west shore of the Sound. At the mouth of the Tamar is the small island of St Nicholas, or Drake's Island, a pyramidal rock, strongly fortified. The Sound is open to the south-west, from which direction strong winds frequently blow, bringing in violent surges from the Atlantic. To protect the shipping in the harbour, a massive stone breakwater, 1700 yards long, was completed in 1841 at a cost of about £1,500,000. On a sunken rock, just inside the breakwater, and at its centre, a strong stone fort has of recent years been erected; and an extensive series of stone batteries has been built at Bovisand and Picklecomb on the mainland, on both sides of the entrance to the harbour.

SCOTLAND.

SCOTLAND occupies the northern, the smaller, and less fertile portion of the island of Great Britain. It lies between lat. 54°38′ and 58° 40′ north, and between long. 1° 46′ and 6° 14′ west, or, including the Hebrides, 8° 35′ west. It is bounded on the west and north by the Atlantic; on the east by the German Ocean; and on the south by England, the Solway Firth, and part of the Irish Sea. Its coast-line presents the most fantastic irregularities: here jutting into the ocean in high narrow peninsulas, there receding far inland, in lake-like gulfs, and again suddenly starting seaward, and breaking into a number of bold rocky headlands. Its greatest length, from the Mull of Galloway on the south to Dunnet Head on the north, is about 280 miles; its breadth is variable, being about 146 miles between Buchan Ness, in Aberdeenshire, and the extreme point of Ross-shire on the west, but diminishing to little more than 30 miles between the Firths of Forth and Clyde. The entire surface, including the islands, is estimated at 30,902 square miles. By the census of 1871, the population of Scotland was 3,360,018; in 1881, it was 3,735,573, shewing an increase of 11·18 per cent., the highest rate of increase since 1831.

SUPERFICIAL FEATURES.

Superficially, the country may be described as mountainous and rugged—its central and southern districts, however, exhibit less of this character; hence the common distinction of *Highlands* and *Lowlands*. A line drawn from Aberdeen to Glasgow may be regarded as the boundary between the two regions—the former a country full of romantic scenery, savage precipitous mountains, lakes, dreary moorlands, rushing streams, deep glens, and wild hanging woods; the latter being less elevated and irregular, but still presenting several considerable mountain-ranges. A more correct division, perhaps, would be into northern, central, and southern regions. The boundaries between these regions are formed by two great natural depressions. The first runs from the Sound of Mull, on the west coast, in a north-east direction to the Moray Firth at Fort George, and is called Glenmore or the Great Glen. It forms the line of the Caledonian Canal (see page 250). The other depression runs across the island between the Firths of Forth and Clyde. The region lying north and west of Glenmore may be considered as a high table-land, at a general elevation of 500 to 1500 feet, with a number of rocks and summits rising from it, the highest of which are Ben More Assynt (3273), Ben Wyvis (3429), and Ben Attow (3383 feet). This division of Scotland is little but a wild, barren, rocky desert. The level portions, which are less than one-twentieth of the whole, lie chiefly around the Cromarty Firth, on the east coast, and in the county of Caithness, the greater part of which is an undulating plain.

The central region, comprised between the two depressions, is traversed by the chain of the Grampian Mountains, which begins on the east coast immediately south of the river Dee at Aberdeen, and runs to the south extremity of Glenmore, on the west coast. The highest summits are Ben Nevis (4406), at the west end of the range, and Ben Muicdhui (4296), near the sources of the Dee. The third or southern division of Scotland also contains a system of mountains or highlands, but of a different character from the northern highlands, the hills being mostly of a rounded form, and in great part covered with green vegetation. The most elevated part of this region is that which forms the water-shed between the waters of the Clyde and Tweed on one side, and those that fall into the Solway Firth on the other. The Lowthers, near the sources of the Clyde, rise in two summits to 2377 and 2403 feet. Broad Law, in Upper Tweeddale, is 2723 feet. This elevation is continued eastward in the Cheviot Hills, dividing England and Scotland. Another eastern prolongation of this southern highlands is the Lammermuirs, which terminate in St Abb's Head.

There are no great *plains* in Scotland. There are, however, a number of considerable valleys, known as carses, straths, haughs, and dales, intermediate between the mountain-ranges; and these form, as it were, the granaries of the country.

GEOLOGICAL STRUCTURE.

The following sketch embraces England as well as Scotland, it being more convenient, in regard to geological structure, to treat the island as a whole. The geology of Great Britain is of peculiar importance. The rocks of the earth's crust having been first systematically studied and expounded here, British geologists have given to the world the names whereby the various strata are known, and British rocks form the typical series of the earth's strata. The whole recognised series of stratified deposits occur in Britain, one or two only being more fully developed elsewhere. In the following sketch of their distribution, we shall begin with the lowest and oldest. The *base rocks* occur in the Outer Hebrides, in Tiree and Coll, and along the western shores of Sutherland and Ross. The predominant rock is crystalline gneiss. Resting on the convoluted edges of this old gneiss, on the mainland, and forming the basement rocks in Cumberland, Anglesea, and North Wales, we have the *Cambrian series* of deposits. In Scotland, these rocks are brownish-red sandstones and conglomerates; in England and Wales, they are composed of sandstones, gritstones, and slates. They contain very few fossils. The *Silurian measures* occupy a large portion of the country, extending over the greater part of Wales, the north of Lancashire, Westmoreland, most of the Lowlands of Scotland, and almost all the Highlands north and west of a line drawn between

Stonehaven and Helensburgh. They consist of shales, limestone, graywacke, &c. but the series is greatly metamorphosed; the lower strata being converted into quartzose flagstones and quartz rock, the upper into chlorite and mica-slate, and quartzose and gneissose rocks. Immense tracts of the lower Silurian beds have hitherto proved devoid of fossils; in other districts, the calcareous rocks are almost entirely composed of the remains of marine invertebrate animals, while the shales abound in zoophytes and crustacea. The *Old Red Sandstone Strata*, consisting of conglomerates, coarse and fine-grained sandstones, and dark-coloured schists, with the characteristic fossils of ganoid and placoid fish, frequently overlie the Silurians. Nearly all Caithness, and the seaward portions of Sutherland, Ross, Cromarty, Inverness, Nairn, and Moray, belong to these strata, which also appear in many parts of the east and south-east of Scotland, in South Wales, Devon, and Cornwall, where the predominant rocks are slates, sandstones, and limestones, and the fossils, coral and shell-fish. The strata of the *Carboniferous period* may be said to occupy a broad but broken tract, extending, in England, from the Bristol Channel to the base of the Cheviots; and in Scotland, filling the great trough between the Silurian measures on the south, and the Old Red Sandstone on the north. Besides coal, the whole of the Carboniferous series contain immense stores of argillaceous carbonate of iron, from the ore of which is produced the great bulk of iron used in the country. The *Permian strata*, consisting of magnesian limestone and sandstone coloured with oxide of iron, occupy a considerable area in the centre and north of England. Two small tracts of highly fossiliferous *Lias* occur, the one in Glamorgan, the other in Shropshire; and small patches exist in Scotland, at Brora in Sutherland, and in the islands of Skye, Eigg, and Mull. Far more extensive and important, however, are the *Oolite measures*, which form a belt nearly 30 miles broad, from Yorkshire to Dorsetshire, curving round by way of Lincolnshire. The best building material in England is obtained from these strata, which are composed of limestones, sandstones, and shales. The fresh-water *Wealden series*, with their abundant remains of reptiles, fishes, shells, and insects, occur in Kent and Sussex, in the Isle of Wight, and in Devon; the fossiliferous beds of the *Cretaceous period*, consisting chiefly of chalk, with intercalated sands and clays, lie east of the *oolite* strata, and parallel to them, and have a historical celebrity in the 'cliffs of Dover,' whose *white*-gleaming heights are supposed by some to have originated the name *Albion*, which our island once bore. *Eocene strata*, composed of clays, sands, and marls, occur in various parts of the south and south-east of England; *Pliocene deposits* of shelly sand and marl in Suffolk; and the still more recent Pleistocene deposits of fresh-water sand and gravel on the coast from Norfolk to Kent.

CLIMATE.

It is impossible to contrast the climates of England and Scotland generally without misleading, because, for several months in the year, longitude, and not latitude, is the agent which mainly affects the various climates of Great Britain. Thus, the annual mean temperature of Greenwich is 3·4° higher than that of Edinburgh; but to know this fact alone is worse than valueless, because July is, on an average, 5° warmer in and near London, while January has the same temperature in both places. From charts prepared by Mr A. Buchan (*Scot. Meteorological Society Journal*, Nos. 28, 29), based generally on the observations of the thirteen years 1857–69, it appears that the lowest line of mean temperature at the level of the sea which touches Great Britain in January, the coldest month, is 37°; but this only embraces the tract from Kinnaird Head to Aberdeen. The line of 38°, again, starting from the Faröe Islands, enters Scotland by the Moray Firth, runs west by Perth, Greenock, Glasgow, and Dumfries, traversing England by Carlisle, Derby, and the Naze; 39° starting from the Shetland Islands, passes through the Hebrides, the Mull of Kintyre, and Galloway. Hence January in the south-east of England is 1° colder than in the Shetland Islands and on the whole west coast of Scotland, and as cold as in the Faröe Islands in 62° N. lat. In the Hebrides, again, and in the south-west of Scotland, the January temperature corresponds with that of Dublin, Bristol, and Portsmouth. February makes but a slight alteration, relatively, in the temperature of Great Britain. In March, latitude begins to supersede longitude as the determining agent. An Edinburgh March is about equal to that of York, and 2° below that of London. April in London is 3° warmer than in Edinburgh. It may here be observed that seasons differ less from one another in mean temperature on the west coast of Great Britain, generally, than they do on the east coast; and that while the winters of the west are warmer, its summer is cooler. But this difference in favour of the west in winter, as compared with the east and inland places, arises chiefly during the night. This fact, Mr Buchan attributes to the great predominance, in winter, of south-west winds, 'which,' he says, 'arrive on our western shores bringing the high temperature of the ocean they have just crossed. At the same time, being cooled by coming in contact with the surface of the earth, at this season many degrees cooler than the Atlantic, their superabundant vapour is condensed into clouds, which partially screen the west coast from those intense colds produced by nocturnal radiation. On the other hand, the south-west winds are rapidly cooled as they proceed northwards, and being drained of much of their moisture, the skies are clearer, and thus less obstruction is offered to radiation.'

From this we infer, that during the prevalence of north and north-east winds, the higher temperature of the west coast will be lost, and these winds are just as prevalent in spring on the one coast as on the other. The point is one which deserves the attention of medical men, and those whose health depends on climate.

The coast of Argyllshire, as might have been expected, has a very high winter temperature. The number of frosty nights which occur there in January, is rather fewer than in May in Upper Deeside, where the Scotch winters are coldest. At Easdale in Argyllshire, in January 1862, the temperature never fell to 32°; and during seven years, 1857–64, twelve nights of frost were the

maximum in January; whilst in Braemar, for the same period, there were never fewer than fourteen nights of frost in January, and in that month, in 1860, there were twenty-five. But it is to be feared that the winter climate of Scotland, indeed of all Great Britain, presents but a choice of two evils—cold or damp. The east coast is dry and cold; the west is damp and comparatively mild; where dryness and warmth are both required, southern latitudes—and far south too—must be sought. The questionable superiority of the English as compared with the Scotch climate in winter and early spring, becomes unquestionable as the season advances. In spring, at least during the intervals when the northerly and easterly winds suspend their fury, the southern half of England is very much warmer than Scotland generally; moreover, its skies are brighter, and its sun more powerful—facts of importance to the ripening of crops. The superiority of south over north goes on increasing till July, when the mean temperature of London is 64°, that of Edinburgh 59°. At Cambridge this superiority begins to diminish, and may be said to disappear at Newcastle. The southern advantage is maintained during September and October, but is lost in November, during which month the 'isothermal' of 43° runs through Wigtownshire, Birmingham, and Oxford. Very curious fluctuations, however, occur in the relative summer temperatures of England—by which is meant England south of Cambridge—and those of the Lowlands of Scotland. Thus, in 1857, the mean summer temperature of England was 64·3°, while in Scotland it was only 56·9°; England being thus warmer by 7·4°; and the English July of that year was 10° warmer than the Scotch. In the following year, however, the southern summer was but 1·8° above the northern; and in July of that year the means were respectively 57·6° and 57·3°, or practically the same. From data such as these, it is found that while the summers of Scotland are less warm than those of England, they are less fluctuating. Hence, in cold, backward seasons, the damage sustained by crops may be expected to be proportionally greater in England than in Scotland. The Scotch climate, it appears, is on the whole better suited for the cultivation of turnips than that of England, though it is not so in every respect. The greater rainfall during July and August in Scotland is advantageous to the root, but its autumnal growth continues longer in the south.

The *Journal of the Scottish Meteorological Society*, No. 31, gives a map shewing the annual rainfall at 290 places in Scotland, on an average of fifty-seven years—viz. from 1815 to 1871. It shews a great variety in the climates of Scotland as regards rainfall. At Edinburgh, the annual fall is little over 24 inches, while at Glencroe it is 128·50 inches on an average of 6½ years. The whole of the west coast of Scotland, from the Firth of Clyde to the extreme north-west, including the Hebrides, is wet as compared with the east coast, and with England generally. Towards Glasgow the rainfall begins to diminish; being 62 inches at Greenock and Gourock, while at Glasgow it is but 43. Higher up the valley of the Clyde, it diminishes still further; falling to 28 inches near Uddingston; 'thus presenting,' says Mr Buchan (*Journal*, No. 31, p. 179), 'an almost exact counterpart of the rainfall of the more level parts of Fifeshire, and many other eastern districts.' For a summer residence it is desirable to choose a place whose mean summer temperature does not exceed 60°; the returns of the Registrar-general shewing that above this point there is an increase in the mortality rates, chiefly from diarrhœa and similar complaints. Deeside, Mr Buchan considers to possess one of the healthiest summer climates of our island. He also especially adverts favourably to Upper Strathearn, Innerleithen, and Moffat.

The plants and animals of the country are, generally speaking, specifically the same as those of England, but have a somewhat more boreal character, as might be expected from the higher latitude and altitude of the land. The common cultivated grains are grown profitably, and to great extent, in the Lowlands; but oats, and a coarse variety of barley (bigg), are the only cereals grown in the Highlands and islands. The stag, roe, and wild-cat are thoroughly *ferœ naturœ* on the northern hills; game-birds—as the partridge, grouse, ptarmigan, woodcock, blackcock—are peculiarly abundant in the same localities. Scotland possesses fewer species of fresh-water fish, but has the salmon and trout in greater abundance than England, and also many of the marine animals, cetacea, herring, cod, and other white fish. Pilchard and white-bait are scarcely known on the Scotch coast.

PEOPLE—POPULATION.

The population of Scotland is readily divisible into two great sections—the Lowlanders or Scotch proper, and the Highlanders or Celts. The former, like the English, are of the Teutonic race, but consist of an admixture of Picts, Saxons, Danes, and Scandinavians. They occupy the whole of the Lowlands and the eastern coast-fringe of the Highlands, speaking a variety or dialect of the English language. They are described generally as a tall, large-boned, and muscular race, with features less round and soft than the modern English, and with a larger and more elongated cranium. The Highlanders, on the other hand, are mainly of Celtic origin; and though their language is gradually giving way to that of the Lowlanders, in other respects they retain all the peculiarities of that race.

The Scottish character exhibits a considerable share of both energy and perseverance. It may safely be said that a country with so many physical disadvantages could never have been brought into such a condition as respects rural husbandry, nor, with all the advantage of the English connection, been made so prosperous a seat of both manufactures and commerce, if the people had not been gifted in a high degree with those qualities. A disposition to a frugal and careful use of means is also conspicuous in the Scotch. The poorest poor, at least in rural districts, are in few instances of such improvident habits as to lead to that destitution of furniture, clothing, and tolerable house-accommodation, which meets the eye almost everywhere in Ireland. Caution, foresight, and reflection may be said to enter largely into the Scottish character. Under the influence of these qualities, they are slow, and sometimes cold in speech, and are therefore

apt to appear deficient in frankness and generosity. They are not, however, really so. That *perfervidum ingenium*, or fiery genius, attributed to them by Buchanan, is still a deep-seated characteristic of the people. On subjects which they regard as important, they sometimes manifest this excitability in a very striking manner; as, for instance, in their almost universal rising against Charles I. in defence of their favourite modes of worship and ecclesiastical polity. They cherish more than most people a feeling of attachment for their native country, and even for the particular district and spot of their birth; for their remote as well as immediate kindred, and for everything which reminds them of what is honourable in the doings of those who went before them. A strong sense of religion is a conspicuous feature in the Scottish national character; free, however, from all regard to external things connected with it. It may at the same time be remarked, that their religion is more doctrinal than venerative or sentimental—a peculiarity which may be traced in the plainness of their forms of worship, as either its cause or its effect. There is a considerable tendency in the Scottish intellect to argumentative reasoning, and this shews itself in the service in their churches as well as in their philosophical literature. The domestic virtues flourish in much the same degree in Scotland as in England; but the humbler classes in North Britain are not nearly so cleanly as the lower English. For centuries, the adventurous disposition of the Scotch has been remarkable. An immense number of young persons every year leave their native country to push their fortune in the busier English cities, in public employment in India, in the colonies, or in other parts of the world. These persons have generally a tolerable education in proportion to their rank and prospects; and being found possessed of steadiness, fidelity, and perseverance, they rarely fail to improve their circumstances. We are here reminded of the advantage which Scotland has long enjoyed in the possession of a universally diffused means of elementary instruction. This, though in some respects over-estimated, has at least insured that nearly every person reared in Scotland has some tincture of literature.

Under the Education Act of 1872, parents are now obliged to send their children to school, under penalty of fine or imprisonment in case of failure. This act further provides that every public school subject to inspection, and in receipt of public money, shall be open to children of all religious denominations. The jurisdiction of presbyteries and church courts in Scotch schools is by this act abolished, and transferred to the parochial school-boards; these being amenable to the chief Board, resident in Edinburgh.

GOVERNMENT—ADMINISTRATION.

The *government* of the country, since the Union in 1707, has been identical in its leading features with that of England. Scotland, however, has her own laws and forms of procedure, which in many respects differ from those of England. For administrative purposes, Scotland is divided into 33 shires or sheriffdoms, comprising about 1000 parishes.

Counties.	Area in Stat. Acres.	Inhabited Houses, 1871.	Population 1871.	Population 1881.
Aberdeen	1,251,451	34,589	244,603	267,990
Argyll	2,056,402	13,497	75,679	76,468
Ayr	722,229	26,798	200,809	217,519
Banff	410,112	11,603	62,023	62,736
Berwick	294,805	6,491	36,486	35,392
Bute	139,432	2,433	16,977	17,657
Caithness	438,878	7,474	39,992	38,865
Clackmannan	30,476	3,316	23,747	25,680
Dumbarton	154,542	7,638	58,857	75,333
Dumfries	680,217	13,646	74,808	76,140
Edinburgh	231,725	27,856	328,379	389,164
Elgin or Moray	304,606	8,452	43,612	43,788
Fife	315,007	27,056	160,735	171,931
Forfar	560,186	25,663	237,567	266,360
Haddington	173,447	7,179	37,771	38,502
Inverness	2,616,544	16,575	87,531	90,454
Kincardine	245,347	6,661	34,630	34,464
Kinross	46,485	1,517	7,198	6,697
Kirkcudbright (Stewartry)	575,303	7,457	41,859	42,127
Lanark	564,284	47,962	765,339	904,412
Linlithgow	76,799	6,255	40,965	43,510
Nairn	124,968	2,029	10,225	10,455
Orkney & Shetland	593,354	11,955	62,882	61,749
Peebles	226,899	2,187	12,330	13,822
Perth	1,617,808	22,134	127,768	129,007
Renfrew	156,785	13,551	216,947	263,374
Ross & Cromarty	1,970,004	15,713	80,955	78,547
Roxburgh	425,657	7,829	53,974	53,442
Selkirk	164,545	1,741	14,005	25,564
Stirling	286,338	13,275	98,218	112,443
Sutherland	1,297,849	4,914	24,317	23,370
Wigtown	310,747	6,739	38,830	38,611
Total of Scotland	19,063,231	412,185	3,360,018	3,735,573

NATIONAL INDUSTRY.

Agriculture.—Nowhere, perhaps, have labour and skill effected so much, in spite of an ungenial climate and naturally sterile soil. One great advantage of Scotland over England is in the system of fixed leases, generally for nineteen years. The Scottish farmers have shewn themselves above those prejudices in favour of use and wont which usually characterise their class, and have been ever ready to adopt the suggestions of science and experience. They have accordingly taken the lead in most modern agricultural improvements—drainage, artificial manures, lighter implements, &c. The effects appear in the immensely increased value of the real property of the kingdom.

According to the agricultural returns for Scotland of 1884, out of the total area of 19,063,231 acres, there were under wheat, 68,716; barley, 230,554; oats, 1,045,895; beans and pease, 23,441; rye, 7334; potatoes, 163,847; turnips, 484,998. The total number of horses was 187,803; of cattle, 1,136,604; and of sheep, 6,983,293.

The following shews the valued rental of the chief counties of Scotland between 1664–95, and in 1882–83:

1664-95.	1882-83.	
Aberdeen...£19,418	£825,408	exclusive of railways.
Berwick.....14,864	368,719	"
Dumbarton... 2,777	399,156	"
Dumfries.....13,220	498,857	"
Edinburgh...15,921	603,544	"
Fife.....30,201	687,931	exclusive of railways and waterworks.
Forfar.....14,287	658,143	inclusive of railways, valued at £62,241.
Haddington..14,072	279,861	exclusive of railways.
Inverness..... 6,099	329,808	exclusive of railways and canals.
Kirkcudbright 9,549	362,675	exclusive of railways and royal burghs.
Lanark.....13,436	2,144,453	inclusive of railways and canals.

	1664-95.	1882-83.	
Perth	£28,330	£888,135	exclusive of railways and waterworks.
Roxburgh	26,222	419,704	inclusive of railways.
Stirling	9,042	415,479	exclusive of railways and canals.
Sutherland	2,266	97,809	supposed to be exclusive of railways, but not stated.
Wigtown	5,634	264,381	

From a parliamentary return published in April 1874, it was shewn that there were then in Scotland 131,530 owners of lands and heritages; that the estimated extent of their property is 18,946,694 acres, the gross annual value of which is £18,698,804.

Mining—Coal.—The first mention of coal in Scotland (*The Industries of Scotland*, by David Bremner; Edinburgh: A. & C. Black, 1869) is found in a charter granted in 1291 to the abbot and convent of Dunfermline, giving them the privilege of digging coal in the lands of Pittencrief; but the first workers are supposed to have been the monks of Newbattle Abbey. In the account of Scotland given by Eneas Sylvius, who visited it in the 14th century, it is stated that the poor people who begged at the church doors received for alms 'pieces of stone, with which they went away quite contented. This species of stone,' he adds, 'whether with sulphur, or whatever inflammable substance it may be impregnated, they burn in place of wood.' A description of Scotland written in the beginning of the 16th century, says: 'There are black stones also digged out of the ground, which are very good for firing, and such is their intolerable heat, that they resolve and melt iron, and therefore are very profitable for smiths, and such artificers as deal with other metals.' Popular prejudice, and want of proper apparatus for digging and raising, prevented coal from being generally used as fuel in Scotland until towards the close of the 16th century, when it is recorded that 'the use of coal beginneth to grow from the forge into the kitchen and halle.' The lot of the early miners in Scotland had its inevitable hardship made worse by a system of bondage, or serfdom, which prevailed. On entering a coal-mine, the workers became bound to labour in it during their whole life, and in case of sale or alienation of the colliery, the right to their services passed to the purchaser without special agreement. The sons of the collier could not follow any occupation but that of their father, and could only work in the mine to which they were born. This slavery was abolished by act of parliament on May 23, 1775. Up to 1843, women and children were employed in the coal-mines of Scotland. It appeared, on investigation by a parliamentary commission, that children as young as eight were employed in Scotland—in England, even as young as four. The women and children were employed to carry the coal on their backs to the pit's mouth; the weight carried on each journey being sometimes as much as 4½ cwt. The Report says: 'The whole of these places, it appears, are in a most deplorable state as to ventilation. The evidence of their sufferings, as given by the young people and the old colliers themselves, is absolutely hideous.' The act of parliament of 1842 prohibits the employment of boys under ten in coal-mines, and prohibits the employment of women. Times are changed with coal-miners, the rate of their wages having of late years been higher than that of almost any other class of workmen. The chief coal-fields in Scotland are those of Mid-Lothian, Fife, Lanark, Stirling, and Ayrshire.

Iron.—Though the existence of ironstone in the Scotch coal-measures was known many years previously, no attempt was made to turn it to account till 1760, when the Carron Ironworks were established. From this time till 1788, the quantity of iron produced in Scotland did not exceed 1500 tons a year; but during the succeeding eight years, a number of new furnaces were erected in the counties of Lanark, Fife, and Ayr. In 1796, the number of blast-furnaces was 17, and the quantity of iron made that year was 18,640 tons. Thirty-three years afterwards, the production was 29,000 tons; and in 1836 the invention of the hot-blast process raised it to 75,000 tons. In 1845, owing chiefly to railways, the quantity had increased to 475,000. In 1882, it was 1,126,000.

Ship-building.—Before the application of steam-power to navigation, the ship-building trade of the Clyde had reached considerable importance. Up to 1830 not more than 5000 tons of steam-shipping had been built on the Clyde. A great advance was made about the year 1840 by the formation of the celebrated Cunard Company, most of whose members were citizens of Glasgow. The total number of ships built in Scotland in 1884 was 358, with a tonnage of 221,635; of these, 70 vessels of 50,900 tons were built for foreigners. At Glasgow, in 1882, there were built 291 vessels, with a burden of 391,934 tons; 37 of these were sailing-vessels, 172 were screw-steamers, and 60 were built of steel.

Fisheries.—The herring-fishery of 1880 was the greatest ever known on the coast of Scotland before 1884. In 1884, the number of barrels cured was 1,697,077; barrels 'branded,' 653,425; exported, 1,185,220; while £10,890 were paid as brand-fees. The value of the fisheries of Scotland in 1884 was as follows:

Cured Fish—			
Herrings		£2,121,346	
Cod, ling, and hake		149,407	
" " " dried and pickled		8,861	
			£2,279,614
Fish sold fresh—			
(White-fish)			
Haddocks	£300,712		
Herrings	150,720		
Cod, ling, and hake	97,443		
Tusk and saithe	10,481		
Whitings	32,808		
Sprats	5,232		
Mackerel	5,286		
Turbot	9,368		
Halibut	17,624		
Flounders	47,723		
Skate	14,171		
Soles, &c	24,727		
			£716,295
(Shell-fish)			
Lobsters	£29,942		
Crabs	23,799		
Mussels	16,062		
Oysters, &c	11,136		
			£80,939
Salmon			250,000
		Total	£3,326,848

Manufactures.—The Border towns, Hawick and Galashiels, are the chief seats of the woollen manufactures of Scotland. About the year 1830, we are told (see Bremner, p. 155), a Border firm sent a quantity of 'tweels' to London; in the invoice the word was written indistinctly, and was read 'tweeds' by the consignee, who, in ordering a new supply, adopted what he considered to be a happy designation, Sir W. Scott having then made the

Scottish Border and the Tweed famous all over the world. In a business note-book of 1829, the total turnover of the tweed-makers is estimated at £26,000. 'It is only,' says Mr Bremner, 'by comparing these modest figures with the present overturn of upwards of £2,000,000, that one can gain anything like an adequate conception of the extent and rapidity of the development of the tweed manufacture.' There are woollen manufactures in Ayr, Kilmarnock, Stirling, Aberdeen, Inverness, and several other towns in Scotland. Dundee and the Forfarshire towns are the principal seats of the linen and jute manufactures.

The following are the statistics of textile factories in Scotland for 1885:

	Factories.	Spindles.	Power-looms.	Persons employed.
Cotton	147	1,149,514	29,689	37,167
Woollen	274	621,206	7,958	27,546
Shoddy	1	..	..	12
Worsted	24	83,811	1,432	5,479
Flax	152	243,273	21,626	39,086
Hemp	28	19,047	480	3,383
Jute	105	235,429	10,856	36,269
Hair	9	..	..	608
Silk	10	16,824	238	861
Lace	13	..	..	965
Hosiery	12	..	..	889
Elastic	1	..	..	14
Total	776	2,369,104	72,279	152,279

Of persons employed as above, at same date, the proportion was 30 per cent. of males, and 70 per cent. of females. Besides these textile factories, paper-making is engaged in on a large scale in Mid-Lothian; the distillation of mineral oil for shale forms an important industry in Mid-Lothian and Linlithgowshire and other parts of Scotland, more than £2,000,000 of capital being invested in this business. There were 122 distilleries in 1884, and over 200 breweries. Greenock is the chief centre for sugar refining; and printing and publishing are largely carried on in Edinburgh, many books published in London and elsewhere being printed here.

Commerce.—The total declared values of exports of British and Irish manufacture, from the three chief ports of Scotland, England, and Ireland, for 1880, were as follows: Glasgow, £11,828,729; Leith, £2,819,111; Greenock, £423,092; London, £52,600,929; Liverpool, £84,029,651; Hull, £18,572,005; Cork, £25,816; Belfast, £544,286; Dublin, £105,288. Since the disastrous year 1857, Scotland has been in the highest degree commercially prosperous. Taking the six banks having their head office in Edinburgh, it has been found that the market value of their united capital, originally £6,600,000 (see COMMERCE—MONEY—BANKS), has risen from £10,730,000 in 1857 to £28,880,000 in 1883. The value of capital invested in insurance companies has probably risen in an equal, if not greater degree. The amount insured in the Standard Life Assurance Company is upwards of 18 millions, and its accumulated fund is upwards of 4 millions sterling. The Scottish Widows' Fund (Mutual) Society, has more than 19 millions of insurances, and an accumulated capital of 5½ millions. The following table shews the estimated annual amount of revenue expected to be derived from taxation in England and Scotland, respectively, at the period of the Union in 1706 (Minutes of Conference, Record Commission, v. 11, App. p. 192–196); also the amount of revenue derived from England and Scotland, during the year ending March 31, 1866, with percentage of increase in each country in 1866 over amounts estimated in 1706:

	England.	Proportion per cent. of whole revenue.	Scotland.	Proportion per cent. of whole revenue.
Gross annual revenue expected to be derived from Customs, Inland Revenue, and Post-office, in 1706, on average of three years ending Michaelmas, 1705	£5,664,038	97·4	£151,500	2·6
The same actually received for year ending March 31, 1866	49,818,029	85·5	8,441,677	14·5
Increase in 1866; also percentage of that increase over amount estimated in 1706	44,153,991	779·5	8,290,177	5490·0

That is, for every £1 of imperial taxation paid by England in 1706, England paid £7·79 in 1866; while during the same period the proportion paid by Scotland advanced from £1 to £54·9.

At the union of the kingdoms, 45 of the 658 members of the House of Commons were allotted to Scotland, while Ireland had 100. In 1832, Scotland obtained 53, Ireland 105. In 1868, the total number of members remaining still unaltered, the share of Scotland was increased to 60. At that date, had the number of members been in proportion to population, Scotland would have had 69, Ireland 122, England 467; if in proportion to payments to revenue, Scotland 86, Ireland 64, and England 508. In 1885, the total number of members was increased to 670, of whom 495 fell to England and Wales, 72 to Scotland, and 103 to Ireland.

In 1871, the population of Scotland was 3,360,018. The amount of revenue contributed by Scotland to the imperial exchequer, for the year ending March 31, 1872, was £8,513,087; or £2, 10s. 8d. per head. By the census of 1871, the population of England and Wales was 22,704,108; and the total revenue contributed by England and Wales, for the year ending March 31, 1872, was £59,184,597; or £2, 12s. 1d. per head. The amount of income and property tax contributed by England and Wales, for the same year, was £7,719,170; or 6s. 9½d. per head. The amount contributed by Scotland for the same year was £826,213; or 4s. 11d. per head. The total sums voted for the Civil services for the year beginning April 1, 1872, for Scotland, was £594,075; the total sums chargeable on the Consolidated Fund for Scotland, for the year ending March 31, 1872, and not included in the annual estimates, was £138,312: total, £732,387. For Ireland, these sums were: Civil services, £2,485,566; Consolidated Fund services, £222,646: total, £2,708,212. The revenue derived from Ireland was £7,010,630; from Scotland, as above, £8,513,087.

REMARKABLE SCENERY—NATURAL CURIOSITIES.

The comparatively irregular surface of Scotland, or, as a geologist would remark, its being more generally formed of the primitive and early rocks, has caused the existence of much picturesque and romantic scenery, the attractions of which have been greatly heightened by the works of the native poets and novelists, particularly Sir Walter Scott. The Highlands may be said to form one wide tract of such scenery, though some parts are considerably more beautiful than others. The finer scenery in Scotland generally lies along the basins of lakes or the vales of rivers.

Stirling, Callander, and the Trossachs.—From Edinburgh to Stirling is a two hours' journey by rail. Here the tourist ought to halt. 'The country round Stirling,' says Alexander Smith, 'is interesting from its natural beauty, no less than from its historical associations. Many battles were fought in the seeing of its castle towers. Stirling Bridge, Carron, Bannockburn, Sauchieburn, Sheriffmuir, Falkirk—those battle-fields lie in the immediate vicinity. From the field of Bannockburn you obtain the finest view of Stirling. The Ochils are around you. Yonder sleeps the Abbey Crag, where, on a summer day, Wight Wallace sat. You behold the houses climbing up, smoke feathered, and the wonderful rock in which the grace of the lily and the strength of the hills are mingled; and on which the castle sits as proudly as ever did rose on its stem. Eastward from the castle ramparts stretches a great plain, bounded on either side by mountains; and before you the vast fertility dies into distance, flat as the ocean when winds are asleep. It is through this plain that the Forth has drawn her glittering coils—a silvery entanglement of loops and links—a watery labyrinth. Look in the opposite direction, and the aspect of the country has entirely changed. It undulates like a rolling sea. Heights swell up into the blackness of pines, then sink away into valleys of fertile green. At your feet the Bridge of Allan sleeps in azure smoke . . . Beyond are the classic woods of Keir, and ten miles further, what see you? A multitude of blue mountains climbing the heavens. The heart leaps up to greet them—the ramparts of a land of romance, from the mouths of whose glens broke of old the foray of the freebooter; and, with a chief in front, with banner and pibroch in the wind, the terror of the Highland war. Stirling, like a huge brooch, clasps Highlands and Lowlands together.' Stirling to Callander is about half an hour's journey by rail. 'Callander,' says the same writer, 'sits like a watcher at the opening of the glens, and is a rendezvous of tourists. To the right is the pass of Leny, well worthy of a visit. You ascend a steep path, birch trees on right and left; the stream comes brawling down, sleeping for a moment in black pools beloved by anglers, and then hastening on in foam and fury to meet her sister in the vale of Menteith below. When you have climbed the pass, you enter on a green, treeless waste, and soon approach Loch Lubnaig, with the great shadow of a hill blackening across it. The loch is perhaps cheerful enough when the sun is shining on it, but the sun in that melancholy region is but seldom seen. Leaving Callander, you cross the waters of the Leny, and walk into the country made immortal by the *Lady of the Lake.* Every step you take is in the footsteps of Apollo, and speech at once becomes song. There is Coilantogle Ford; Loch Vennachar, yonder, is glittering in windy sunshine to the bounding hills. Passing the lake, you come on a spot where the hillside drops suddenly down on the road. On this hillside Vich-Alpine's warriors started out at the whistle of their chief; and if you travelled on the coach, the driver would repeat half the poem, with curious variations, and point out the identical rock against which Fitz-James leaned . . . At a turn of the road, Loch Achray is before you. Beyond expression beautiful is that smiling lake, mirroring the hills, whether bare and green, or plumaged with woods from base to crest. At every step the scenery grows wilder. Loch Achray disappears. High in upper air tower the summits of Ben-Aan and Ben-Venue. You pass through the gorge of the Trossachs, whose rocky walls, born in earthquake and fiery deluge, the fanciful summer has been dressing these 1000 years; clothing their feet with drooping ferns and rods of foxglove bells, blackening their breasts with pines, feathering their pinnacles with airy birches, that dance in the breeze like plumage on a warrior's helm. The wind here becomes a musician. Echo sits babbling beneath the rock. The gorge, too, is but the prelude to a finer charm; for before you are aware, doubling her beauty with surprise, there breaks on the right the silver sheet of Loch Katrine, with a dozen woody islands, sleeping peacefully on their shadows.'

The view of the lake, on approaching it on the east, is rather confined; but from the top of the rocky and woody mount above, the prospect is more extensive, and of that singular beauty which Scott in his *Lady of the Lake* has described:

> Gleaming with the setting sun,
> One burnished sheet of living gold,
> Loch Katrine lay beneath him rolled,
> In all her length far-winding lay,
> With promontory, creek, and bay,
> And islands that, empurpled bright,
> Floated amid the livelier light,
> And mountains that like giants stand,
> To sentinel enchanted land.
> High on the south, huge Ben-venue
> Down on the lake its masses threw—
> Crags, knolls, and mounds, confusedly hurled,
> The fragments of an earlier world;
> A wildering forest feathered o'er
> His ruined sides and summit hoar;
> While on the north, through middle air,
> Ben-an heaved high his forehead bare.

Loch Earn.—The route from Edinburgh to Loch Earn is the same as to the Trossachs, as far as Callander, the roads diverging about a mile beyond that village. There is now a railway from Callander to Loch Earn Head, but the tourist will probably prefer to drive or walk, the road being a picturesque one by the margin of Loch Lubnaig; a loch which, despite of the high authority from whom we have been quoting, we think an exceedingly beautiful one. The scenery at the head of Loch Earn is very tame. In spring and autumn there is tolerable fishing in the lake, and boats are to be had at moderate charges. The streams in the neighbourhood are, as well as the loch, open to the public, and abound in small trout. As you

approach St Fillans, at the foot of the lake, the character of the scenery entirely changes. From tame, it becomes as picturesque as any in Scotland. Gracefully wooded knolls bend over rocks festooned with fern, and carpeted with many coloured mosses. Over all, sometimes in gentle slopes, at others in abrupt precipices, rise the Highland hills; in the distance, dark blue; in the foreground, glowing with innumerable tints—from tender green to richest purple.

Middle Perthshire.

Dunkeld.—This small town, so celebrated for the fine scenery in its neighbourhood, is situated on the north bank of the Tay, at the distance of 15 miles from Perth, and 24 from Kenmore. Nestling beneath steep and woody mountains, with a noble river running in front, across which there is an elegant bridge, the first view of Dunkeld, in approaching it from the south, is very striking. The village consists of two small streets, in which are two excellent hotels. At Dunkeld, attention is called to the venerable remains of a cathedral, and the Duke of Athole's mansion, Dunkeld House; but our present business is with the natural scenery. Most of this is in the pleasure-grounds connected with the mansion.

Craig-y-Barns, a lofty hill, wooded to the top, which rises behind the house, is a resort of tourists for the sake of the magnificent view which it commands. They are also conducted by guides to the scenery of the *Bran*, which joins the Tay on its opposite bank near the village of Inver—the birthplace and usual residence, it may be mentioned, of the late Neil Gow, so famous wherever Scottish music is known, at once for his performance on the violin and his excellent compositions. 'About a mile higher up the Bran is the *Rumbling Bridge*, thrown across a chasm, about fifteen feet wide. The bed of the river, for several hundred feet above the arch, is copiously charged with massive fragments of rock, over which the river foams and roars like the waters at Ivy Bridge in Devonshire. Approaching the bridge, it precipitates itself with great fury through the chasm, casting a thick cloud of spray or vapour high above the bridge, and agitating by its fury even the prodigious masses which form the surrounding rocks. Few objects will more amply repay the traveller for his trouble of visiting them, than the woody precipices, the long, winding, shady groves, the ruins and cataracts of Dunkeld.' In the angle formed by the junction of the Bran and Tay rises *Craig Vinean*, a broad shadowy mass of firs, reared against the sky. A neighbouring eminence obtains the name of the *King's Seat*, in consequence of King William the Lion having been in the habit of stationing himself upon it, in order to shoot at the droves of deer which his attendants caused to pass through the adjacent hollows.

Aberfeldy, Kenmore, and Killin.—Aberfeldy, a village not in itself remarkable, is celebrated for the fine cataract, formed by a small tributary of the Tay, in its neighbourhood, and near the House of Moness. The tourist is conducted by a guide along the thickly wooded banks of this rivulet, till, about a mile from the village, he reaches the first of the celebrated water-falls of Moness. A little sub-tributary rill here pours, in a series of cascades, down the side of the glen, amidst a natural scene of the greatest beauty. A little farther up the main dell, the rivulet pours along a steep natural staircase, of a hundred feet in perpendicular descent, the sides of which rise abruptly and ruggedly, clothed with the most beautiful natural plants. This scene is described by Burns in one of his well-known songs:

> The braes ascend like lofty wa's,
> The foaming stream deep-roaring fa's,
> O'erhung wi' fragrant spreading shaws,
> The birks of Aberfeldy.
>
> The hoary cliffs are crowned wi' flowers;
> White o'er the linn the burnie pours,
> And, rising, weets wi' misty showers
> The birks of Aberfeldy.

A ride of six miles along the Tay brings the traveller to *Kenmore*—a village of famed beauty, situated at the east end of Loch Tay, at the place where the river issues from that sheet of water. This is one of the chief stages or *points* in the tour of Perthshire, and it is provided, accordingly, with a good inn. Lofty hills ascend on each side; on one hand there is a noble lake; on the other, towards Aberfeldy, stretch the splendid grounds around Taymouth Castle, the seat of the Earl of Breadalbane.

Loch Tay is a fine sheet of water, 15 miles in length, lying between two ranges of hills. In the centre of the north-west side rises *Ben Lawers*, to the height of (with its cairn) 4004 feet. An island near Kenmore formerly contained a priory of Augustines, founded by Alexander I. in the year 1122. Here his queen, Sybilla, daughter of Henry I. of England, was buried. Loch Tay is remarkable, like some other Scottish lakes, for having been on several occasions greatly agitated at the moment of the occurrence of earthquakes in distant parts of the world. It is from 15 to 100 fathoms deep. There is a road on each side to Killin, the distance being sixteen miles. Both abound alike in fine scenery, though, by pursuing that along the south side, a view will be obtained of the lofty Ben Lawers, which will scarcely be seen so well on the opposite side. The mixture of wood, rock, and cultivated field which the traveller finds skirting Loch Tay, will please him with its happy effect. A steamer plies upon the loch at stated intervals; the sail from one end to the other occupies 1 hour 40 minutes.

Killin, a straggling little village, situated in the low vale at the head of the loch, is celebrated for the varied beauty of its scenery. Here two rivers, the Dochart and the Lochy, come down out of different glens, and join their waters with each other and with the lake. The vale of the latter is peculiarly beautiful; that of the Dochart extending up to Tyndrum, upon the great west road, is stern and wild. On arriving at the town, the Dochart breaks over a strange expanse of table-rock in a thousand little cascades; so that the traveller, who crosses a bridge just at the place, is bewildered, as he looks around, with the flashing and sparkling water which everywhere meets his eye. A branch line connects the village with the Callander and Oban Railway.

Dumbartonshire.

A tract of beautiful scenery extends through this county, from the banks of the Clyde along those of the Leven, and including Loch Lomond,

the largest, and probably most beautiful of our British lakes.

At the starting-point, in an angle formed by the confluence of the Leven and Clyde, is a basaltic mass, shooting up to the height of 560 feet above an alluvial plain. This affords a site for the celebrated *Dumbarton Castle*, a romantic fortress, noted in Scottish history, and one of four kept in repair in terms of the Act of Union. Passing the town of Dumbarton, the tourist proceeds upwards along the vale of the Leven, a scene of singular beauty, filled with thriving villages and with villas. The road, at the distance of two miles from the town, passes the old mansion-house of Dalquharn, in which, in the year 1721, the author of *Roderick Random* first saw the light. Archibald Smollett, the father of the novelist, was the fourth son of Sir James Smollett of Bonhill, and having married against his father's will, was residing here, in possession of one of the farms of the family property, at the time of the birth of his illustrious child. The road leads to *Balloch* (at the foot of the lake), a small village and inn at the southern extremity of Loch Lomond, and 4¼ miles from Dumbarton.

Loch Lomond measures 22 miles in length from north to south; its breadth, where greatest, at the southern extremity, is 5 miles, from which it gradually grows narrower between the inclosing hills, till it terminates in a mountain streamlet. The whole aqueous surface covers 17,420 English acres, and it is studded by above thirty isles, mostly at the southern extremity. Its greatest depth is 630 feet, and its height above the sea, 23 feet. In ancient times, Loch Lomond was famed for three wonders —'waves without winds, fish without fins, and a floating island.' The first phenomenon is attributed to a peculiar atmospheric effect, not easily described, but which has also been observed on the Cumberland lakes; vipers swimming from island to island account for the second; the floating island is supposed to have been a detached fragment of moss, or a matted mass of aquatic plants, which ultimately fixed itself near the west side of Inch Conagan.

Luss, a delightful little village, on a promontory which juts into the lake, is much resorted to in summer, on account of its being a convenient station for tourists in search of the picturesque. One of the finest points for enjoying the scenery of Loch Lomond and the environs of Luss, is Stronehill, to the north of the village. At this point, about one-third of the way up a lofty hill, the whole breadth of the lake is spanned by the eye, including

> All the fairy crowds
> Of islands which together lie,
> As quietly as spots of sky
> Among the evening clouds.

At *Inveruglas*, 3½ miles beyond Luss, there is a ferry to Rowardennan Inn, the usual starting-point for those who desire to ascend to the top of *Ben Lomond*. This mountain, situated in the county of Stirling, is 3192 feet above the level of the lake, which is 23 above the level of the sea. At Rowardennan, when looking northward, it almost completely fills up the view. It is formed in three great stages, each rising above the other; these, again, are divided into a number of lesser swelling knolls, some of which are covered with heath and crags, while others are verdant and smooth. The distance from the inn to the top of the mountain is six miles of a continued ascent, which in general requires about three hours. From the summit, a varied and most extensive prospect opens upon the eye in every direction. The lake, lately contemplated with so much pleasure, now appears a small pool, and its islands as so many specks upon its surface. The coasts of Ireland and the Isle of Man are, when the atmosphere is clear, within the boundary of the view. To the east are seen the counties of Stirling and the Lothians, with the windings of the Forth and the castles of Stirling and Edinburgh. The prospect to the north is marked by grandeur alone. Immense mountains, piled, as it were, above each other, and extending from the borders of Stirlingshire to the western ocean, with the indentations of the coast on one side, and the lakes of Perthshire on the other, form altogether a scene which may be conceived, but which cannot be properly described.

Firth of Clyde—Argyllshire.

This is a tract of scenery much admired and visited, on account of its presenting a fine combination of inland seas, with islands of varied surface, and chains of rugged mountains.

The Clyde expands into an estuary a little way below Dumbarton. There, while the comparatively low hills of Renfrewshire, with the thriving towns of Port-Glasgow and Greenock, are seen on the left, attention is called on the right to the towering alps of Argyllshire. This mountainous region is penetrated by several inlets of the sea, one of which, named Loch Long, is twenty-four miles long. Another, named the Holy Loch, is shorter, but surrounded by equally picturesque ground. A little below is Dunoon, a favourite summer resort of the inhabitants of Glasgow.

Separated from this rugged district by only a narrow strait is the island of *Bute*, remarkable for the amenity of its climate, on which account it is much resorted to by persons affected with pulmonary ailments. It measures fourteen miles in length by about four in breadth, and contains some beautiful strips of level territory. The town of Rothesay, a watering-station, occupies a fine situation on the north-east side of the island. Here are the ruins of a palace which formed the ordinary residence of the earliest sovereigns of the House of Stuart. The *Kyles of Bute*, as the strait above mentioned is named, is remarkable for the fine vistas of alpine scenery which it opens up to the view of the tourist.

To the south of Bute lies the island of *Arran*, 22 miles long, and which entirely consists of a range of rocky mountains, the serrated outline of which, as seen from the neighbouring seas and shores, is extremely grand. The loftiest summit, Goat-fell—called by the natives *Goath-bhein*, the Hill of Storms—is 2866 feet high. Arran bears great value in the eyes of the geologist, on account of its presenting, within a narrow space, an epitome of the whole geological structure of Scotland. Its pathless glens and picturesque hills commend it equally to visitors who do not inquire into the mysteries of stratification and volcanic agency. The whole island, excepting a few small farms, belongs to the Duke of Hamilton, whose ancestor, James, first Lord Hamilton, obtained it from the crown on his marrying Mary, the

eldest daughter of James II. in the year 1474. A road sweeping round the east shore of the island leads to Brodick Bay, at the bottom of which there is a beautiful tract of low and sloping ground, ornamented with some fine wood, containing a hamlet, which forms a favourite resort for sea-bathing. On the adjacent height, amidst old woods, is the ancient château of Brodick. From this place a road strikes across the island, and opens up some magnificent scenery. Two or three miles to the southward of Brodick, the shore forms the more spacious recess of Lamlash Bay, at the bottom of which is a village of the same name, while it is landlocked in front by Holy Island, a small isle which formerly contained a monastery. Lamlash Bay is of great importance to the navigation of the Clyde and Irish Channel, as a harbour of safety.

Loch Fyne, a long narrow estuary, having the ridgy promontory of Kintyre on the one side and the district of Cowal on the other, opens up much fine scenery. In sailing up the loch, the first remarkable place is Tarbert, a fishing village, situated at the bottom of a beautiful small bay, with a ruined fortalice of the Argyll family perched on a rock by its side. Farther up the loch is Inveraray. Between Inveraray and the inn of Tarbet, on Loch Lomond, a road opens up a splendid tract of mountain scenery, the most striking being comprehended in the valley of Glencroe. Another road, proceeding in a northerly direction, leads to Loch Awe, an inland lake possessing many fine features, and upon which stands the ruined castle of Kilchurn, once the chief stronghold of the Breadalbane family. The loch is overhung by Ben Cruachan, a mountain 3689 feet in height, on the skirts of which King Robert Bruce gained a victory over his powerful enemy, the Lord of Lorn.

The northern portion of Argyllshire, where it is bounded by the Western Ocean and its many inlets, contains much fine scenery. In a sheltered situation on the west coast stands the neat and cheerful town of Oban, a point of rendezvous for the numerous steamers permeating these seas, and a kind of entrepôt for the rural produce of the wide district around it. In front is the isle of Kerrera, where Alexander II. died in the course of an expedition to the Western Islands. On the coast, a little to the north of Oban, is Dunolly Castle; and a little way farther north is Dunstaffnage, an ancient seat of the Caledonian kings. The Callander and Oban Railway connects this Highland town with the southern railway systems.

Loch Linnhe, opening between Lorn and Morven, and the commencement of the chain of salt and fresh water lakes formed into the Caledonian Canal, presents on both sides scenery of a most romantic character—a mixture of bold rocky forelands, on many of which are perched the eyrie-like fortresses of the rude chiefs of the olden time, and green smiling hollows, within bays, with many pleasant modern residences. The long island of Lismore, in the mouth of this estuary, was the ancient appanage of the bishops of Argyll, and temporarily the site of a college for Catholic priests, after the French seminaries were closed by the Revolution. Opposite to its upper extremity, Loch Creran, a sub-estuary, branches off into the land of Lorn, opening up much beautiful scenery. On the south shore of Loch Linnhe, to the north of the opening of Loch Creran, is the district of Appin, previous to 1765 the property of a race of Stewarts, descended from a natural son of the last Lord Lorn, and for four centuries conspicuous in Highland history. From Ballahulish Ferry, on Loch Leven, noted for its great quarry of slate, the road from Fort-William to Glasgow runs for a number of miles nearly east through the wild vale of Glencoe, emerging at the solitary inn of King's House, in the desolate district of Rannoch.

Glencoe is a narrow strip of rugged territory, along which hurries the wild stream of Cona, celebrated by Ossian, who is said to have been born on its banks. 'Anything,' says Charles Dickens, 'so bleak, and wild, and mighty in its loneliness, as the whole country, it is impossible to conceive. Glencoe itself is perfectly terrible. . . . Through the whole glen, which is ten miles long, torrents were boiling and foaming, and sending up in every direction spray like smoke of great fires. They were rushing down every hill and mountain side, and tearing like devils across the path, and down into the depths of the rocks. Some of the hills looked as if they were full of silver, and had cracked in a hundred places—others as if they were frightened, and had broken out into a deadly sweat. In others there was no compromise or division of streams, but one great torrent came roaring down with a deafening noise, and a rushing of water that was quite appalling.' 'Even,' adds Dickens' biographer, 'where he expected to find Nature in her most desolate grandeur, in the dreary waste of an American prairie, his imagination went back with a higher satisfaction to Glencoe.'

Inverness-shire—The Great Glen.

Between Loch Linnhe on the west coast, and a point on the Moray Firth near Inverness, there is a remarkable natural phenomenon, in the form of a glen or hollow, passing in a perfectly straight line for 60 miles through a mountainous region, and the bottom of which is nowhere more than 90 feet above the level of the sea. It is called by the Highlanders *Glen-more-nan-Albin* (the Great Glen of Scotland). A chain of lakes extending along this extraordinary hollow suggested the formation of a canal which should admit of navigation between the seas on the two sides of the island, and save the dangerous passage round by the Pentland Firth; and this, under the name of the *Caledonian Canal*, was formed between 1803 and 1822, under the care of Mr Telford, at an expense of £800,000.

The canal commences at Clachnaharry, in the outskirts of the town of Inverness, and, after six miles, enters the first of the chain of lakes, *Loch Ness*, a grand piece of water, nearly 23 miles long, amidst stupendous and sterile mountains. The waters of Loch Ness never freeze, but they are often agitated simultaneously with the occurrence of earthquakes in distant parts of the world. On an elevated rock projected into the north-west margin of Loch Ness, are situated the remains of Urquhart Castle, consisting of a great square keep and several exterior walls of defence. It was besieged in 1303 by the officers of Edward I. and with great difficulty taken; it afterwards was a royal fortress; and finally, in 1509, it became the property of Grant of Grant, ancestor of

the Earl of Seafield, to whom it now belongs. Glen Urquhart, which recedes behind Urquhart Castle, is a beautiful Highland vale. The conspicuous mountain, *Mealfourvounie* (Hill of the Cold Tarn), which is 2284 feet in height, here begins to raise its huge bulk above the banks of the loch. Mealfourvounie stands so prominently above the neighbouring hills, that it is not only singled out by the eye at Inverness, but is the first landmark seen on entering the Moray Firth, at the distance of a hundred miles.

The road along the south side of Loch Ness, though it presents numberless fine views, is enlivened by few traces of man's presence. The paucity of houses gives a sort of distinction to the inn named General's Hut, nearly 18 miles from Inverness, originally the residence of General Wade, while superintending the formation of his roads. Little more than a mile farther on, a recess or chasm in the hill by the side of the lake contains the celebrated *Fall of Foyers*.

A few miles farther on, *Glenmoriston*, a valley full of romantic scenery, opens upon the north-west bank of Loch Ness. At the distance of thirty-two miles from Inverness, the traveller comes on *Fort-Augustus*, situated in a pleasant opening amongst the hills, at the termination of Loch Ness. It was erected in 1730, as an addition to the means previously existing for the control of the turbulent children of the mountains. Its purposes being long since accomplished, it has for many years been only occupied by a few artillerymen. From Fort-Augustus, the cut of the canal is resumed, and several locks are ascended; five miles bring it to *Loch Oich*, the smallest of the chain of lakes. The scenery is here finer than at any other part of the Great Glen.

The next and last loch is *Loch Lochy*, the hills environing which are the most wild and stupendous of all in the glen. The summit-level of the canal is between Loch Oich and Loch Lochy, being 90 feet above the ordinary high-water mark at Fort-William, and 94 above that at Inverness —a difference to be accounted for by the pressure of the Atlantic on the west shores of Scotland. The canal, after leaving this loch, descends in a precipitous series of locks, called *Neptune's Staircase*, into Loch Eil, a continuation of Loch Linnhe, the arm of the sea formerly mentioned.

At this point, the glen is more spacious than anywhere else; it is, however, the spaciousness of a moor. The River Lochy, which issues from the lake of the same name, pours its voluminous and impetuous flood towards Loch Eil on the left; and beyond it Ben Nevis is seen to rear his enormous head, with the vale of Glen Nevis withdrawing from his mighty side into the solitudes of Lochaber. At the distance of little more than a mile is the town of Fort-William, so called from a fortress of the same name, built for the repression of Highland turbulence, and now nearly disused.

A cluster of glens to the south of the Great Glen is remarkable for a natural phenomenon, usually called the Parallel Roads of *Glenroy*, such being the name of the vale in which the wonder is most conspicuously marked. It consists of a set of terraces, in most places three in number, extending along both sides of these vales for many miles, the uppermost 82 feet above the second, which, again, is 212 feet above the first. The common people represent these terraces as roads formed at the command of Fingal, an early hero, for his convenience in hunting; but they are in reality ancient beaches of inland seas—phenomena with which modern geologists are familar.

Western Islands.

The Western Islands are generally bleak and rugged in surface, and occupied by a very poor class of tenantry. It is not possible here to present a particular description of any except the isle of *Staffa*, so remarkable for its basaltic structure. It is about 1½ mile in circumference, and bears no human habitation, its only useful tenants being a small herd of black-cattle. At the point of greatest elevation, towards the south-west, this island is 144 feet high. On the north-east it presents a face of somewhat less height, composed of basaltic columns, and penetrated by several caves of various sizes, into which the sea occasionally breaks with the report of thunder. This face, according to Dr Macculloch, is formed of three distinct beds of rock, of unequal thickness, inclined towards the east in an angle of about 9 degrees: the lowest is a rude trap tufa: the middle one is divided into columns placed vertically to the planes of the lowest bed; and the uppermost is an irregular mixture of small columns and shapeless rock—the whole being partially covered by a fine verdure. The central columnar part having in some places given way, is the occasion of the numerous caves by which the island seems perforated.

At the north-east point of the island, the dipping of the rocks is so low as to afford a safe landing-place at any time of the tide. Proceeding thence, the visitor is conducted along the north-east face, and is introduced to the *Clam-shell* (Scallop) *Cave*, where a curious confusion in the columnar structure is observable. The columns on one side are bent, so as to form a series of ribs, not unlike the inside view of the timbers of a ship; while the opposite wall is formed by the ends of columns, bearing a general resemblance to the surface of a honeycomb. This cave is 30 feet in height, and 16 or 18 in breadth at the entrance; its length being 130 feet, and the breadth contracting to the termination. Next occurs the noted rock, *Buachaille* —the Herdsman—a conoidal pile of columns, about 30 feet high, lying on a bed of curved horizontal ones, visible only at low-water. There is here an extensive surface, resembling that of the Giant's Causeway, and composed of the broken ends of pillars once continuous to the top of the cliff. The colonnade is now for some distance upright and very grand, till the visitor reaches the *Uaimh Binn* (Musical Cave), usually called *Fingal's Cave*, by far the most impressive and interesting object in the island. It opens from the sea with a breadth of 42 feet, a height of 66 feet above the water at mean tide, the pillar on one side being 36 feet high, and that on the other 18. The depth of the recess is 227 feet, and the breadth at the inner termination 22. The sides within are columnar throughout; the columns being broken and grouped in many different ways, so as to catch a variety of direct and reflected tints, mixed with secondary shadows and deep invisible recesses. As the sea never ebbs entirely

out, the only floor of this beautiful cave is the fine green water, reflecting from its white bottom tints which vary and harmonise with the darker tones of the rock, and often throwing on the columns flickering lights, which its undulations catch from the rays of the sun without.

The lowlands of Scotland are overspread with a network of railways little less dense than that of England, and from Edinburgh or Glasgow, by Stirling and Perth, the counties of Aberdeen, Banff, Elgin, Nairn, Inverness, Ross, and Sutherland are accessible by railway. From the town of Inverness, by Dingwall in Ross-shire, the line runs to Strome Ferry on the west coast. From the Ferry, boats communicate with the isle of Skye, famed for the alpine grandeur of its scenery. From Perth there are two lines running north, the one by the east coast to Aberdeen; the other traverses the centre of Scotland, by Blair Atholl, from which place those who are in quest of scenery may do well to walk or drive to Braemar and Ballater. From Ballater there is a railway to Aberdeen. From Glasgow there is ample steamboat communication with the Western Highlands and the Hebrides. Natural scenery and science have thus, in combination, done much to compensate the Highlands of Scotland for their barren soil and ungenial climate; the former by rendering them attractive, the latter by making them accessible to tourists—of whom, and of sportsmen, each month of August brings its fertilising cloud, which dissolves, so to speak, over the land in a golden shower.

ANTIQUITIES, ETC.

There are in Scotland, and particularly in the district between the Firth of Tay and Moray Firth, numerous mounds, upright slab-stones, and carved stones, which are supposed to have been raised as monuments over slain warriors, by the early inhabitants of the country, or by the Danes or other northern nations who occasionally invaded it in remote times. The most remarkable examples of mounds are two at Dunipace on the Carron, in Stirlingshire, and one at Fettercairn, in Kincardineshire. A distinct class of mounds, called *moot* or *moat hills*, are common in the south-western and several other districts. They are generally of a square form, with a flat top. It is believed that they served as places for the administration of justice in rude ages. Such is the opinion of the antiquary, who regards these mounds as *artificial*, and raised for a specific purpose; but to the geologist, acquainted with the phenomena of raised beaches, moraines, and denudations, they appear, what in most instances they really are, substantial *natural* accumulations, which may have been employed by our early ancestors as above described, but which assuredly were never erected by them. For a geological account of the mounds of Dunipace, the reader is referred to an article in *Chambers's Edinburgh Journal*, No. 144, New Series.

Of the carved stones, a remarkable example exists at Forres. It contains figures of men and animals in various compartments. There is another very entire and curious specimen at Aberlemno, in Forfarshire. These carved stones are mostly confined to the north-east part of Scotland. They are undoubtedly sepulchral monuments; but the character of the sculptures is unique, nothing resembling them being known in any part of the world.

In the north of Scotland, and in Orkney, there are some surviving examples of a very remarkable class of early buildings, to which the common people now give the name of *Picts' Houses*, as supposing them to have been built by the Picts. They are generally round buildings, of no great height, with round vaulted tops, altogether built of courses of dressed stone without mortar, and containing for the most part one central chamber, and several long narrow recesses in the thickness of the wall. Circular mounds, the remains of British and Danish camps, are common on the tops of the Scottish hills, having probably been the places to which the early people retired with their flocks in times of danger. On several hills, particularly in Perthshire and Inverness-shire, there are remains of walls, presenting appearances as if the stony materials had been artificially vitrified. It is not yet ascertained whether these *vitrified forts*, as they are called, were works of our Caledonian ancestors, or the effect of accident, though the former is the more likely supposition.

The weapons used by the aboriginal people are often found, consisting of stone axes, arrow-heads of flint, &c. Necklaces, bracelets, and other ornaments used by them, barbarous in style, but generally of gold, are also often found. In various districts, so-called Druidical circles still exist in a tolerably entire state, but none on so large or regular a scale as those of Stonehenge and Abury. There are remains of roads and camps formed by the Romans in their hesitating and imperfect attempts to subdue North Britain; and of the wall built under the Emperor Antoninus, between the Firths of Forth and Clyde, with forts at regular intervals, it is still possible to discern a few traces.

The next class of antique objects are the remains of the Gothic fanes, reared on account of religion during the period when the Romish Church was triumphant. These are everywhere very numerous, but in few cases tolerably entire. Excepting two cathedrals, those of Glasgow and Kirkwall (in Orkney), all of that class of structures are in ruins. The abbeys, priories, and other conventual and collegiate establishments, are in every instance gone to decay. Melrose Abbey, the Cathedral of Elgin, and the Collegiate Church of Roslin, are the most beautiful of these ruinous buildings.

Numerous specimens of the towers and castles occupied by men of note in the middle ages still exist, though mostly in a decayed state. Those which indicate the greatest strength and consequence are—*Lochmaben Castle*, the residence of the Bruces, Lords of Annandale; *Hermitage* (Roxburghshire), which belonged to a powerful noble named Lord Soulis; *Douglas*, the residence of the Earls of Douglas; *Turnberry* (Ayrshire), the residence of the Earls of Carrick; *Bothwell*, another stronghold of the Douglases; *Tantallon* (Haddingtonshire), the residence of the Earls of Angus, a branch of the Douglas family; *Dunnottar* (Kincardineshire), the seat of the Earls Marischal; and *Doune* (Perthshire), the stronghold of Robert, Earl of Fife, brother of Robert III. and governor of Scotland. Four places of strength—*Edinburgh*, *Stirling*, *Dumbarton*, and

Blackness Castles—are still kept in repair at the public expense, and serve as barracks for foot-soldiers.

CHIEF CITIES, TOWNS, PORTS, ETC.

Edinburgh, the capital, is situated in the county of the same name, on a cluster of eminences, distant between 1½ and 3 miles from the Firth of Forth. The city is composed of two principal parts—the Old and New Towns: the former being built on a long narrow eminence gently rising towards the west, where it terminates in a lofty and abrupt rock, on which the castle is situated; while the latter occupies lower ground towards the north. The town is universally built of a fair sandstone, which retains its original colour in the newer parts of the town, and in the best public buildings, and forms one of the most striking features of Edinburgh. The New Town is laid out on a regular plan of rectangular streets and squares, exhibiting in general much architectural elegance. Between the Old and New Towns, and between various sections of the New Town itself, as well as in the centres of the principal squares, there are gardens laid out in the modern style, forming delightful places of recreation. It is chiefly owing to the unequal ground on which Edinburgh is situated, the massive elegance and regularity of its buildings, the intermixture of ornamental pleasure-ground, and the picturesque hills immediately adjacent, whence distant and extensive prospects are commanded, that this city makes so great an impression on most strangers.

Formerly the seat of the government of the country, Edinburgh is still that of the supreme law-courts and of a flourishing university. It is also to a great extent a city of residence, not only for persons connected with the country, but for strangers desirous of enjoying a society of moderate habits, and the benefits of education for their children. Its leading classes are thus composed of legal practitioners, learned persons, and families in independent circumstances. It is only in a small degree a manufacturing town, the principal trade being the brewing of ale (for which the town is celebrated). The leading periodical publications are *Blackwood's Magazine* and *Chambers's Journal*. The *Edinburgh Review* is now published in London. The leading daily paper is the *Scotsman*, a journal of Liberal principles. There are besides several medical, philosophical, and legal journals. The Register Houses in Princes Street contain the historical and legal records of the country. A striking feature in the city and its neighbourhood is the number of its schools and educational institutions. Among the most famous of the latter are George Heriot's and Donaldson's Hospitals. The latter is a palatial building, as also Fettes College. The city is now the centre of the Scottish railway traffic, having lines and telegraphs communicating with all parts of the island. Tramways are laid in the main streets, and a suburban railway connects the principal suburbs.

Amongst the remarkable objects in the city, the most striking is the Castle, a large fortress romantically situated on the summit of a mass of igneous rock, between 200 and 300 feet in perpendicular height. It contains, besides various batteries and other fortifications, a modern barrack, in which a foot-regiment is usually quartered. In a well-protected room are shewn the crown, sceptre, mace, and sword which formed the regalia of the Scottish line of princes. An apartment is also shewn in which Queen Mary was delivered of her son James VI. The Courts of Law are situated in the centre of the Old Town, and are composed of a great hall, formerly the meeting-place of the Scottish Parliament, rooms for the two divisions of the civil court and for the lords-ordinary, a room for the High Court of Justiciary (supreme criminal court), and other accommodations. The extensive libraries belonging respectively to the Advocates (barristers) and Writers to the Signet (solicitors) are adjacent. Holyrood-house, the palace of the Scottish kings, is situated at the lower extremity of the principal street of the Old Town. The oldest part is a mass of building erected by James V. containing the presence-chamber, bedroom, and other apartments used by Queen Mary, with some of the original furniture; as also a gallery, furnished with (generally imaginary) portraits of the kings of Scotland. The apartments of the queen are to be regarded with no ordinary interest, both as furnishing a curious and faithful memorial of the domestic accommodations of a princess of the sixteenth century, and as the scene of the murder of David Riccio. Another part of the building, erected in the reign of Charles II. contains the apartments used by George IV. for his levée in 1822, and a suite of rooms which furnished accommodation to Charles X. of France and his family during the years 1831–33. Closely adjoining to the palace are the ruins of a Gothic church, originally that of the Abbey of Holyrood, and latterly a chapel-royal.

The College is a large modern quadrangular building, in the southern quarter of the city. It contains class-rooms for the professors, and a library of splendid proportions. The university is distinguished as a school of medicine, for which new buildings have been erected in Teviot Row. The Infirmary, Museum of Science and Art, Heriot-Watt College, and Free Library (in progress 1888) are the other chief buildings in the south side.

'Every true Scotsman,' says Alexander Smith, 'believes Edinburgh to be the most picturesque city in the world. . . . The finest view from the interior is obtained from the corner of St Andrew's Street (South) looking west. Straight before you, the Mound crosses the valley, bearing the white Academy buildings; beyond, the castle lifts, from grassy slopes and billows of summer foliage, its weather-stained towers and fortifications, the Half-moon Battery giving the folds of its standard to the wind. Living in Edinburgh, there abides, above all things, a sense of its beauty—hill, crag, castle, rock, blue stretch of sea, the picturesque ridge of the Old Town, the squares and terraces of the New—these things once seen are not to be forgotten. The quick life of to-day sounding around the relics of antiquity, and overshadowed by the august traditions of a kingdom, make residence in Edinburgh more impressive than residence in any other British city. . . . What a poem is that Princes Street! The puppets of the busy, many-coloured hour move about on its pavement; while across the ravine, time has piled up the Old Town, ridge on ridge, gray as a rocky coast washed and worn by the foam of

centuries; peaked and jagged by gable and roof; windowed from basement to cope; the whole surmounted by St Giles' airy crown. The New is there looking at the Old. Two times are brought face to face, and are yet separated by a thousand years. Wonderful on winter nights, when the gully is filled with darkness, and out of it rises, against the sombre blue, and the frosty stars, that mass and bulwark of gloom, pierced and quivering with innumerable lights. . . . Finer still, to place one's self near the Burns Monument, and look towards the castle. It is more astonishing than an Eastern dream. A city rises up before you, painted by fire on night. High in air, a bridge of lights leaps the chasm; a few emerald lamps, like glow-worms, are moving silently about in the railway station below; a solitary crimson one is at rest. That ridged and chimneyed bulk of blackness, with splendour bursting out at every pore, is the wonderful Old Town, where Scottish history mainly transacted itself; while opposite, the modern Princes Street is blazing throughout its length. . . . From George Street, which crowns the ridge, the eye is led down sweeping streets of stately architecture, to the villas and woods that fill the lower ground and fringe the shore; to the bright azure belt of the Forth, with its smoking steamer or its creeping sail; beyond, to the shores of Fife, soft, blue, and flecked with fleeting shadows, in the keen, clear light of spring, dark purple in the summer heat, tarnished gold in the autumn haze; and farther away still, just distinguishable on the pale sky, the crest of some distant peak, carrying the imagination into the illimitable world. Residence in Edinburgh is an education in itself. Its beauty refines one, like being in love. Nothing can stale its infinite variety. From a historical and picturesque point of view, the Old Town is the most interesting part of Edinburgh, and the great street running from the castle to Holyrood—the Lawnmarket, High Street, and Canongate—is the most interesting part of the Old Town. In that street, the houses preserve their ancient appearance; they climb heavenward, story upon story, with outside stairs and wooden panellings, all strangely peaked and gabled. With the exception of the inhabitants, who exist amidst squalor, and filth, and evil smells, undeniably modern, everything in this long street breathes of the antique world. If you penetrate the narrow wynds, that run at right angles from it, you see traces of ancient gardens. Occasionally the original names are retained, and they touch the visitor pathetically, like the scent of long withered flowers. Old armorial bearings may yet be traced above the doorways. Two centuries ago, fair eyes looked down from yonder window, now in possession of a drunken Irishwoman. If we but knew it, every crazy tenement has its tragic story; every crumbling wall could its tale unfold. The Canongate is Scottish history fossilised. What ghosts of kings and queens walk there! What strifes of steel-clad nobles! What wretches borne along in the sight of peopled windows to the grim embrace of the "Maiden!" What hurrying of burgesses to man the walls at the approach of the Southron! What lamentations over disastrous battle-days! James rode up this street on his way to Flodden. Montrose was dragged up hither on a hurdle. . . . Jenny Geddes flung her stool at the priest in yonder church. John Knox came up here to his house, after his interview with Mary at Holyrood—grim and stern, unmelted by the tears of a queen. . . . The Canongate once seen is never to be forgotten: nobles, grave senators, jovial lawyers once had their abode here. In the low-roofed rooms, half-way to the stars, philosophers talked, wits coruscated, and gallant young fellows, sowing wild-oats in the middle of last century, wore rapiers and lace ruffles, and drunk claret jovially out of silver stoups. In every room a minuet has been walked, while chairmen and linkmen clustered on the pavement beneath. But the Canongate has fallen from its high estate—whisky has supplanted claret. Nobility has fled and squalor taken possession. Wild, naked children swarm round every door-step. Ruffians lounge about the mouths of the wynds. Female faces worthy of the *Inferno* look down from broken windows. Riots are frequent; and drunken mothers reel past, scolding white atomies of children that nestle wailing in their bosoms—little wretches to whom death were the greatest boon; and when evening falls, and the lamps are lit, there is a sudden hubbub and crowd of people, and presently, from its midst, emerge a couple of policemen and a barrow, with a poor, half-clad, tipsy woman, from the sister island, crouching upon it, her hair hanging loose about her face, her hands quivering with impotent rage, and her tongue wild with curses; attended by small boys, who bait her with taunts and nicknames, and who appreciate the comic element which so strangely underlies the horrible sight.' Many of these foul closes and 'wynds,' here so vividly painted, have of recent years been swept away, under powers given to the town council by the City Improvement Act. The population of Edinburgh and Leith was, in 1811, 101,492; in 1881, it was 295,487. Edinburgh City (since 1885) returns four members to parliament; the university, with that of St Andrews, returns another.

Leith, the seaport of Edinburgh, is situated at the mouth of the Water of Leith, a polluted and unwholesome stream, which has been improved, but by no means made perfect, by the expensive drainage scheme of 1864. The harbour of Leith, which has frequently been improved, now admits vessels of 2000 tons. In 1863, the Leith Dock Commissioners obtained a grant of £223,000 for construction of new works. These include a great reclamation embankment on the east sands; a wet dock of nearly eleven acres, with entrance basin of about two acres, and lock of 350 by 60 feet. The embankment is about 350 long, inclosing 36 acres. The new dock was opened in 1881. The customs revenue for 1880 was £290,570.

St Andrews.—Few places in Scotland are of greater historical interest than St Andrews. It was constituted a royal burgh by David I. Part of the wall built by Prior John Hepburn in 1516 still remains. From the top of one of its towers, St Regulus, there is a fine view of the Bell Rock, bay, city, and county, with the ruins of the once formidable castle of Cardinal Beaton, the scene of his cruelties and murder. There is also to be seen a specimen of the bottle-shaped dungeon, a sight to make one shudder at the ingenuity of human cruelty. The university was founded in 1411. Madras College was founded and endowed by the late Dr Bell in 1832. St Andrews is the

stronghold of the game of golf, which may be called the national pastime of Scotland.

Dundee, a royal burgh in Forfarshire, on the shores of the Firth of Tay, is the third town in Scotland in point of population and wealth, and the second as regards trade. It is the chief seat of the linen and jute manufactures in Great Britain. In 1745, the port dues were under £1200. Since 1815, when the harbour was placed under new management, the increase of trade has been enormous. For the year ending May 1861, the revenue of the port was £25,329; for the year 1881, the customs revenue was £158,489. The tonnage which entered the port in 1835 was 259,736; in 1881, it was 474,699. The most extensive factory in Dundee is that of Messrs Baxter Brothers & Co. The buildings cover a superficial area of twelve acres. In the spinning department there are 22,000 spindles, with the requisite preparing machines; and in the weaving-room there are 1200 power-looms. Twenty-two steam-engines, having an aggregate of 750 horse-power, are employed. The number of persons employed is about 4500, a large percentage being females. Jute was introduced into Dundee in the year 1824. In 1838, the consumption was 1136 tons; it is now fully 130,000 tons. In 1801, the population of Dundee was 31,058; in 1881, it was 140,239. In 1863, a beautiful park was given to the town and endowed by Sir David Baxter, Bart. The total cost has been £50,000. An admirably equipped University College was established here in 1882, having a principal and four other professors. The Morgan Hospital is an important educational institution. The fund—obtained by the trustees after a lawsuit as to the validity of the will—is £73,000. Dundee returns two members to parliament.

Aberdeen, a city and capital of the county, is pleasantly situated on a slope rising gently from the sea. The chief street, Union Street, is very handsome. About the middle of it, a bridge of one arch spans a ravine, which divides the Old from the New Town. In 1692 the whole shipping of Aberdeen consisted of two galliots, of 30 tons each. About this time, however, its trade began to make progress. In 1788, the number of vessels registered was 169, and the tonnage 11,820. In 1872, there were registered 218, of which the tonnage was 100,279. In 1880, the revenue of the customs was £92.599. Since 1810, when the improvement of the harbour was begun, great sums have been spent upon it. The newest undertakings regarding it are the new breakwater and division of the river; the first turf of which work was cut by Lord Provost Leslie on 22d December 1869. The granite is the great trade of Aberdeen, the annual quantity now quarried being about 55,000 tons. It is estimated to increase at the rate of 500 tons a year. The university is divided into two colleges, King's and Marischal. King's was founded by bull of Pope Alexander VI. dated Rome, February 10, 1494. The charter still exists. Marischal was founded and endowed in 1593 by George, Earl Marischal of Scotland. The old building was taken down, and a new one erected between 1837 and 1841, at a cost of £21,240, of which £15,000 was paid by government, the balance being raised by subscription. The population of Aberdeen was, in 1811, 34,640; in 1881, 105,189.

Inverness is generally regarded as the capital of the Scotch Highlands. It is situated on the river Ness, near its junction with the sea. The neighbourhood is extremely picturesque, with several scenes and objects of traditionary and historical interest. Here Macbeth had a castle, which Boethius, and afterwards Shakspeare, assign as the scene of Duncan's murder. The castle, says the latter,

> Hath a pleasant seat; the air
> Nimbly and sweetly recommends itself
> Unto our gentle senses.

The remains of a fort built by Cromwell are to be seen. Five miles from the town, lies the fatal field of Culloden.

Perth, the capital of the county, is beautifully situated on the Tay, with a fine view of the Grampian Hills. Ginghams and shawls are manufactured in considerable quantities in Perth; there are also flax-spinning mills, bleaching-fields, iron-foundries, and tanneries. In December 1871, there were 45 vessels belonging to the port, with a tonnage of 4357. The customs revenue, for the year ending March 1880, was £24,215. A much-admired statue of the Prince-consort, by Brodie of Edinburgh, was erected in 1864, and inaugurated by the Queen on 30th August of the same year. The population of Perth in 1881 was 28,980. It returns one member to parliament.

Glasgow, the most populous city in Scotland, occupies a highly advantageous situation on the banks of the Clyde, in Lanarkshire, a few miles from the place where the river expands into an estuary, 42 miles from Edinburgh, 397 from London, and 196 from Dublin. The public buildings are in general handsome, and in most instances disposed in such a manner as to be seen to advantage. The more ancient part of the city extends along the line of the High Street, between the Cathedral and the river; the more modern and elegant part stretches towards the north-west. On the left bank of the river, and connected by three bridges, is situated the populous barony of Gorbals, bearing the same reference to Glasgow which Southwark bears to London. Westward from the lowest of the bridges, both sides of the river are formed into quays, which, owing to recent operations for deepening the channel, are now approached by vessels drawing from 15 to 18 feet water, and of 1000 tons burden and upwards. As late as 1820, no vessel drawing above 8½ feet could ascend the Clyde. The quay on the north bank is denominated the *Broomielaw;* there is an extent of quay of about 1½ miles on both sides of the river.

Glasgow took its rise as a dependency of the cathedral of the bishops (latterly, archbishops) of the see bearing its name. It was not, however, till long after the Reformation that it became a seat of considerable population. About the middle of the eighteenth century, it had acquired a considerable share of the import colonial trade, which it still retains; but during the last hundred years, it has chiefly been distinguished as a seat of manufactures. The weaving of lawns, cambrics, and similar articles commenced in Glasgow in 1725. The advantages enjoyed by the city for the importation of cotton in time gave a greater impulse to that species of manufacture. Besides the old park in the east end, or 'Green,' as it is called, Glasgow has of late years acquired three others—one of 40 acres, in the west end, named

Kelvingrove Park, at a cost of £89,000; another of 100 acres, to the south, named Queen's Park, at a cost of about £60,000. Both of these were designed and laid out by Sir Joseph Paxton. The third, the Alexandra, 85 acres, is in the north-eastern part of the city. It has cost about £40,000. Glasgow is paved with granite, and is one of the best-paved cities in Europe. The Loch Katrine water-works, begun in 1856, by Mr Bateman, C.E. were completed in three years. The aqueduct from the lake to the reservoir, 8 miles from Glasgow, is 26 miles long. During half of that distance, the water is conveyed through tunnels. There are four miles of iron piping carried across valleys, and for the rest of the way there are open cuttings and bridges. The cost of the aqueduct averaged £18,000 per mile. The total cost of the works has rather exceeded one million and a half sterling. Over 32 millions of gallons are brought into the town daily. This gives 52 gallons per head to the population. The works are capable of supplying 50 millions of gallons per day. The City Improvement Trust was created in 1866, to acquire decayed buildings and parts of the town where houses were bad or deficient. A tax was imposed for this purpose. The Trust has already acquired £1,100,000 worth of property. The iron trade has grown to be of vast magnitude in Glasgow. In the immediate neighbourhood, in 1880 there were 97 iron furnaces, producing upwards of 3000 tons of pig-iron per day. In 1879, the total manufacture was 932,000 tons; the shipment, in 1880, was 259,425 tons. In shipbuilding, Glasgow holds a high position. The aggregate launched during 1882, a year of exceptional activity, was 291 vessels of 391,934 tons. The commercial progress of Glasgow is indicated by the following table:

Year ending	Duty collected at the Port.
Jan. 5, 1801	£469 13 6
" 1820	11,000 6 9
" 1830	59,013 17 3
" 1840	468,974 12 2
" 1855	668,556 9 4
Mar. 31, 1870	1,072,718 11 6
" 1881	1,036,616 0 0

The Cathedral or High Church ornaments the north-east end of the city. It was founded by John Achaius, bishop of Glasgow in the reign of David I.; a stone over the door tells us that it was dedicated in 1197, St Mungo being the tutelar saint. The new university buildings were begun in 1867; when finished, the total cost will, it is expected, be about £400,000. Towards this, the citizens have subscribed £120,000. The style of building is that of the early part of the 14th century as applied to colleges. There is a large infirmary in connection with the university. In 1811, the population of Glasgow was 103,224. By the census of 1881, it was 674,095. By the same, the population of Manchester (with Salford), 517,741, and of Liverpool, 552,425. After 1868, Glasgow sent three members to parliament; after 1885, seven. The university, in conjunction with that of Aberdeen, returns another.

Paisley.—The country around Glasgow, particularly towards the south, abounds in busy towns and villages, of the former of which the most remarkable is Paisley, situated in Renfrewshire, on the banks of the small river Cart, seven miles from the city above described. It originated from an abbey founded in 1160 by Walter, the first of the Stuarts, and of which considerable remains still exist. Paisley is a noted seat of the manufacture of shawls, and also of cotton thread, gauzes, and velvets. There are also brass-foundries, bleaching-works, and a silk-throwing mill. The population in 1881 was 55,638.

Greenock, in the early part of the 18th century, was a small fishing village. It is now the first seaport in Scotland, possessing commodious harbours, extending 5455 feet from east to west. The Albert Harbour, opened in 1866, cost £200,000. The Princes Pier, extending along the Clyde westward, cost £70,000. It has direct communication with the Greenock and Ayrshire Railway. The new Garvel Park graving-dock, one of the largest docks of the kind in the kingdom, was formally opened by the chief magistrate on 1st April 1874. The works cost upwards of £60,000. The principal trade of Greenock is with the East and West Indies, the United States, and British America. It is a very flourishing town. The population in 1881 was 66,704. It returns one member to parliament.

Dumfries is prettily situated on the Nith, which is navigable to small vessels nearly as far as the town. The population in 1881 was 17,092. Dumfries has some weaving-mills and small manufactures; and is an entrepôt for transmission of cattle to English markets. It derives some importance from being the chief town of a considerable district. In St Michael's churchyard are laid the remains of Robert Burns.

The Border.—Though the scenery of the Scottish Border cannot be compared with that of the Highlands, it is in many parts extremely picturesque; and there are few lands so famed in song and story. 'Many of the Border ballads,' says a poet, 'are so real and life-like, so full of character and humour, that we feel as if the singer had himself wielded a sword in combat, or ridden into England to lift a prey. . . . All that far-off, lawless, and generous life is unroofed to us in these ballads. We wander amid the ruins of a past society, as we would amid the ruins of Pompeii.' Entering from England by Ford, Twizel Castle, and Coldstream, we pass through the country traversed by James on his way to Flodden, and we think of *The Flowers of the Forest*—

I 've heard them lilting at the ewes milking,
Lasses a-lilting before the dawn of day;
But now there's a moaning on ilka green loaning,
For the Flowers of the Forest are a' wede away.

The first town on the Scotch side on the Tweed, after Coldstream, is Kelso, where there is a fine ruin of an abbey of David I. and the ruin of the old fortress of Roxburgh Castle, the scene of the Black Douglas's famous exploit. Eight or nine miles farther up, we come to Dryburgh, within whose abbey Sir Walter Scott is buried—

'Mong mouldering ruins low he lies,

and from his grave you hear meet music—the wail of his beloved Tweed. Five or six miles farther up, stands Melrose, with its famed Abbey, where lie the heart of Bruce, Alexander II. of Scotland, Earl Douglas who fell at Otterburn, and William, 'the dark knight of Liddesdale.' Abbotsford is about two miles from Melrose. It now belongs to the Hon. Mrs Constable Maxwell Scott, great-grand-daughter of Sir Walter Scott, and grand-daughter of J. Gibson Lockhart, his biographer.

IRELAND.

IRELAND is bounded on the south, west, and north by the Atlantic, and on the east by a strait—called, at different places, the North Channel, the Irish Sea, and St George's Channel—which separates it from Great Britain. The strait is about 47 miles wide between St David's Head, in Wales, and Carnsore Point, in Ireland; about 55 between Holyhead and Dublin; and 13 between Fair Head and the Mull of Kintyre, in Scotland. Ireland has a coast-line of not less than 2200 miles. It lies between lat. 51° 26′ and 55° 21′ north, and between long. 5° 20′ and 10° 26′ west. The island, according to Dr Clyde (*School Geography*, by James Clyde, LL.D.) 'consists of a central plain inclosed by mountainous districts, except at the bays of Dublin and Galway, where it reaches the shore in a considerable extent of coast-line. This central plain would very nearly coincide with a four-sided figure, having for its four corners the towns of Wicklow, Galway, Sligo, and Dundalk. It occupies one-fourth of the entire surface of the island, and is so low that the highest point between Dublin and Galway is only 320 feet above the level of the sea. The principal ranges in the mountainous districts separating the central plain from the sea, are the Mourne Mountains, in County Down; the mountains of Antrim, connected with which are the basaltic columns known as the Giants' Causeway; Mount Nephin and Croagh Patrick, in Mayo; Macgillicuddy Reeks, in Kerry, the highest peak of which, Carran Tual (3410 feet), is the highest mountain in Ireland; the Slievh Bloom Mountains, on the borders of King's County and Queen's County; the Knockmele-down Mountains, between Tipperary and Waterford; and the Wicklow Mountains. The central plain nearly inclosed by these mountains is one immense deposit of limestone, overlaid to a great extent by bog. Tullamore, in Queen's County, is the centre of the bog region.'

The largest of these morasses is the Bog of Allen, which stretches in a vast plain across the centre of the island, or over a large portion of Kildare, Carlow, King's and Queen's Counties—having a summit elevation of 280 feet, in which the Boyne and some lesser rivers take their rise. Along the banks of the river Inny—which, rising in Lough Iron, in County Westmeath, crosses Longford, and falls into the Shannon—are large tracts of deep, wet bog, only exceeded in dreariness by that which for miles skirts the Shannon in its course through Longford, Roscommon, and King's County. These bogs consist of turf or peat in various degrees of condensation—from a pulpy or fibrous mass, to a compact mass that admits of being cut into any form. They rest on a substratum of clay and limestone gravel, are from 15 to 40 feet in depth, and are composed chiefly of aquatic vegetables, which have grown on the sites where they are now entombed. Notwithstanding the quantity of water contained in these extensive bogs, there arises from them no miasma injurious to health. This is attributable to the large portion of tannin they contain, which possesses so strong an antiseptic quality, that bodies plunged into a deep bog remain undecayed, the flesh becoming like that of an Egyptian mummy. It sometimes happens that a bog, overcharged with water during a rainy season, breaks through the obstruction which the drained and more solid part affords, and, rushing forward, overflows large portions of good land.

'The central plain,' continues Dr Clyde, 'is drained chiefly by the Shannon, which is the largest river in the British Islands, and the only considerable one on the western shore of Ireland; it is navigable to Lough Allen, a distance of 240 miles. Other rivers draining the central plain are—the Erne, which, like the Shannon, traverses several lakes in its course; the Liffey, navigable only to Dublin; and the Boyne, navigable to Navan, a distance of 25 miles. Most of the rivers belonging to the mountainous regions are small; the more considerable are in the south of Ireland, the Slaney, the Barrow, the Blackwater, and the Lee, forming respectively the harbours of Wexford, Waterford, Youghal, and Cork. The river Bann is the outlet of Lough Neagh, the largest lake in the British Islands; its waters petrify, but its scenery is uninteresting, as the shores are low and flat. On the other hand, the three lakes of Killarney, at the base of Macgillicuddy Reeks, in Kerry, compete with those of Cumberland and Scotland in beauty. The Devil's Punch Bowl, in the same neighbourhood, is a mountain hollow, so called because mist is almost always floating above it.'

GEOLOGY.

A great series of grits and slates of Cambrian age occur in the south-east of Ireland; the upper portion contains a few fossils of zoophytes and worms. Lower *Silurian strata* rest unconformably on the Cambrian rocks in the same district. Detached portions of Upper Silurian measures occur on the western side of the island, in Kerry, Galway, and Mayo.

Between the Silurian and Old Red Sandstone is an enormous thickness (11,000 feet) of sandstone grit and shale in Kerry and Cork. These strata are almost wholly unfossiliferous.

Old Red Sandstone strata, consisting of red and yellow sandstone and slate, cover a large tract of the south of Ireland, stretching almost continuously from the extreme west of Cork and Kerry into Waterford and Kilkenny, being stopped by the Silurian rocks of Wexford and Carlow.

The *Carboniferous Limestone* is extensively developed in Ireland, occupying the whole of the centre of the country, except in those places already alluded to, where the older rocks appear on the surface. This great tract is an extensive plain covered with drift, and with peat-moss and

freshwater marl, in which are found the remains of *Megaceros Hibernicus* and *Bos longifrons*. In Kerry, Cork, and Waterford, the strata are very much contorted, the coal-seams are changed into anthracite, and so squeezed and crushed as to be got only in small dice-like fragments. Further north, the strata are nearly horizontal, but the coal-fields are limited, and the seams are generally of inconsiderable thickness. They occur chiefly in Tipperary, Kilkenny, Tyrone, and Antrim.

CLIMATE.

The *climate* of Ireland is remarkable for its mildness and humidity—results arising, in the first place, from its being surrounded by the Atlantic, from which no portion of its interior is distant more than 50 miles; and in the second, from the comparatively small elevation which the generality of its land attains. This mildness is proved by the fact, that even in the northern county of Donegal, the arbutus, laurustinus, agapanthus, and fuchsia grow healthily in the open air, and myrtles so luxuriantly as to cover the walls of houses up to the second story. Its humidity, though great, differs considerably in different districts; at Cork, for instance, the average annual fall is said to be 40 inches; at Dublin, it is only 30 inches. The average over the whole island is estimated at 36 inches. Owing to its mildness and humidity, the climate is especially favourable to vegetation, the land being clothed in an almost perpetual greenness.

Considerable variety of climate, at least as regards temperature, is found in Ireland, and, as in Great Britain, the temperature of one district changes relatively to that of another, according to the season of the year. We give the following on the authority of the *Journal of the Scottish Meteorological Society* (Nos. 28, 29, art. 'Temperature of the British Islands,' with thirteen charts). In January, the coldest month of the year in Ireland, as in Great Britain, the coldest part of Ireland lies between the 53d and 54th parallel of latitude, at a distance of about 30 miles from each coast. The mean temperature of the month is here 39°, which is equal to that of the warmest part of the mainland of Scotland, and slightly above that of London for the same month. The mean January temperature of 40° takes an eccentric course from Malin Head, in the extreme north, running south at a distance of 20 or 30 miles from the coast to about Limerick in the south-west; thence it passes east, through Dublin and Belfast. The warmest part of Ireland, in January, February, and March, is the corner lying south of a line drawn from the head of Dingle Bay by Killarney to Cork, where the mean January temperature is 42° to 43°, about 1° below that of the warmest part of England, and 2·5° above that of Pau, in the south of France (40·5°). As the season advances, latitude becomes the determining element in Irish as in British climates; by April the isothermals, or lines of equal temperature, run almost in parallels north and south; the corner from Dingle Bay to Wexford being the warmest part of Ireland in spring and summer. Here April has the same temperature as England south of London, 49° to 50°. In July, the warmest part of England is 2° warmer than this part of Ireland, whose mean temperature is then 62°; the corner north of Londonderry and Belfast being then the coldest part of Ireland, with a mean temperature of 58° to 59°; the same as Edinburgh, and 5° to 6° below that of London.

BOTANY AND ZOOLOGY.

The native *Flora* and *Fauna* of Ireland generally resemble those of the neighbouring island; the cultivated plants and domesticated animals are identical. There are, however, some species peculiar to the island, of which the following are the most remarkable: The strawberry-tree, found at Killarney, particularly beautiful from its abundance of red fruit; the Irish rose, found near Belfast; the Irish furze, found sparingly in Down, distinguished from common furze by its upright mode of growth and softer texture; the Irish or Florencourt yew, of upright growth and dark-green foliage, resembling that of the cypress; the Irish menziesia, whose large purple heath-like bells decorate the wild districts of Galway; the Corsican and other species of heaths, found also in Spain and the islands of the Mediterranean; and carrageen or Irish moss, a sea-weed of some commercial importance.

At present, Ireland is not a well-wooded country—a defect which is fast being remedied by extensive plantations; but we have historical evidence, as well as the indubitable records of her bogs, that at no very remote period large tracts were covered with a gigantic growth of the ordinary forest-trees. Morrison (1596) and Davis (1605) mention the forests in which the poor Irish took refuge; and all the scenery of Spenser's *Faëry Queen* is drawn from the river Bandon, which he celebrates as the 'pleasant Bandon wood y-crowned,' as it is to this day. Boate, in his *Natural History* (1652), mentions the great extent of wood then standing. The violent transfers of property that were constantly occurring for many years subsequently to this date, would, of course, produce recklessness and improvidence, and the holders of land would naturally seek to make the most of it by cutting down the woods, while there was little inducement to plant. There are still, however, in a few favoured spots, some remains of the ancient oak and ash woods, as at Killarney, at Glengariff near Bantry, in Connemara, in some spots of the county of Wicklow, and in Donegal, near the beautiful Lough Van, where a few red deer are still to be seen.

With respect to the animal kingdom, the elk has passed away, leaving its skeleton and antlers in the bogs as memorials of its gigantic size; the wolf has disappeared since the time of the Commonwealth; the wolf-dog is still to be met with, though rarely; the red deer frequents the wild mountain districts of Kerry; the eagle inhabits the western coast of Connaught; the Irish falcon of our ancestors is, we believe, extinct; and the gillaroo and dorchar trouts are limited to Lough Neagh. Of the domesticated animals, though these are now generally cross-breeds, Ireland possesses some varieties regarded as peculiar—namely, the Irish black horse, the Kerry and old Irish breeds of the ox, a worthless wiry-woolled sheep, and a long-legged narrow-bodied pig. In consequence, it is presumed, of the humidity of

the soil and climate, the adder and snake are unknown, as is also the mole.

PEOPLE—POPULATION.

The Irish people are, in the main, a branch of the Celtic race, though the Celts were probably not the first settlers in the island; the earlier occupants belonging (as in Britain, before the arrival of the Celtic Britons) to a non-Aryan stock, often called Euskarian or Ivernian. The peasantry throughout nearly the whole country are of Celtic or mixed Celtic and Euskarian blood, and in many parts they still speak the old Irish language. But in the north, a great number of the humbler, as well as middle classes are descended from comparatively recent settlers of Scottish descent. Families of English blood are comparatively rare amongst the labouring class in Ireland; but a large portion of the upper and middle classes are of Saxon descent.

Character.—Irish character is in some respects like the French. As the French are, the Irish are led by impulse and by the humour of the hour. They are more vain, or at least act more from vanity, caring less to conceal the fact of its being the mainspring of action, than the English and the Scotch do. They wholly lack the prudence and the perseverance which are so especially the virtues of the latter people. They are intelligent, witty, hospitable, light-hearted, and, unlike the English and the Scotch, usually content to remain in the social position and circumstances in which they are born. The feature in the character of the Irish, to which the misfortunes of Ireland are apparently to be attributed, is their disregard of law. In Great Britain, popular sympathy is almost always on the side of the law; in Ireland, it is nearly always against the law. How far this and the other defects of national character have arisen from political circumstance, or how far the misfortunes of the people have been owing to these defects, are questions to be studied in the history of the country. See art. HISTORY OF GREAT BRITAIN AND IRELAND.

We take the following from an able chapter in a *Memoir of Thomas Drummond, Under-secretary to the Lord-lieutenant of Ireland*, by John F. M'Lennan, M.A., advocate. 'There are in Ireland,' says Mr M'Lennan, 'as it were, two nations interfused, yet distinct, with separate traditions, and differing in blood, temperament, and religion. The larger represents the tribes which occupied the country before the Conquest; the smaller represents the conquerors. Their relations have always been hostile. The growth of the society which they compose has consequently been abnormal; its growing pains, acute and prolonged beyond parallel. They have not yet ceased; they are constantly producing feverishness and delirium. The history of Ireland is mainly that of the larger of the two nations—the nation of the tribes. In the time of Henry II. this consisted, according to the computation of Sir William Petty, of not more than 300,000 souls, divided into a few tribes, and subdivided into a great number of clans or septs. . . . The number of clans was prodigious. The clan-feuds were incessant; the tribal wars were almost incessant. Antipathies founded on wrongs, real or imaginary, divided the clans; antipathies founded on real or assumed differences of race divided the tribes. There were everywhere hereditary hatreds of unknown origin. The clans even contained within themselves the elements of discord, and fell into factions. . . . Property was held in common; the succession of sons to fathers had not been introduced. The tribes had been resolved into clans of different stocks; but the clans had not yet, properly speaking, been resolved into families. The tie of milk was superior to the tie of blood; children belonged to the sept rather than to the family. They were rarely or ever reared by their own mothers—"the potent men selling," says Sir John Davis, "the meaner sort buying, the alterage of their children." At the period here treated of, Irish civilisation was in some other respects considerable. Christianity was established, and missionaries from Ireland were carrying the new light into places still in the darkness of paganism. In 1154, Pope Adrian IV. as "king of all islands," granted the lordship of Ireland to Henry II. of England, for the purpose of "broadening the borders of the church." Henry's conquest was little more than nominal, and the four centuries which followed were centuries of constant feud and slaughter between the invaded and the invaders. The law of England was "by law" established, but practically there was no law but the will of the stronger. By the time of Henry VII. the English rule in Ireland was verging on extinction. From a report made in the reign of Henry VIII. it appears that "the English order, tongue, and habit" were used, and English laws obeyed, within a district of not more than twenty miles in compass; sixty "regions" of Ireland were under the dominion of Irish chieftains; and thirty "regions" under the authority of chiefs of Anglo-Norman descent—the Irish rebels—who owned neither the laws nor the government of England. The real struggle between England and Ireland began with the Reformation under Henry VIII. and ended with the fall of Tyrone, a native chief, in the reign of Elizabeth, leaving Ireland,' says Mr M'Lennan, 'a waste of blood and ashes. Love of plunder,' he continues, 'had now found a powerful auxiliary in zeal for the Reformed religion. . . . The English army acted, indeed, as if its mission were not to conquer, but to destroy the people. Its route was everywhere marked by slaughter, famine, and desolation. "The soldiers in the camp," says an English chronicler, "were so hot upon the spur, and so eager upon the vile rebels, that they spared neither man, woman, nor child, but *all* were committed to the sword." The natives, when they crowded into castles, were burnt or slain in the mass. Their cattle were carried off, and their crops cut down; and those whom the sword spared, hunger destroyed. Catholic priests were forbidden to exercise their spiritual functions, and were hanged or burned if they did so. One of the first acts of James I. was a jail delivery, from which he excluded "murderers and papists." Plague and famine raged over the unhappy land. According to an eye-witness, whole counties were cleared of their inhabitants. A man might travel twenty or thirty miles and not see a living creature, either man, beast, or bird: where survivors were found, they were either old men and women, or children. "I have seen these miserable creatures," says Colonel

Lawrence, "plucking stinking carrion out of a ditch, black and rotten, and been credibly informed that they digged corpses out of the grave to eat." By twenty-four acts,' says Mr M'Lennan, 'passed between the seventh year of his (William III.) reign and the 29th of George II. the penal code (i.e. against the Catholics) reached the fulness of its hideousness. The papist was withdrawn from the charge and education of his family; he could educate his children neither at home nor abroad. Popish schools were prohibited, and special disabilities attached to papists bred abroad. A premium was set on the breach of filial duty and family affections. . . . The exercise of his religion was forbidden; its chapels were shut up; its priests banished and hanged if they returned home.' The breaking out of the American war extorted some concession to Ireland from the British government; and the French Revolution extorted further concession. In 1792, the Catholics were granted the right of education, admitted to the bar, and allowed to intermarry with Protestants. This, which may fairly be called the beginning of justice to Ireland, was followed by the political enfranchisement of the Catholic population in 1793, by the Union in 1800, and by the completion of Catholic emancipation in 1829; but all came too late to restore tranquillity to the distracted and unhappy country. In 1832 its condition was fearful. The Association that had carried Catholic emancipation was looking forward to repeal of the Union; and Catholic and Protestant fanaticism were alike in a blaze. The condition of the people was deplorable. The landlords were for the most part tyrants or absentees, or both, by means of 'middlemen' between them and the tenants. Most of the estates were in Chancery, and had been there for about half a century. There were the old difficulties regarding the land. The peasantry were sunk in destitution and squalor. There were ever new political combinations, such as 'Ribbonism,' forming among them, to secure their interests by outrage and disorder. There were the difficulties of tithe collection. There was O'Connell agitating; and there was the opposition agitation of the Orange Society, with its secret meetings and armed members. 'Agrarian crimes, faction fights,' says Mr M'Lennan, 'occasional insurrections, perpetual agitations in connection with land, politics, or religion, were the symptoms of the universal discontent and inquietude.' Happily, in our own day, we have seen the voluntary completion by England of those measures of justice to Ireland which in former times were only partly conceded to political necessity. That these measures should be at once fully successful, is, of course, not to be expected. The effect of centuries of oppression and misgovernment cannot be expected to disappear the instant that the cause is withdrawn—the sea, long vexed by tempest, continues to rage for some time after the winds have ceased. But there is every reason to hope that a new and a happier era has at length dawned on Ireland; and that the next generation may see her people prosperous and contented, as they are generous and brave.

No one, probably, had ever a keener appreciation of Irish character—its drollery, its wit and humour amid rags and disorder, its swagger under poverty and debt, its generosity, and its ferocity—than Thackeray. 'What a history,' he writes in his *Irish Sketch-book*, 'of poverty, and barbarity and crime, and even kindness, was that by which we passed! What a chapter might a philosopher write on them! Look yonder, at those two hundred ragged fellow-subjects of yours—they are kind, good, pious, brutal, starving. If the priest tells them, there is scarce any penance they will not perform; there is scarcely any pitch of misery which they have not been known to endure, nor any degree of generosity of which they are not capable; but if a man comes among these people, and can afford to take land over their heads, or if he invents a machine which can work more economically than their labour, they will shoot the man down without mercy, murder him, or put him to horrible tortures, and glory almost in what they do. . . . They are as fond of their mother and children as we are; their gratitude for small kindnesses shewn to them is extraordinary; they are Christians as we are; but interfere with their interests, and they will murder you without pity. It is not revenge so much which these poor fellows take, as a brutal justice of their own.' As descriptive of the disorderly habits of the lower classes of the Irish, take the following: 'But of all the wonderful things to be seen in Skibbereen, Dan's pantry is the most wonderful; every article within is a make-shift, and has been ingeniously perverted from its original destination. Here lie bread, blacking, fresh butter, tallow-candles, dirty knives—all in the same cigar-box with snuff, milk, cold bacon, brown sugar, broken tea-cups, and bits of soap. No pen can describe that establishment, no English imagination could have conceived it!' On the other hand, he continues: 'I have met more gentlemen here (*i.e.* in Ireland) than in any place I ever saw—gentlemen of high and low ranks; that is to say, men shrewd and delicate of perception, observant of society, entering into the feelings of others, and anxious to set them at ease or to gratify them; of course exaggerating their professions of kindness, and in so far insincere; but the very exaggeration seems to be a proof of a kindly nature, and I wish in England we were a little more complimentary.'

The following was the population of Ireland, according to the census returns at decennial periods, from 1821: (1821) 6,801,827; (1831) 7,767,401; (1841) 8,196,597; (1851) 6,574,278; (1861) 5,798,967; (1871) 5,412,377; (1881) 5,159,839. Between 1841 and 1851, the population decreased 19·79 per cent.; from 1851 to 1861, 11·79 per cent.; from 1861 to 1871, 6·83 per cent.; from 1871 to 1881, 4·7 per cent.

Emigration.—In the decennial period ending with 1881, 622,686 Irish-born persons emigrated from Ireland; and in the ten years from April 1, 1861, to March 31, 1871, 819,903 Irish-born persons emigrated from different ports in the United Kingdom. 'To emigration,' says the Census Report quoted by the above authority, 'may chiefly be attributed the decrease of the population during a period when the country was remarkably free from any outbreak of pestilence, scarcity of food, or of the other social calamities which have occasionally retarded the growth of population in this and other countries. It must also be remembered that some of the remote effects of the disastrous period of famine, pestilence, and panic, which commenced with the

potato blight of 1845-46, had extended over the first few years of the decade upon which it is now our province to report. Assuming that the increase of population by births over deaths was at the rate of ·92 per cent. per annum, as stated in former Census Reports emanating from this country, the population of Ireland would—had no disturbing cause intervened—have been about 6,297,275. It is therefore probable that the decrease of the population may be accounted for by the very great emigration, as stated above. It is here worthy of remark, that at the time of taking the census in 1851, there were no less than 250,611 paupers in the Irish workhouses, and 47,014 persons in hospital, of whom 4545 were not workhouse inmates—that in 1861 the numbers in workhouses, healthy and sick, were only 50,010; while there were but 48,989 persons in the Irish workhouses the day before the census was taken in 1871.'

The Act for the registration of Births and Deaths in Ireland (26 Vict. c. 11) came into operation of January 1, 1864. The number of marriages in 1870 afforded a ratio of 1 in 188, or ·532 of the population—1 in every 153 Protestants, and 1 in every 202 Roman Catholics. The marriages in 1871 give a ratio of 1 in 186, or ·537 per cent. of population—1 in 158 Protestants, and 1 in 196 Roman Catholics. The marriages in 1881 give a percentage of ·560 Protestants, and ·379 Roman Catholics.

NATIONAL INDUSTRY AND COMMERCE.

Agriculture.—For the following we are indebted mainly to Thom's *Irish Almanac.* 'Ireland,' says this authority, 'was almost exclusively a pasturing country until the middle of last century. That the soil of Ireland is, however, eminently fitted for tillage, appears from the evidence of every intelligent person qualified to give a sound opinion who has visited the country. . . . "In the elements of natural fertility," says Mr M'Combie, M.P. for Aberdeenshire, "only the richer parts of England, and very exceptional parts of Scotland, approach to it."

'Notwithstanding this great fertility of soil, political, social, and moral forces, the strength of which cannot be known until some time after they have ceased to be in action, have heretofore kept the land in a very imperfect state of cultivation. "Under the treatment the soil of Ireland receives, great part of the soil of Scotland would long ago have ceased to produce any crops at all—would have relapsed into sterility. It is only the natural richness of the soil of Ireland which has averted a like result. But rich as it is, and capable so far of recovering fertility, if only let out into grass, it stands to reason that the finer elements are in course of being gradually withdrawn from the soil. Skilful farmers remark that its meadows—beautiful as is their close carpet of green—do not fatten stock proportionately to their apparent richness. Nor is Irish milk equal to that drawn from the more highly manured, though less verdant fields of Scotland." Another competent observer from Scotland says: "The tillage lands of the south of Ireland, though not so rich as the pasture-lands in Tipperary, Limerick, and the Meaths, are also of great fertility. I join heartily in the eulogium pronounced by Arthur Young and other judges on the richness of the soils of Ireland, though they have been sadly deteriorated by bad farming, since that distinguished agriculturist wrote on them. The overcropping to which the small holdings have been subjected, amounting often to nine or ten crops of oats in succession, is enough to reduce to sterility any soil of ordinary fertility. The average rent of the tillage lands is about 15s. per statute acre. In Ulster the farming is better, and the rents are about 9s. higher than those paid for land of the same quality in the south."—(*Land Culture and Land Tenure in Ireland.* By Peter Maclagan, Esq. M.P.)

'Notwithstanding the bad cultivation of the smaller and other holdings held by tenants at will, it must not be supposed that there are not many exceptions and some improvements. "A journey of some thousand miles through the various counties of Ireland, has made it impossible for the writer to doubt that in the last thirty years there has been generally throughout the country a great development of all the elements of national prosperity—wealth has increased, and the condition of the labouring classes has materially improved."—(*Ireland in* 1839 *and* 1869. By H. S. Thompson, Esq. late President of the Royal Agricultural Society of England.) But this increase of prosperity is very much of foreign origin; *i.e.* it has arisen mainly from the attraction of remunerative employment in the United States of North America, Great Britain, and elsewhere, which has greatly diminished the number of the population, and by the largely increased value of stock, &c. caused by the unlimited demand in the markets of Great Britain, and facilities for reaching those markets.' There can be little doubt, however, that the legislation of recent years has already done, and will continue to do, material benefit to Ireland. The passing of the Landlord and Tenant Act of 1870, unquestionably marked an epoch in the history of Ireland. It may be too much to say that this Act has produced general content; but it has diminished dissatisfaction, and has opened the way to the ultimate solution of the whole questions involved in the term *tenant-right*, which denotes the various claims of right which tenants maintain against their landlords—such as the right of occupancy not subject to removal, and the right to occupy at a rent not subject to increase on the ground of improvements; it being said to be inequitable to make them pay rent for what they have themselves produced. In Ulster and in the north of Ireland generally, the equity of these claims had long been recognised and acted on. In the south of Ireland, on the other hand, tenant-right had never been conceded by the proprietors, while the right of occupancy not subject to removal had *de facto* been enjoyed by the tenants. The non-settlement of the question was long the subject of bitter controversy, and undoubtedly its evil condition was the root of much of the national misery. Owing to the old tenure of land, as tribal or clan property, the people of the south of Ireland never received into their minds the notion of 'contracting' with any one as the 'owner' of the land. They had the traditional feeling of being themselves the owners; and so much was this feeling a source of agrarian disturbance, that few Irish 'landed proprietors' ever ventured fully to exercise their rights of property; and nothing was more

common in the south than to find that the land had been in the occupancy of the same families from time immemorial, without lease or contract of any kind. The discontent in Ireland continued unabated till the imperial government interfered, and settled the question, in so far as practicable, by the passing of the Act of 1870 above referred to. The Land Act of 1881 was still more favourable to tenant-farmers. It established land courts throughout the country for fixing 'judicial' rents, to remain unaltered for fifteen years at a time; limited the possibility of evictions to the non-fulfilment of certain conditions; recognised the tenant's right to sell his tenancy; and made provision for advancing money to tenants wishing to buy their holdings.

In 1884 the number of separate holdings in Ireland was 565,254, being 2471 less than in the previous year. The following table shews the number of holdings, and the entire extent of land under each class of landholders, and the division of land, from the returns in 1872:

Classes.	Number of Holdings in each class.	Area.	Average extent of Holdings in each class.	Proportion per cent. of Holdings in each class.	Total Extent under Crops.	Grass.	Fallow, or uncropped Arable Land.	Woods and Plantations.	Bog, Waste Water, Roads and Fens.
		Acres.	A. R. P.		Acres.	Acres.	Acres.	Acres.	Acres.
1	52,885	24,376	0 1 34	8·8	21,163	1,435	36	200	1,542
2	73,574	263,378	3 2 13	12·4	162,969	76,452	208	2,673	21,076
3	170,335	1,785,750	10 1 37	28·6	828,941	782,604	815	10,261	163,129
4	138,734	3,094,457	22 1 9	23·3	1,231,116	1,511,069	2,164	16,439	333,669
5	72,889	2,940,971	40 1 16	12·2	1,020,186	1,521,639	2,844	20,798	375,504
6	55,216	4,055,150	73 1 30	9·3	1,146,439	2,252,502	5,179	46,322	604,708
7	21,839	3,282,951	150 1 12	3·7	670,525	1,893,506	3,901	67,685	647,334
8	8,159	2,780,820	340 3 12	1·4	339,019	1,487,631	1,956	93,396	858,818
9	1,582	2,070,084	1308 2 4	0·3	66,955	719,277	1,301	67,929	1,214,622
Total of 1872.	595,213	20,297,937			5,487,313	10,246,115	18,404	325,703	4,220,402
" 1871.	592,590	20,298,125			5,621,437	10,071,285	20,620	324,990	4,259,793
" 1870.	591,619	20,325,693			5,641,140	9,966,855	18,656	320,853	4,378,189
" 1869.	593,282	20,319,924	....	100	5,577,780	10,041,390	20,684	320,461	4,359,609
" 1868.	594,341	20,319,924			5,547,971	9,993,393	22,110	322,258	4,428,192
" 1867.	597,118	20,319,924			5,459,702	10,060,764	22,790	323,420	4,453,248

TOTAL VALUE OF PRINCIPAL CROPS.

1863	£29,474,583
1864	31,415,922
1865	29,687,703
1870	34,961,042
1883	31,127,837
1884	28,544,794

Live-stock.—Number and value of horses, cattle, sheep, and pigs in Ireland in 1872: 532,146 horses, value, £4,831,368; 4,142,400 cattle, £35,623,882; 4,482,053 sheep, £8,292,571; 1,042,244 pigs, £2,990,614. Total value of cattle, sheep, and pigs in 1885, £63,512,277.

Fisheries.—In her fisheries, Ireland possesses a mine of almost inexhaustible wealth, but, strange to say, it is almost wholly neglected.

NUMBER OF VESSELS AND BOATS, MEN AND BOYS, EMPLOYED IN THE DEEP-SEA AND COAST FISHING FROM 1880 TO 1884.

Year.	Vessels and Boats.	Men and Boys.	Value of Fish exported to England.			
			Salmon.	Herrings.	Mackerel.	Cod.
1880	6459	24,548	£473,596	£246,038	£85,525	£171,303
1881	6458	24,528	511,237	230,466	87,632	163,095
1882	6089	22,391	308,306	140,114	64,353	113,374
1883	5866	21,814	521,443	170,376	93,253	140,883
1884	5759	21,696	440,578	153,266	87,538	138,711

Under the Act 26 and 27 Vict. c. 114 (1863), special Commissioners for Irish Salmon-fisheries were appointed. In their first Report, they say: 'We do not think we exaggerate the value of the salmon-fisheries when we estimate them as being worth over £400,000 a year.' For the development of this branch of industry, they earnestly recommend government loans to the fishermen for the repair and purchase of boats and gear, without which assistance, they say, 'fishing industry will nearly expire on half the coast.'

The herring-fishery is prosecuted chiefly on the east coast of Ireland, by a fleet of about 2000 vessels, from Cornwall, Scotland, and the Irish coast. The success of the fishings fluctuates from year to year. Thus, in 1877, a value of over £350,000 was realised by the herring-fishery at 10 stations; in 1879, it was under £124,000; and in 1881, only £63,850. The total value of salmon, herrings, mackerel, and cod exported to England in 1884, amounted to £820,093. The oyster-fisheries are declining. Nearly everywhere there has been over-dredging; and lately an attempt has been made to stock the used-up beds with French oysters.

Manufactures.—Ireland is not, and never has been, a *manufacturing* country. Its unsettled, turbulent state, and the general dependence of the population on land, have hitherto formed insuperable obstacles to the formation of great manufacturing establishments in most parts of the country; whilst the want of coal, capital, and skilful

workmen, and the great ascendency of England and Scotland in all departments of manufacture, will, there is reason to think, hinder Ireland from ever attaining eminence in this department. Linen may be regarded as the staple manufacture, of which Belfast and the surrounding districts of Ulster are the chief seats.

The exports of linen yarns and manufactures from Ireland to Great Britain were, in 1864, £10,327,000 in value. The woollen manufacture was nearly extinguished at the revolution of 1688, but it revived some time afterwards. There seems to have been a decrease in the number of factories from 1839 to 1850, since which time the trade has revived, and many of the discontinued factories have been reoccupied. The total number of factories is 47, but in only two of these—in the counties of Cork and Dublin—is the number of hands employed over 100. The total number of persons employed in 1868 was 1374. The quantity of flax grown in Ireland, annually, on the average of the seven years ending 1864, was 30,985 tons. The number of acres sown in 1863 was 214,099; in 1872 the number had fallen to 121,864; in 1885 it was 108,149 acres. The position of Ireland as a manufacturing country will be seen from the following table, which shews the number of textile factories, and the persons employed in 1885.

	Factories.	Persons employed.
Cotton	7	1,248
Woollen	141	3,136
Worsted	4	202
Flax	166	61,749
Hemp	2	670
Jute	4	961
Hair	6	192
	330	68,158

Of the persons employed in these factories, 31 per cent. were males, and 69 per cent. females. A great source of employment for females in the north of Ireland is now the working of patterns on muslin with the needle. Belfast is the centre of this manufacture, which employs about 300,000 persons, chiefly females. About 40 firms are engaged in the trade, some being Irish houses, and others agents for Scotch firms. The gross value of the manufactured goods amounts to about £1,400,000.

Distillation.—In 1829, there were 80 distilleries in Ireland, and the number of gallons entered for home consumption in that year was 9,212,223 gallons, the duty being 2s. 10d. per gallon. In 1836, the number of gallons entered for home consumption had risen to 12,248,772, the number of distilleries being in that year 90, the duty 2s. 4d. With some oscillation, the tendency has been from this period to an annual decrease in the quantity of spirits consumed in Ireland. In 1842, the home consumption was 5,290,650, the duty being 2s. 8d. to 3s. 8d. In 1854, again, the figures rise to 8,440,734, the duty being 3s. 4d. to 4s.; but by 1864, again, they have fallen to 4,845,100, the duty being 10s.; in 1881, they are 5,184,953, the duty being 10s. per gallon. The force of these figures is, of course, to be considered in connection with population returns.

Trade and Shipping.—The exportation of the agricultural produce of the country has always been the principal branch of Irish commerce. Great Britain is by far the best and most extensive market for all kinds of the produce of Ireland. Much the greater part of the export trade is carried on by the cross Channel navigation, chiefly to Liverpool, Bristol, and Glasgow; the staple articles being black-cattle, sheep, swine, salted provisions, grain, flour, butter, eggs, and linen. The trade with the colonies and foreign countries is comparatively inconsiderable. The cessation of the collection of the duties on the cross Channel trade, which took place in 1825, has taken away the means of estimating the amounts of imports and exports to and from Great Britain since that period. The total 'Declared real value of British and Irish produce exported direct to foreign countries from Ireland,' from 1866 to 1883, was as follows: (1866) £194,204; (1867) £283,266; (1868) £350,766; (1870) £213,685; (1883) £863,877.

From Dublin, Belfast, and Cork, these values were as follows:

Years.	Dublin.	Belfast.	Cork.
	£	£	£
1866	27,835	18,382	110,703
1867	39,751	7,374	156,644
1868	50,844	7,056	160,202
1882	116,400	725,079	11,795
1883	77,827	777,787	8,263
1884	106,541	640,793	....

NUMBER AND TONNAGE OF VESSELS AT PORTS IN IRELAND ON 31ST DECEMBER 1871 AND 1881.

Sailing Vessels.								Steam Vessels.							
1871.				1881.				1871.				1881.			
50 tons and under.		Above 50 tons.		50 tons and under.		Above 50 tons.		50 tons and under.		Above 50 tons.		50 tons and under.		Above 50 tons.	
Ves.	Tons.	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.
651	19,919	923	148,555	620	19,322	746	141,448	60	1555	142	48,133	78	1770	175	59,062

Total Foreign Colonial and Coasting Trade.—Number and tonnage of sailing and steam vessels entered inwards and cleared outwards at ports of Ireland, in the coasting, colonial, and foreign trades (distinguishing British from foreign vessels), in the year 1881: Entered inwards—British, 31,129 vessels, 6,445,849 tons; Foreign, 632 vessels, 307,591 tons. Cleared outwards—British, 29,997 vessels, 6,319,155 tons; Foreign, 589 vessels, 295,350 tons.

TOTAL VALUE OF IMPORTS INTO IRELAND FROM FOREIGN COUNTRIES AND BRITISH POSSESSIONS ABROAD, AND EXPORTS FROM IRELAND TO FOREIGN COUNTRIES AND BRITISH POSSESSIONS ABROAD, 1868–1870.

Years.	Imports.			Exports.		
	Computed real Value into Ireland from Foreign Countries.	Merchandise from British Possessions.	Total.	Declared Value British and Irish Produce and Manufactures.	Computed real Value Foreign and Colonial Merchandise.	Total Exports.
	£	£	£	£	£	£
1868	7,804,178	615,417	8,419,595	350,766	9,098	359,864
1869	8,115,358	736,716	8,852,074	155,642	15,595	171,237
1870	7,901,899	823,312	8,725,211	213,685	24,767	238,452

GOVERNMENT—ADMINISTRATION.

For civil and other purposes, the island is divided into 4 provinces—Ulster, Leinster, Munster, and Connaught—which are subdivided into 32 counties, and these, again, into baronies, hundreds, and other minor sections. The following table shews the population of the counties and provinces of Ireland, according to the census of 1881 :

Leinster—	
Carlow	46,508
Dublin	418,152
Kildare	76,102
Kilkenny	99,064
King's	72,668
Longford	60,790
Louth	78,228
Meath	86,301
Queen's	72,598
Westmeath	71,513
Wexford	123,587
Wicklow	73,679
Total	1,279,190
Munster—	
Clare	141,210
Cork	492,810
Kerry	200,448
Limerick	177,203
Tipperary	199,004
Waterford	113,235
Total	1,323,910
Ulster—	
Antrim	423,171
Armagh	162,823
Cavan	129,008
Donegal	205,443
Down	269,927
Fermanagh	84,633
Londonderry	164,714
Monaghan	102,590
Tyrone	197,233
Total	1,739,542
Connaught—	
Galway	241,662
Leitrim	89,795
Mayo	243,030
Roscommon	131,755
Sligo	110,955
Total	817,197
Leinster	1,279,190
Munster	1,323,910
Ulster	1,739,542
Connaught	817,197
Total	5,159,839

The government of the country, since the Union in 1801, has been incorporated with that of Great Britain. It is represented in the imperial parliament by 28 members of the House of Lords, and 103 of the House of Commons. The executive government is invested in a Lord-lieutenant, assisted by a Privy-council and chief-secretary. The mass of the Irish people have long been bitterly discontented with the administration of the country, and through the majority of their representatives in parliament have demanded 'Home Rule'—local autonomy under a national Irish parliament, meeting in Dublin. In 1885, Mr Gladstone's government intimated their readiness to grant this concession, and introduced a bill giving to Ireland Home Rule in a very wide sense; followed by a bill buying up the rights of Irish landlords in the soil.

Religion.—The dominant religion in Ireland is the Roman Catholic. Up to 1869, the Established Church was a branch of the Church of England. But by act of parliament, passed in that year (32 and 33 Vict. c. 42), the Episcopal Church was disestablished in Ireland. Immediately on the passing of the act, in accordance with its 11th and 12th clauses, the Irish Church Temporalities Commissioners took over all the property which the late Ecclesiastical Commissioners had under their control, and issued forms of claim to be filled up by every clergyman, or other person entitled to receive a continuance of income, or compensation, under the terms of the act. The 19th section of the act provides for the reorganisation of the church; in accordance with which, a clerical synod met in Dublin, on 14th September 1869, to consult on the representation of the clergy in a future general convention of bishops, clergy, and laity. This 'National Synod of the Church of Ireland,' consisting of the provincial synods of Armagh and Tuam, and of Dublin and Cashel, met in St Patrick's Cathedral, Dublin, and closed its session on 16th September. It was resolved 'that this synod deems it its duty to place upon record a declaration that it is now called upon not to originate a constitution for a new communion, but to repair a sudden breach in one of the most ancient churches of Christendom.' A meeting of laymen was subsequently held in Dublin, with a view to passing regulations as to the representation of the laity in the general synod of the church. It was resolved that, in the opinion of the meeting, 'the clerical and lay representatives should sit and discuss all questions together in the general synod, with the right to vote by orders, if demanded by three of either order present at the meeting.' A resolution was also carried, affirming the expediency of fixing the number of lay representatives in the general synod in the proportion of two to one of the clergy. On the second day of the meeting, it was resolved 'that the dioceses should be divided into three groups, and allotted a representation as follows: Down, 71; Armagh, 72; Dublin, 59; Derry, 36; Kilmore, 34; Cork, 38; Ossory, 36; Tuam, 19; Meath, 23; Killaloe, 19; Limerick, 19; Cashel, 20—total, 446.' It was also resolved that 'no test be required of the electors in any parish, district, or congregation, except the declaration that they are residents in the parish, or members of the congregation, and members of the Church of Ireland, and twenty-one years of age.' The general convention assembled to legislate on church matters on 15th February 1870. It was resolved that 'no question shall be decided except by a majority of the bishops present, and a majority of the clerical and lay representatives present, whether voting conjointly or separately, provided always, that when any motion has been

carried by a majority of each of the other orders present, and voting, it shall pass, unless seven at least of the existing bishops be present, and shall concur in a dissentient vote.' The mode of election of bishops and ministers was decided by this meeting of general convention. The accounts of the Church Temporalities Commissioners for the year 1871, and for the period from 26th July 1869 (the commencement of the commission) to 31st December 1871, shew that the expenditure has exceeded the available funds to so great an extent, that at the close of the account, the advances made by the Commissioners for the Reduction of the National Debt amount to £3,000,000; and a further sum of £1,543,454, 1s. stands as commutation money on credit to the representative church body; leaving, after deduction of money assets, a net liability, at 31st December 1871, of £3,938,462, 4s. 6d. standing as a charge against the proceeds to be hereafter derived from the sale of church property. The amount of commutation money paid (including bonus where payable) in respect of claims investigated up to February 1873, is as follows:

Archbishops, bishops, and incumbents	£5,561,877 16 1
Curates	1,724,710 7 5
Nonconformist ministers	613,821 14 5
Diocesan schoolmasters, clerks, sextons, &c.	359,264 1 10
Total	£8,259,673 19 9

The Roman Catholic hierarchy consists of four archbishops and twenty-four bishops. The clergy are supported solely by the voluntary contributions of their congregations, paid mostly by fees for marriages, baptisms, and other religious ceremonies. The bishops are nominated by the pope, the parochial clergy by the bishops. The number of priests in Ireland, in 1853, was 2291—of whom 1222 were educated at Maynooth College—in 1881, there were 3155. The curates of the parish priests form more than half of the whole clerical strength, and scattered through the cities and towns are 70 or 80 communities of priests of various religious orders and rules, called *Regulars*, who minister in their own churches, and, though without parochial jurisdiction, greatly aid the secular clergy. All the places of public worship are built from funds collected or bequeathed for the purpose. There are numerous monasteries and convents; the latter are supported partly by sums, usually from £300 to £500, paid by those who take vows in them, and partly by fees paid for the education of children. Various communities of monks and nuns devote themselves to the gratuitous education of the poor. Candidates for clerical ordination, formerly obliged to go to continental colleges for education, are now educated at home. The principal college is the Royal College of St Patrick, Maynooth. Formerly, it had a grant of £26,000 a year from the consolidated fund; this has been commuted for a payment of £372,331.

The Presbyterians are mostly in Ulster. The General Assembly is the supreme Presbyterian ecclesiastical court in Ireland, as in Scotland. The *Remonstrant Synod of Ulster* was formed in May 1830, by the separation of seventeen ministers, with their congregations, from the general synod of Ulster. The *Reformed Presbyterian Synod of Ireland* is unconnected with the General Assembly.

Education.—The university of Dublin is a college incorporated by charter or letters-patent 34 Eliz. (1591). The corporation at present consists of a provost, 7 senior fellows, 26 junior fellows, and 70 scholars. The course of general instruction extends over four years, the principal studies of each year being successively mathematics, logic, natural history, philosophy, astronomy, and ethics. A medical school has been long attached to the university, to which has been lately added a school of civil engineering; and degrees and licences in surgery and civil engineering are granted by the university senate, on the completion of the prescribed courses. The college has a fine library of about 160,000 volumes and 1700 MSS. The number of printed volumes is increased by about 1500 annually, partly purchased, and partly obtained under the Copyright Act.—*Queen's Colleges.* Under the Act for establishing new colleges in Ireland, charters were, in 1849, granted to three colleges, called Queen's College, Belfast; Queen's College, Cork; and Queen's College, Galway; and statutes issued for their government. New charters, amending the former ones, passed the Great Seal in 1863. Candidates for the degree of Bachelor in Arts attend the Queen's Colleges for three sessions, and undergo two examinations in the Queen's University. They have also to pass the college entrance examination, and college examinations held at the close of each session.—*Queen's University.* In 1850, the Queen founded a university, to be called 'The Queen's University in Ireland,' to which these three colleges were subordinate. The Queen's University was superseded in 1880 by a new foundation, the *Royal University.*—*The Royal College of Science for Ireland* was established under the authority of the Science and Art Department, London, in August 1867, in place of the Museum of Irish Industry, Stephen's Green, which then ceased to exist.—*Maynooth College* was founded in 1795 by an Act of the Irish parliament. The ordinary course of study extends over eight years. After its completion, students are considered fit for the duties of the sacred ministry; and those who have taken the highest honours during their course are selected for the Dunboyne establishment—founded by the late Lord Dunboyne, and of the value of £460 a year—on which they continue their studies for three additional years. The number of students that completed their education at Maynooth College from 1845 to 1861 inclusive, was 875. The Dunboyne establishment, temporarily closed in 1872, was soon re-opened. —*Roman Catholic University.* The synod of the Roman Catholic prelates which was held at Thurles in 1850, resolved to establish a university, and appointed a committee to make arrangements. The synodal meeting held in Dublin in May 1854, formally established the university. The schools were opened on November 3, 1854. The university has no endowment or settled property, and depends wholly for its maintenance on voluntary contribution. Collections are made annually on the 3d Sunday of November. The receipts up to December 1, 1881, were £250,000. In accordance with a resolution of the Roman Catholic prelates, at their meeting in October 1873, a considerable number of Roman Catholic colleges throughout Ireland have been affiliated to the university, and their students admitted to certain of its privileges.

—*General Assembly's Theological College*, Belfast. The majority of Irish Presbyterian ministers are educated in this institution. Previous to the passing of the Irish Church Act in 1869, six professors were maintained by a parliamentary grant of £1750 a year, leaving £250 for expenses of management. On the passing of the act, government granted £43,976 as compensation for withdrawal of the annuity; and the interest of this sum, with the interest of £5000 raised by subscription, with the fees of the students, constitute the annual income of the college.—*The Magee College, Londonderry*, was opened on October 10, 1865. It was endowed in 1846 with £20,000, by Mrs Magee, widow of the late Rev. William Magee, Presbyterian minister of Lurgan. The Irish Society have granted an annual endowment of £250 to the chair of Natural Philosophy and Mathematics, and £250 for five years towards the general expenses of the college. The Rev. Richard Dill, who died in 1858, bequeathed £5000 to establish two Professorships, and £1000 for two Bursaries; also his books and the rest of his property, worth about £5000 more. No religious test is prescribed to students either on entering or on graduating; but the professors are required by the General Assembly to sign the Westminster Confession of Faith.—*The College of St Columba*, near Dublin, was founded for the purpose of establishing, under the management of a collegiate body, a system of instruction preparatory for the university.

National Schools.—In 1831, grants of public money were made for the education of the poor, and intrusted, under the Lord-lieutenant, to 'the Commissioners of National Education.' In 1845, the Commissioners were incorporated, under the title of 'The Commissioners of National Education in Ireland,' and adequate powers conferred on them. The principles on which they act are: that the schools shall be open to Christians of all sects; that no pupil shall be required to attend any religious exercise, or to receive any religious instruction, which his parents or guardians do not approve of; and that sufficient opportunity shall be given to the pupils of each religious persuasion to receive separately, at appointed times, such religious instruction as their parents or guardians think proper. The following table exhibits the growth of the system since 1833:

Years.	No. of Schools.	No. of Pupils.	Parliamentary Grant.
1833.....	789	107,042	£25,000
1843.....	2912	355,320	50,000
1853.....	5023	550,631	182,073
1863.....	6163	840,569	306,016
1873.....	7160	974,696	542,222
1881.....	7648	1,066,259	729,868

Number of pupils of each religious denomination on the rolls of the National Schools on 31st December 1881: Protestant Episcopal Church of Ireland, 101,401 (9·5 per cent.); Roman Catholic 841,184 (78·9 per cent.); Presbyterian, 113,242 (10·6 per cent.); other persuasions, 10,432 (1 per cent.).

ANTIQUITIES, ETC.

Tumuli or cairns, dolmens and cromlechs, are common to Ireland, with the neighbouring island and other parts of the world (see the No. on ARCHÆOLOGY). One of the most remarkable 'chambered' cairns known is that at New Grange, on the banks of the Boyne, near Drogheda, in Ireland. It is 400 paces in circumference, and about 80 feet high, and is supposed to contain 180,000 tons of stones. In 1699, it was described by Edward Llhwyd, the Welsh antiquary, as 'a mount or barrow, of very considerable height, encompassed with vast stones, pitched on end, round the bottom of it, and having another, lesser, standing on the top.' This last pillar has disappeared; of the outer ring of pillars, ten still remain, placed at about ten yards one from another. 'The cairn,' says Mr Wakeman in his *Archæologia Hibernica* (Dublin, 1848), 'in its present ruinous condition, presents the appearance of a grassy hill partially wooded; but, upon examination, the coating of earth is found to be altogether superficial, and in several places the stones, of which the hill is entirely composed, are laid bare. The opening [which is nearly square, and lined by large flags] was accidentally discovered about the year 1699. The gallery, of which it is the external entrance, communicates with a [dome-roofed] chamber or cave nearly in the centre of the mound. This gallery, which measures in length about 50 feet, is, at its entrance, 4 feet high; in breadth about 3 feet. Towards the interior, its size gradually increases; and its height, where it forms the chamber, is 18 feet. The chamber is cruciform, the head and arms of the cross being formed by three recesses—each containing a basin of granite. The sides of these recesses are composed of immense blocks of stone, several of which bear a great variety of carving, supposed by some to be symbolical. The majority of these carvings must have been executed before the stones had been placed in their present positions. The length of the passage and chamber from north to south is 75 feet, and the breadth of the chamber from east to west 20 feet. Of the urns or basins in the recesses, that to the east is the most remarkable. It is formed of a block of granite, and appears to have been set upon, or rather, within, another of somewhat larger dimensions.' The Irish antiquaries believe that the chambered cairn of New Grange—'the Cave of Achadh Aldai,' as it was called, from Aldai, the ancestor of the Tuatha De Danaan kings—was opened and rifled by the Norsemen in 862. About a mile from it, on either side, are other two cairns of nearly equal size, named Knowth and Dowth. The latter was opened in 1847, and found to contain a gallery, a cruciform chamber, a basin or sarcophagus, and carved stones, all of the same type as those of New Grange.

Amongst the earliest and peculiar antiquities of Ireland, are the low *Stone-roofed Buildings*, with high wedge-shaped roofs: of these, a few still exist at Kells, Kildare, Ardmore, and Killaloe. The most remarkable relics of the olden times of Ireland are the lofty *Round Towers*, of which, perfect and imperfect, 118 have been enumerated in various parts of the kingdom. They are built with a wonderful uniformity of plan. They are all circular, of small diameter, and great altitude. Of the excellence of the masonry, a proof was given by the Tower of Mahera, which, in consequence of having been undermined, was blown down, and lay, at length and entire upon the ground, like a huge gun, without breaking to pieces, so

wonderfully hard and binding was the cement with which it had been constructed. Various theories have been offered as to the purpose for which these mysterious buildings were erected; the only clear point seems to be, that they are religious edifices erected during the earlier centuries of Christianity in the island. They vary in height from 35 to 120 feet; the internal diameter from 10 to 16 feet, and the outer circumference from 46 to 56 feet. Their tapering shape forms one of the most marked characteristics.

Ecclesiastical Antiquities.—Under this head rank those buildings which may be considered as the most ancient, after the pagan remains, and which bear a peculiar character, differing from that of any extant elsewhere. Of these but few are now in existence. The stone-roofed church of St Doulagh's, near Dublin, belongs to the earliest date; its plan and style are equally uncommon. The latter seems to have been a rude approach to the oldest Norman; it is low, and of great strength; the church, divided by a low-browed arch, seems to have had a small choir and a somewhat larger nave. There are also, strangely disposed, at various heights, small chambers, apparently for the residence of the clergy. A part of the building is used as the parish church; and the old tower has borne the addition of a belfry, so excellent was the mason-work. The beautiful and curious ruin at Cashel, called *Cormac's Chapel*, is Norman in character, and was probably the cathedral of that diocese previous to the English invasion. It is considered to have been built in the tenth century by Cormac, who was both king and archbishop. He died about 990 A.D. It is to be observed that both here and at St Doulagh's are crypts placed *over* the churches—a peculiarity known in Ireland only; the crypts in all other countries being underneath. Ireland cannot boast of any ecclesiastical buildings of great richness or beauty; but there are some of respectable appearance. The two cathedrals of the capital, St Patrick's (recently restored by private munificence) and Christ-Church (presently being restored), are at least elegant in the interior. The large cathedral of Galway, and that of Limerick, are both handsome buildings, as is the cathedral of Kilkenny. These are all in good order, and in daily use. There are numberless ruins of monasteries, abbeys, knights' preceptories, and churches.

Military Antiquities.—The traveller in Ireland must be struck with the vast number of small castles which stud the whole country. They chiefly bear date about the reign of Elizabeth, by whose orders they were raised, as strongholds to overawe the wild Irish. They are usually high and square, with towers at each corner. Besides these fortalices, there are ruins of very large castles, so customarily attributed to King John as to shew that they were built in the early times; of these, the extensive ruin at Trim, in the county of Meath, affords a fair example, as being one of the largest, and often formerly the residence of the viceroy or chief-governor. Parliaments were held within its walls, and money minted there, and sent into circulation. A few of the ancient castles belonging to the old nobility still continue to be inhabited, as *Malahide*, belonging to Lord Talbot de Malahide; and *Howth*, the Earl of Howth's, both in the county of Dublin; *Shanes Castle*, the residence of Earl O'Neil; *Portumna Castle*, on the Shannon, that of Lord Clanricarde; and *Kilkenny Castle*, the seat of the Marquis of Ormond.

THE PROVINCES—LEINSTER.

This is the largest province of Ireland, and contains the twelve counties of *Louth*, *Meath*, *Dublin*, *Wicklow*, *Wexford*, *Carlow*, *Kilkenny*, *Kildare*, *Queen's County*, *King's County*, *Westmeath*, and *Longford*, the whole forming a large tract of country on the east side of the island, and having Dublin at a central point on the coast. The scenery of Leinster is much varied. The county most remarkable for picturesque beauty is that of Wicklow, a short way south of Dublin; the hills, glens, and valleys are here rich in natural wood, and, bounded by an extensive prospect of the ocean, can hardly be exceeded in beauty. The principal points of attraction for tourists are Lough Bray; a woody ravine called the Dargle; and the Vale of Avoca, which is one continuous piece of silvan pleasure-ground. Wexford, still farther south, may also, to a considerable extent, be described as a picturesque and fertile county; and though the county of Meath is for the most part flat and tame, except along the banks of the Boyne and Blackwater, it can boast there of some spots of redeeming beauty; and in a large portion of the county, the quantity of wood and the rich hedgerows give an English character to the landscape. Westmeath is remarkable for expansive lakes, and for the dry gravelly hills which give variety to its surface. The Queen's County, though a good deal disfigured by bog, yet boasts, at Abbeleix and Dunmore, of a great stretch of magnificent natural oak-wood. The remaining part of Leinster cannot be considered interesting or peculiar in its general features.

Leinster may be considered as much superior to the other provinces with respect to agriculture; and some parts of Carlow, Kildare, and Wexford, are cultivated in a manner approaching in skill to that of the agricultural districts of England and Scotland.

The counties of Wicklow and Wexford contain an industrious and thriving population; and because industrious, the people are able to pay, from soils not superior to those of other districts, rents which would be intolerable in other parts of Ireland. The Wicklow peasantry are reckoned the finest in the world, and are proverbial for their handsome features and fine Roman profiles, and still more so as being a respectful, quiet, and well-conducted people. The county of Meath is remarkably fertile. Leinster may altogether be pronounced a prosperous part of the country.

Chief Towns.

The chief towns in Leinster are *Dublin*, *Kilkenny*, *Drogheda*, *Wexford*, *Maryborough*, *Mullingar*, *Carlow*, *Birr* or *Parsonstown*, and *Trim*.

Dublin, the principal town in Leinster, and the capital of Ireland, is situated at the margin of a beautiful bay, on a generally flat piece of country, through which flows the river Liffey, and is therefore conveniently placed for commerce and the accommodation of a large population. In external

aspect, it is essentially an English town, being built of brick in a neat and regular manner, but abounding in a class of elegant public structures of stone, which resemble the more substantial embellishments of Paris and other continental cities. The river, flowing from west to east, divides the city into two nearly equal portions, and is a striking feature in the general plan. The aristocratic parts of Dublin are the south-east and the north-east, containing many beautiful squares, streets, and terraces. The centre and north-west are the commercial quarters of the town. The south-west division, part of which is called the 'Liberties'—once the seat of the silk-trade—is the most foul and degraded quarter; there the streets are narrow, crooked, and irregular. The city is surrounded by a 'Circular Road,' nearly nine miles long, forming a favourite walk and drive of the inhabitants. In the newer parts of Dublin the streets run at right angles to one another, and are remarkable for their breadth and for the uniformity of their architecture, which is, however, not monotonous. The most imposing one is Sackville Street. It is 120 feet broad, and nearly 700 yards long. At its north end stands the Rotunda, with Rutland Square; in its centre the beautiful Ionic portico of the General Post-office and Nelson's Monument, upwards of 130 feet high; on the south, it is terminated by Carlisle Bridge, and a wedge-like block of handsome houses formed by the converging sides of Westmoreland and D'Olier Streets. The squares of Dublin are numerous and well kept, and especially spacious. Stephen's Green, the largest, is about 20 acres in area, and about a mile in circuit. The environs of Dublin are especially beautiful. Rathmines, a southern suburb, has become a large town, and is the favourite residence of the wealthier part of the community. Glasnevin, on the north, was the favourite residence of Addison, Steele, Parnell, Swift, Sheridan, and many other celebrated men. In its cemetery are buried Curran, O'Connell, and Tom Steele. The Phœnix Park is a magnificent area of nearly 2000 acres, in some parts level, in others with broken ground, with many trees and much brushwood, which shelter immense herds of deer. It affords ample scope for military reviews, and is much used for recreation-ground by all classes. Dublin, as a whole, with its magnificent bay, splendid park, massive public buildings, wide streets, spacious and well-kept squares, clean and elegant quays, and beautiful environs, is one of the handsomest and most pleasing capitals of Europe. The residence of the Lord-lieutenant brings to the city many of the Irish aristocracy and county families; thus preserving to the town the character of a capital. The population was, in 1871, 267,717; in 1881, 249,602 (parliamentary, 273,282). The university of Dublin was founded in 1591–92. Its position is that of a college with university powers. Its income was very limited and precarious, till James I. endowed it with certain estates in the province of Ulster, and with a yearly pension of £388, 15s. from the public purse. Scholarships, tenable for five years, are open to competition; some being given for classical, others for scientific, proficiency. The various emoluments of a scholar, arising from salary, remission of fees, rooms, commons, &c. amount to about £50 a year. There are also minor scholarships for the encouragement of the study of divinity and of the Irish language; others are connected with the royal and endowed schools. In 1859, fourteen studentships were founded, worth £100 a year each, tenable for seven years, to encourage graduates in the pursuit of some special study, on which they may afterwards be called to teach, should they become fellows and lecturers. Two are given every year, and are open to persons of all religious denominations. The provost and senior fellows are the electors, There are four grades of students. 1. Noblemen, sons of noblemen, and baronets, who have certain special privileges; the first two being allowed the degree of B.A. *per specialem gratiam.* 2. Fellow-commoners, who obtain degree with one examination less than pensioners, and who dine at the fellows' table. 3. Pensioners, who form the great body of the students. 4. Sizars, who have rooms and commons free. The sizars are limited to thirty. They are elected by competitive examination, and hold their sizarship, worth about £37 a year, for four years. Each rank has a dress peculiar to itself. For entrance and first half-year, the fees are — noblemen, £60; fellow-commoner, £30; pensioner, £15; sizar, £5, 1s. 3d. Other half-years, £33, 12s.; £16, 16s.; and £8, 8s.—the sizars being exempt. This does not include rooms and commons. The university of Dublin is well equipped for educational purposes. The teaching staff is numerous; the tutorial and professional elements being more largely combined in it than in any other British university. The names of Swift and Goldsmith, Sheridan, Curran, and Burke, with a host of others famed in literature and politics, shed a lustre on the university, of Dublin.

Kilkenny, the capital of the county of the same name—and forming, with a rural district of 26 square miles, a county of a city—situated on the river Nore, was formerly a town of great consequence, as its ancient castle, the ruins of its embattled walls, and churches, testify. At one time, it carried on a considerable trade in the manufacture of woollen cloths and blankets; but these branches have in a great degree fallen off, and the business is now confined to the retail of necessaries for its inhabitants, and the sale of the agricultural produce of the district. The city contains several good streets, which are respectably inhabited, both by private families and tradesmen; but the suburbs are miserable. The most conspicuous ornament of the city is the fine baronial castle of the Marquis of Ormond, full of historical associations, rising boldly over the Nore. The Cathedral of St Canice, built in 1202, is not excelled by any of the ancient ecclesiastical buildings in the kingdom, except St Patrick's and Christ-Church in Dublin. The town possesses a number of respectable schools, and various asylums and other beneficiary institutions. Near the town, there is a marble quarry of considerable local importance. The population in 1871 was 15,609, and in 1881, 15,278.

MUNSTER.

Munster contains six counties—*Clare*, *Cork*, *Kerry*, *Limerick*, *Tipperary*, and *Waterford*—and may be considered as that part of Ireland in which the national character and the national habits of all kinds are maintained in their greatest purity. The

province contains many tracts of beautiful scenery, and one in particular which is allowed to be unequalled in the kingdom—the celebrated lake-district at Killarney.

The *lakes of Killarney* are in the mountainous county of Kerry. They are annually visited by travellers from all parts of the island, as well as from neighbouring countries. There are three of them, of unequal size, and of varied, though generally mountainous scenery. Lough Lane, or the Lower Lake, by far the largest of the three, is skirted on one side by the level and well-cultivated country surrounding the pleasant village of Killarney; on the other side rise the Glena and Tomies Mountains. In this lake there are a number of wooded islands, one of which contains the ruins of an abbey, and another the remains of an ancient castle. On the shore, towards the east, is the beautiful ruin of Muckross Abbey. Divided from the Lower Lake by the fine wooded promontory of Muckross, but accessible by two channels of level water, is the Middle Lake, called also Turk Lake, from the name of the mountain at whose foot it reposes. These two sheets of water are beautified by their wooded islands; by irregular promontories and slopes, also generally wooded, which surround them; and by the mountains towering over them in sterile grandeur, down whose sides streams are flashing in foaming cascades. The Upper Lake, the third of the series, is three miles apart from the middle one, on a higher level, and totally embosomed amidst the hills. A stream descending from the one to the other can be passed in a boat; and at a particular place on the passage, it is common for tourists to have a bugle played, in order to enjoy the oft-repeating echoes which it awakes in the neighbouring hills. The Upper Lake, having the wooded heights of Dericunighy on one side, the round-headed Purple Mountains on the other, and at the head, the bare many-coloured ridge of Macgillicuddy Reeks, while the surface is broken by a variety of silvan islets, presents a landscape of enchanting loveliness. In connection with the lakes, there is a narrow rugged vale named Dunloe, which is usually taken in by a tourist in a survey of this fine scenery.

Amongst other beautiful places in Munster are —Glengarriff, a rugged and most picturesque vale near the head of Bantry Bay; the banks of the Blackwater, between Lismore and Youghal; the river Lee, below Cork, and the fine natural harbour (*the Cove of Cork*) in which it terminates; and the lofty iron-bound coasts of Clare, amidst which are some scenes of uncommon grandeur.

The soil in the southern parts of Limerick and Tipperary is perhaps not inferior in fertility to any portion of Europe. The Corkass lands of the former, and the Golden Vale of the latter, are celebrated for their extraordinary richness. These districts are chiefly appropriated to the feeding of black-cattle. Wheat is cultivated throughout the limestone districts of Tipperary, Clare, and Limerick, while dairy-farming is followed in the mountain districts of Kerry and Waterford. The potato-culture necessary to supply the wants of an over-dense population, is pursued throughout the whole province; and it is a deplorable fact, that a large portion of that population have no other food during the greater part of the year. Cork is the great butter-country of Munster.

Chief Towns.

The leading towns of Munster are *Cork*, *Limerick*, and *Waterford*. The name *Cork* is derived from the Irish word *Corcah*, which signifies a marsh. This city, the third in importance in Ireland, stands on the river Lee, 11 miles inland from the entrance of the river into Cork Harbour. The river divides at the city into several branches, and forms an island, on which part of the city stands. The Lee is navigable to about a mile above the city. The harbour commissioners have spent above £300,000 within the last 25 years on the improvement of the navigation. The extent of the quays is now above four miles, and ships of 600 tons reach them. The harbour, noted for its size and safety, is a basin of ten miles square, formed by the estuary of the Lee. It could contain the whole British navy, and has been the main source of the rise and progress of the city. The entrance is by a channel two miles by one, defended by batteries on Spike, Hawlbowline, and Rocky Islands, which are occupied by convict and ordnance depôts, artillery barracks, and a powder-magazine. On the shores of the estuary are the towns of Passage and Queenstown, formerly Cove of Cork. In 1880, 2880 vessels, with a total tonnage of 728,556, entered the port; and 2526, of 649,722, cleared. The exports are valued at several millions sterling yearly. The population in 1871 was 100,518 within the parliamentary limits, and in 1881, 104,496. Nine-tenths of them are Roman Catholics. Cork grew up round an abbey, founded in the year 600 by St Finbar. The Danes in the 9th century built the city walls. Dermod Maccarthy, king of Cork, surrendered it to Henry II. in 1172. Cromwell besieged and took it in 1649; and it was taken by Marlborough in 1688. In Cork, William Penn, the founder of Pennsylvania, became a Quaker, with several of the soldiers of the republican garrison.

Speaking of Cork, Thackeray says: 'I have said something in praise of the manners of the Cork ladies; with regard to the gentlemen, a stranger too must remark the extraordinary degree of literary taste and talent amongst them, and the wit and vivacity of their conversation. . . . The Cork citizens are the most book-loving men I ever met. The town has sent to England a number of literary men of reputation too, and is not a little proud of their fame. . . . I think, in walking the streets and looking at the ragged urchins crowding there, every Englishman must remark that the superiority of intelligence is here, and not with us. I never saw such a collection of bright-eyed, wild, clever, eager faces.'

Limerick, the chief city of the west of Ireland, is situated on the Shannon, near the place where that noble river expands into an estuary. It consists of the Old and New Town, respectively situated on the north and south sides of the river, which is crossed by five bridges, one of them—the Wellesley Bridge—a magnificent structure. The division of the New Town or Irish-town, called Newtown Perry, is considered one of the most elegant towns in Ireland; but the Old Town is confined, dirty, decayed, and inhabited by a very miserable population. Limerick has a handsome cathedral of some antiquity, situated in the old part of the city, five Episcopal churches, meeting-houses belonging to the Presbyterians,

Independents, and the Society of Friends, with five Roman Catholic chapels, three friaries, and one nunnery. There are the usual public civic buildings, some of them handsome edifices. The charitable institutions are numerous.

The manufacture of linen, which had nearly expired, has revived; that of gloves has long been important, as well as that of lace and of fish-hooks. Distilling, brewing, tanning, and ship-building are other branches of Limerick industry. The population in 1871 was 49,980; and in 1881 it was 48,670, of whom 45,000 were Roman Catholics.

Waterford, the chief town of the county bearing its name, and a large seaport, is situated on the Suir, several miles from its junction with the sea. Vessels of 800 tons can discharge at the quays, one of the finest ranges in the United Kingdom. The population in 1871 was 29,250; in 1881, 29,181, of whom 26,000 were Roman Catholics.

ULSTER.

The most northerly province is Ulster, containing the counties of *Antrim*, *Armagh*, *Cavan*, *Donegal*, *Down*, *Fermanagh*, *Derry*, *Monaghan*, and *Tyrone*. The province of Ulster is hilly. The scenery is in general picturesque, especially in the vicinity of its chief towns, Derry, Belfast, and Armagh. In the county of Antrim, the country from Glenarm to Bengore Head presents a succession of striking and romantic views. The most remarkable feature of this scenery is the peculiar conformation of the basaltic columns with which it abounds, and of which the arrangement is strikingly displayed in Fair Head and the *Giants' Causeway*. Bengore, one of the promontories of the Causeway, lies about seven miles west of the little town of Ballycastle: though generally described as a single headland, it is composed of many small capes and bays, each bearing its own proper name, and of these capes the most nearly perfect is *Pleaskin*. The summit of Pleaskin is covered with a thin grassy sod, which lies upon the rock, the surface of which is cracked and shivered. About ten or twelve feet from the top, the rock begins to assume a columnar character, and standing perpendicularly to the horizon, presents the appearance of a magnificent colonnade, supported on a foundation of rock nearly sixty feet in height. About eight miles from Pleaskin is *Fair Head*, the easternmost head of the Causeway, which presents a huge mass of columnar stones, of coarse texture, but many of them more than 200 feet in height. Some of these gigantic stones seem to have fallen from the top, and now present to the eye of the spectator the appearance of groups of artificial ruins. The part which may more properly be called the *Giants' Causeway* is a kind of quay projecting from the base of a steep promontory some hundred feet into the sea: it is composed of the heads of pillars of basalt, which are placed in close contact with each other, forming a sort of polygonal pavement, somewhat like the appearance of a solid honeycomb. The pillars are jointed, and their articulation curiously exact, the convex termination of one joint always fitting with precision into a concave socket in the next.

The soil of Ulster varies much. In the counties of Armagh, Down, Antrim, Derry, and Monaghan, it passes from a deep rich fertile clay to a dry sandy or gravelly loam; while in Donegal, Tyrone, Fermanagh, and Cavan, a great proportion of it is cold, wet, and spongy. Tillage is, in general, in an improved state throughout this province; and though the old Irish plough and the slide-car are still occasionally used in the remoter parts, many of the modern implements of husbandry have been introduced, especially in Down and Londonderry. The corn-crops most general are oats, bere, barley, and a small proportion of wheat. Barley is in Derry said to pay the summer's rent, and flax the winter's. Potatoes are largely planted by rich and poor, and gentlemen-farmers cultivate turnips and mangel-wurzel. Lime and peat are the most usual ingredients of the manure employed in the inland districts; while in the maritime counties, sea-sand, sea-weed of different sorts, and various kinds of shells pulverised, are used in addition. From the wetness of the soil, in some of the northern parts of Monaghan, the manure is usually carried to the fields in baskets called *bardocks*, which are slung over asses' backs, or the shoulders of the poor women.

Whatever were the manufactures of Ireland before the time of James I. they were swept away in the long series of wars between government and the local chieftains in the days of the Tudors; and the Scottish settlers in the north of Ireland, and those English whom Boyle, Earl of Cork, brought into Munster, may be considered the introducers of nearly all the manufactures that now exist in Ireland. During the reigns of Charles I. and II. much attention was paid to them; and the exertions of Lord Strafford, Sir William Temple, and the Duke of Ormond, caused the establishment of the linen trade to be attributed successively to each. The Duke of Ormond not only procured several acts for its encouragement, but sent Irishmen to Flanders to be instructed in the details of the flax manufacture; he also established a linen-factory both at Chapelziod, near Dublin, and at Carrick-on-Suir. In the reign of William III. the linen business rose to still greater importance, from the compact between the English and Irish merchants to discourage the woollen and promote the linen trade; for which purpose they contrived to get an act passed, levying additional duty on Irish woollen goods, from a jealous fear that the prosperity of the Irish woollen trade was inconsistent with the welfare of that of England. Another impetus was given to the linen trade by the emigration of the French manufacturers, after the Edict of Nantes, of whom a large number took refuge in Ireland; and Mr Louis Cromelin, a leading manufacturer, obtained a patent for improving and carrying it on, and his efforts were crowned with considerable success. In the ninth year of Queen Anne, a Board of linen and hempen manufactures was established, and linen allowed to be exported duty free. In the 8th of George I. a grant was given to build a linen hall, and another to encourage the growth of flax and hemp. Previous to 1778, bleached linen was sold in the fairs, the manufacturer being the bleacher; but when the manufacture extended, bleaching became a separate business. Considerable sums had been from time to time voted by parliament for its support; and during the eighteenth century, the trade continued to advance, until the check it received during the American war. On the re-establishment of peace, it revived, and though deprived of all artificial props, in the form of

bounties, is now a flourishing department of industry. Belfast is the great centre to which the linens, not only of Ulster, but also of the weaving districts in the west of Ireland, are sent for sale. The province of Ulster was also the seat of the first cotton-manufactory introduced into Ireland, and Belfast continues to take the lead in that branch of industry.

Speaking of Ulster generally, it may be said the lower classes have more self-respect, more industry, more desire for advancement in life, than in other parts of Ireland. In fact, they are a better educated, and therefore a more improving people. As may be expected, their taste for comfort operates in the economy of their houses and farms; and except in the mountainous districts above alluded to, where old habits still maintain their ground, the Ulster peasantry may be considered as a respectable class in society. The river-fisheries, though less productive than under better management they might have been, yet form in several parts of Ulster a lucrative property. The lakes and rivers abound with trout, pike, perch, eels, and char; and on the Bann, the Foyle, and the Ballyshannon in Donegal, are established very successful salmon-fisheries.

Chief Towns.

The chief towns in Ulster are *Belfast* and *Antrim*, in the county of Antrim; *Londonderry* or *Derry* and *Coleraine*, in the county of Londonderry; *Donegal*, in the county of the same name; *Strabane*, in Tyrone; *Armagh*, in Armagh; and *Newry*, *Lisburn*, and *Downpatrick*, in the counties of Antrim or Down. Without reference to counties, Belfast, Lisburn, Newry, Armagh, and some places of smaller note, may be said to form a cluster of towns chiefly devoted to the linen manufacture, and all occupied by a population who, for generations, have been noted for their industry and peaceful habits.

Belfast is the principal town and seaport in this province, and the second in importance in Ireland. It is advantageously situated on the west side of the Lagan, where that river swells into an estuary called Belfast Lough; distance from Dublin 85 miles. The ground on which the town stands is flat, while the beautiful and fertile environs on the western side of the vale are bounded by a picturesque range of mountains. The general aspect of Belfast is indicative of activity and prosperity; while there is less dirt and smoke than in most of the English commercial towns. Many of the streets, especially in the White Linen Hall quarter, are well built and spacious. The manufactories are mostly on the rising ground on the north and west of the town. Belfast is the chief seat of the trade and manufactures of Ireland, and is second to Dublin as an Irish port. The staple manufactures are linen and cotton. The linen manufacture dates from 1637. Cotton-spinning by machinery dates from 1777, and linen-spinning by machinery from 1806. The other chief branches of industry are linen and cotton weaving, bleaching, dyeing, calico-printing, and iron-founding. There are many flour and oil mills, chemical works, breweries, alabaster and barilla mills, and saw-mills; there are ship-building yards, and manufactories of rope and sail-cloth. The iron ship-building yard on Queen's Island employs upwards of 2000 men. The inland trade is carried on by the Lagan, by the Ulster Canal, and by three railways. The harbour is undergoing extensive improvements which, when completed, will make Belfast one of the first-class ports of the United Kingdom. Before the recent improvements, there were only two tidal docks; between 1866 and 1872, five new docks and a tidal basin, with about 25 acres of water-area, have been opened. On these, £370,000 have been expended, making the total assets of the commissioners £940,000. The imports of Belfast may be valued at £13,000,000 a year; the exports, at about £12,000,000. In 1880, 9583 vessels, of an aggregate tonnage of 1,804,930 tons, entered the port; and 9338 of 1,859,384 tons, cleared. The most important branch of commerce is the Channel trade. Population in 1821, 37,000; in 1851, 103,000; in 1871, 174,394; in 1881, 208,122; of whom about 70,000 were Roman Catholics. It returns four members to parliament. It was destroyed by Edward Bruce in the 14th century. It has been an important town from early in the 17th century. It received its charter in 1611. In the great civil war the inhabitants first joined the parliament, but afterwards became royalists.

Londonderry ranks next to Belfast, being a seaport of considerable importance. It is situated on the west bank of the Foyle, four miles above the point where that river spreads into Lough Foyle; and is distant 146 miles from Dublin. The original town, built by Sir Henry Dowera about 1603-4, was burned by Sir Cahir O'Dogherty in 1608; and the present city may be considered as deriving its origin from the London plantation, which was the immediate result of that catastrophe. The walls of Derry are described by Pynnar as 'excellently made and neatly wrought; the circuit thereof about 284 perches, and in every place the wall being 24 feet high and 6 in thickness;' and after a lapse of more than two centuries, these fortifications retain their original form and character. The north-west bastion was demolished in 1824, to make room for a market; and in 1826, the central western bastion was modified for the reception of the pillar erected in memory of the Rev. George Walker, governor of the city during the famous siege in 1689; but the guns used during the siege are still preserved in their original places. The total number of cannon remaining in the city and suburbs is about fifty; and in the court-house yard stands *Roaring Meg*, so called from the loudness of her report during the siege. This cannon is 4 feet 6 inches round at the thickest part, and 11 feet long, and is thus inscribed: 'FISHMONGERS, LONDON, 1642.'

The chief of the ecclesiastical buildings is the Cathedral, built by the corporation of London in 1633. This event is recorded in a tablet, which was originally placed over the door of the porch of the old cathedral, but is now over that of the belfry, bearing the following couplet:

> If stones could speak, then London's praise should sound,
> Who built this church and city from the ground.
> A.D. 1633.

There are a dozen other churches in the town, of which six belong to the Presbyterians. The salmon-fishery of Lough Foyle is very productive.

An extensive emigration goes on from this port. The population in 1881 was 29,162, of whom about 15,000 were Roman Catholics.

The city of *Armagh*, situated in an inland part of the country, is of considerable local importance. It is placed in the midst of a rich and beautiful district, the face of which is singularly varied by detached hills, some of which are more than 1000 feet in height. This character of country stretches from Lough Neagh in the north to the north-western part of the county of Meath in the south, and is well watered by lakes and streams, and, generally speaking, richly furnished with wood. The city stands on a hill, which is crowned by the old cathedral, around which the town has gradually arisen. The cathedral has been re-edified, at an expense exceeding £30,000, in the pointed Gothic style, for the most part in very good taste; the organ is a remarkably fine one, and the choir excellent. There is water-carriage from both Belfast and Newry by lake and canal, to within four miles of the city; and the Ulster Railway now connects it with Belfast. In 1841, the population was 10,245; in 1871, 8952; in 1881, 10,070, of whom 5000 were Roman Catholics. Near Armagh stands the Observatory, built and endowed by Primate Robinson, whose munificence greatly contributed to the advance of science and improvement of the whole diocese.

CONNAUGHT.

Connaught, the smallest of the four provinces, contains but five counties, those of *Leitrim*, *Roscommon*, *Mayo*, *Sligo*, and *Galway*. There are in this province large tracts of mountainous and sterile land, especially in the western parts of the counties of Galway and Mayo. The peninsula formed by the western part of the first of these counties is named *Connemara*, and is famed for its scenery, which somewhat resembles that of Argyllshire. Connemara contains a small, scattered, and primitive population, usually full of superstitious and old feudal feelings.

From the high grounds near Westport is obtained a view of Clew Bay, a magnificent sheet of almost inclosed water, full of islands, and bounded by lofty mountains; among which the most conspicuous is Croagh Patrick, which is regarded with superstitious feelings by the peasantry, as the spot where their tutelary saint was accustomed to preach.

Amidst the great tracts of wild ground in Connaught, there are a few other spots of an unusually attractive character. The scenery round Lough Allen, out of which the Shannon flows, is extremely pretty, as is also that near Boyle, at the foot of the Curlew Mountains. At Lough Gill, near Sligo, a lake bearing a strong resemblance to the Upper Lake of Killarney, and the little Bay of Ardnaglass, into which falls the cataract of Ballysedare, are scenes of peculiar beauty. Much of the surface of Galway is flat, shewing, for twenty miles together, a succession of narrow limestone rocks, like parapet-walls of three feet high, placed in parallel lines to each other, at distances of from three to ten feet: the intermediate spaces, though apparently but a waste of rock and stone, supply the finest sheep-pasture in the kingdom.

The agricultural capabilities of the province are great compared with what has yet been made of them; but a considerable change in the proprietary and occupants is infusing a new spirit, and great improvement may be looked for. The culture of flax is on the increase.

There are few manufactures of any kind in the province; and the condition of the peasantry in general is that of poverty. Fishing affords occupation to a considerable number of the population. In some years, the sun-fish, or basking shark, are abundant off the shores of Galway, and much excellent oil is produced; but this fish is so capricious, that the fishery cannot be looked to with any certainty.

Chief Towns.

Galway, reckoned the capital of the west, is situated in a valley lying between the bay which bears its name and Lough Corrib. The town is of considerable antiquity, and consists of streets and lanes huddled together without any regard to comfort or convenience. The whole resembles a Spanish town, the result probably of its early intercourse with Spain; and a small open space near the quay retains the name of *Spanish Parade*. The ecclesiastical buildings are the parish church of St Nicholas, founded in 1320, Presbyterian and Methodist meeting-houses, and three Roman Catholic chapels. There are three monasteries and five nunneries. At the head of the educational institutions may be mentioned Queen's College, opened in 1849. In 1851, communication with Dublin was opened by railway.

The chief manufacture of Galway is flour. There are three foundries, an extensive paper-mill, and several breweries and distilleries in the town. Salmon and sea-fish are abundant. The Bay of Galway, protected by the Arran Isles from the swell of the Atlantic, offers great advantages for foreign trade. The harbour has been much improved; and there is a floating dock of five acres. The exports are agricultural produce, wool, and marble. In 1856, there were fourteen vessels belonging to the port, with a tonnage of 1129. The population, which in 1841 was 32,511, had diminished in 1851 to 20,686. In 1881, it was 19,170, of whom 18,000 were Roman Catholics.

Across the country in a northern direction, and also situated at the head of a bay bearing its name, stands *Sligo*, a town of a much smaller population than Galway, but more important as respects its commerce. There are several handsome public buildings; and the suburbs are beautiful and picturesque. The manufacture of linen is carried on; as also of flour, meal, whisky, and beer. The salmon-fishery is very productive. The vessels belonging to the port in 1856 were 35, with a tonnage of 4352. The population in 1841 was 14,318; in 1881, 10,670. Nine Irish boroughs send sixteen members to parliament.

ASIA.

ASIA—the most extensive, the most diversified, and, so far as the early history of mankind is concerned, the most interesting of the great divisions of the globe—is situated between lat. 1° 28′ and 78° north, and long. 26° and 190° east. It thus occupies the greater portion of the Eastern Hemisphere, and is bounded on the north by the Arctic Ocean; east, by the Pacific; south, by the Indian Ocean; and west, by Africa and Europe—being separated from the former by the Red Sea and the Isthmus of Suez; and from the latter, by the Mediterranean, Black Sea, Caucasus chain, Caspian Sea, and the Ural Mountains. The region thus inclosed lies compactly together, the only irregularities in its bounding outline being that succession of peninsular projections and intervening gulfs which give character to its eastern and southern sea-board. Its greatest length, along the 40th parallel, is 5500 miles; the greatest breadth, from Cape Romania, in the Malayan Peninsula, to North-east Cape, along the 104th meridian, 5300 miles; its area is estimated at upwards of 16,000,000 square miles, or above four times that of Europe.

SUPERFICIAL FEATURES, ETC.

The most striking feature in the surface of Asia is the great table-land of Tibet, which rises between India and Mongolia, like a mountain with a flattened top, spreading out over a space equal to two or three European countries, Tibet has an elevation of 15,000 feet—that of the summit of Mont Blanc—and it is the most extensive, and in every way the most remarkable of the table-lands which exist on the surface of the globe. On the south, its upturned edge forms the Himalaya Mountains, which look down upon the plains of India; on the north, it terminates in the Kuen Lun. Beyond this chain it sinks to a lower table-land—that of Mongolia—which runs north-eastward from Western Tibet to the upper basin of the Amour River, at an elevation of less than 4000 feet. Round these two central table-lands of Tibet and Mongolia, the mountains and other highlands of Asia may be grouped. Eastward, the highlands of Tibet are continued by those of Southern China, which, furrowed and hollowed into great valleys by the rivers which traverse them, have lost the form of a plateau, and assumed that of a mountainous country. Between China and India, there projects, from Eastern Tibet, the highland of Indo-China, which, as it proceeds southwards, splits into a series of mountain chains, running like so many fingers from the back of a hand, and inclosing between them the valleys of Burmah, Siam, Cambodia, and Tonquin. Towards the north-west, the edge of the great Tibetan table-land is continued by the Pamir table-land, a lofty elevation without abrupt descent on either side, described by the people of Central Asia as 'the roof of the world.' It is

connected on the south-west by the Hindu Kush with another table-land, that of Iran, which extends from the Indus to the Greek Archipelago, with an elevation of 6000 feet in Afghanistan, 4000 in Persia, 5000 in Armenia, and from 2000 to 4000 in Asia Minor. Two detached table-lands, above the elevation of 1000 feet, fill the interior of Arabia and Southern India. The mountain-chains of Asia generally run along the edges of the plateaus. The Himalaya include the loftiest mountains of the globe—Mount Everest, 29,000 feet; Kunchinginga, 28,156 feet; and Dhawaligiri, 26,680.

The plains of Asia—by which we mean that part of the surface of the continent lying at an elevation of less than 500 feet above the sea—form a vast expanse in North-western Asia, stretching from the edge of the Iranian table-land, through Northern Siberia, to the Arctic Ocean and Behring Strait. This great plain sinks on the shores of the Caspian to a level below that of the ocean. The other plains of Asia, which lie south and east of the table-lands, are much less extensive, but, lying under a warmer climate, they are of infinitely greater importance. The great plain of China includes the deltas of Yang-tze-kiang, the Hoang-ho, and the Pei-ho; the Indo-Gangetic plain, those of the Ganges, Indus, and Brahmaputra; the Assyrian or Babylonian plain, that of the Tigris and Euphrates.

The *seas*, *bays*, and *gulfs* which indent and intersect the surface of Asia are in noway so remarkable as those which give character to Europe.

The *islands* more immediately connected with Asia are the Liakhov group, in the Arctic Ocean; the Aleutians, in the Sea of Kamtchatka; the islands of Japan; Saghalien, Formosa, Hainan, and Chusan, off the coast of China; Ceylon, the Andaman and Nicobar Isles, in the Indian Ocean; and Cyprus, in the Levant. (The large islands of Sumatra, Java, Borneo, Celebes, &c. generally known as the East India Islands, are treated in the following number.)

The *lakes* or *inland seas* of Asia constitute one of its peculiar features, most of these being salt or brackish, having no visible outlet, and being in some instances considerably beneath the general level of the ocean. The largest of these is the Caspian, having a length of 760 miles, with an average breadth of 200, receiving the rivers Volga and Ural, but with no outlet; its waters brackish, and of unknown depth, and its surface-level 84 feet beneath that of the Black Sea.

Of the *rivers* which water the continent, a large number are of the first-class. In Eastern Asia, we find the Amour, Hoang-ho, Yang-tze-kiang, and Hong-kiang, all of which are slow-flowing rivers, and navigable for a long way into the interior. India without the Ganges is watered by the Camboja, Meinam, and Irrawadi; and Hindustan by the Brahmaputra, Ganges, and Indus. The Ganges, though subject to annual inundations, and to a very rapid and dangerous tidal bore, is one of the most valuable rivers in the world, being, with most of its tributaries, navigable to the very basis of the mountains. The same, however, cannot be said of the Indus, which, though of ample volume, has an obstructive and shifting delta, which renders it of little avail, unless to small steamers. In Western Asia are the Tigris and Euphrates—the latter, navigable for flat-bottomed steamers so high as Bir.

CLIMATE, ETC.

In Northern Asia, no mountain chain prevents the entrance of the polar winds, and, in consequence, they sweep southwards over the plains of Siberia and Turkestan. In Southern and South-eastern Asia, the monsoons (see METEOROLOGY) explain the cause and course of the winds. They enable us also to explain the distribution of rain in Asia. The great mountains which fringe the table-land condense the vapours brought from the Pacific and Indian Oceans, and thus China, Indo-China, Eastern India, the coasts of the Indian peninsula, and the southern sea-board of Arabia, are well watered by periodical rains. North of the table-land and its fringe of mountains there is a fall of periodical rains, which, although scanty, redeems from sterility the countries on which it falls. In the interior of the continent and within the plateaux, on the other hand, rain is scarcely known. Thus, the Altaï, the Himalaya, and the Chinese highlands make Tibet and Mongolia the most arid countries of the globe. The great Desert of Gobi, the deserts of Persia, of Syria, Arabia, and Western India, may all be explained by the fact, that the winds which come to them from the ocean have been robbed of their vapour by the mountain ranges. In Southern India, the Western Ghauts receive the vapours of the south-west monsoon; the Eastern Ghauts, those of the north-east monsoon, and both are well watered. But the winds which pass into the interior have become dry, and hence the aridity of the table-land of the Deccan, and the necessity of irrigation to make it fertile. The fact is, that aridity is the chief feature of all the countries lying between the Red Sea and Northern China. They can be rendered fertile when cultivated by a peaceful and industrious population, intelligent enough to construct and keep in repair reservoirs and irrigation canals; but they become utterly desert when war or bad government interferes with the combinations and arrangements necessary for this purpose. Hence, there are no countries the prosperity of which is so completely dependent, as those of Western and Central Asia, on peace and good government.

Asia is traversed by all the zones of climate into which the surface of the globe has been divided by meteorologists and botanists. Northern Siberia, to a line just south of the Arctic circle, has a temperature of from 5° on the north to 30° Fahr. on the south. It is the country of the Tundras—frozen marshes which fill the lower basins of the Siberian streams. The cold temperate zone succeeds—stretching from the last area to a line running from the Gulf of Finland to the northern shore of the Sea of Okhotsk. It has a temperature of from 30° to 40° Fahr. and is the zone to which Norway and Finland belong. There occur within it tracts of arable soil, in which the hardier grains, oats, barley, and rye, potatoes and turnips, can be cultivated in sheltered situations. The next, the temperate zone, from 40° to 60° Fahr. extends southwards to a line which runs from the Black Sea to the north of Corea, and the Strait of Sangar, which separates the southern from the northern islands of Japan. It has the climate of

England; and in it deciduous trees, meadow-grasses, and the European cereals are cultivated with success. It includes on the east the Desert of Gobi, and on the west the parched steppes of Northern Turkestan. The warm temperate zone from 60° to 70° Fahr. lies south of the Caucasus and the Desert of Gobi. It includes Northern Arabia, the south of Persia, and the Punjab and Northern China. It is the climate of Spain and Italy, of the orange and fig, the vine and the tea-plant. In it the grains usually cultivated are rice and millet. It occupies on the west the arid region of Asia, including the Syrian, Persian, and Bactrian and Indian deserts; but on the east, it receives copious showers. Its driest districts are traversed by great rivers. Tibet, which is in the latitude of Cairo, is thrown by its high elevation into the colder zones. The tropical belt—temperature from 72° to 82°—in Asia occupies a comparatively limited space. It includes the Arabian sea-board, the greater part of India, the Indo-Chinese peninsula, and that part of China which lies south of the Nan-ling chain. It is the zone of the palm, the banana, and the sugar-cane. Within this belt, forests of flowering trees, infinite in their variety, and interlaced with lianas and parasitic plants in all places where the atmosphere is moist, overshadow the soil with an almost impenetrable covering of vegetation. Central, Northern, and Western Asia are, in short, characterised by deserts and scanty meadows, the forests being confined to Southern Siberia, and the mountain-ranges exposed to the southern winds. In the promontories of South-eastern Asia, on the other hand, is displayed all the tropical luxuriance of vegetation which characterises Central America.

With this distribution of the zones of climate and of vegetation is connected that of animal life. In Northern Siberia, where there is almost perpetual ice and snow, and little more than a scanty vegetation of lichens and mosses, the reindeer finds its proper food, and supports whole tribes of men. In Central Asia, the horse and the ox are the chief domestic animals of the Tatar population. The Bactrian camel enables them to cross the inhospitable deserts of Mongolia and Turkestan. Farther to the south, it is replaced by the Arabian camel, in the Persian and Syrian deserts. In India, the buffalo and the elephant are the characteristic beasts of burden. In the tropical woods of South-eastern Asia, reptiles and beasts of prey become dangerous enemies to man. The reports given of the destruction of human life by snake-bites and tigers in Indo-China, have been pronounced exaggerated; but the statistics annually collected in India confirm the most startling of them. An official notice gives the number of persons killed in British India in 1881 at the frightful total of 18,670; while 2757 were slain by wild animals. In the same year, 43,609 head of cattle were reported killed by snakes and wild animals; while 254,968 snakes and 15,274 wild animals were destroyed, 103,000 rupees being paid by government for their destruction. In Madras province, 1195 were killed by snakes and wild animals in 1882—920 by snakes, 206 by tigers, 28 by panthers and leopards. In 1873, a single tigress caused the destruction of thirteen villages, and threw 256 square miles of country out of cultivation. In the Central Provinces, in three years the deaths of 946 persons had been ascertained to have been caused by tigers. It is scarcely possible to believe that Mr Markham is not talking ironically when he enumerates among the difficulties in the way of getting rid of these 'gigantic cats,' that their wholesale destruction is objected to by Englishmen in India, as that of a kind of game which affords excellent sport when shot with the rifle; and by the native population, on the ground, that the 'man-eating tiger' is a kind of incarnate divinity, and that it would be dangerous to offend it!

In the number devoted to ANTHROPOLOGY, enough has been said of the distribution of man in Asia; while the rise and course of the chief streams of civilisation have been traced in the HISTORY OF ANCIENT NATIONS. It may be well, however, to remind the reader of the events occurring in the twelfth century which were destined to influence the whole continent. The Mongols who dwelt on the border of the Great Eastern Desert, under the lead of Genghis Khan, then penetrated into Siberia, attacked and took possession of China on the east, and Turkestan and Persia on the west. The sons of Genghis continued his conquests, destroying the califate of Bagdad, and advancing into India. His grandson, Kublai Khan, ruled over the greatest empire that ever existed, extending as it did from the Baltic to the Pacific, and from the Arctic zone to the Indian Ocean. It was in the reign of the Great Khan that Marco Polo, the Venetian, travelled through Asia, and recorded his observation in a wonderful narrative, which has been of inestimable value in guiding and stimulating geographical research, and which, as recently done into English by Colonel Yule, is one of the most readable and fascinating of books. Towards the end of the 14th century little remained of the empire of the Great Khan. A new conqueror then made his appearance—Timur the Tatar, or Tamerlane, who, after invading Persia, Egypt, and India, made Samarcand the seat of his empire, and a chief centre of Mohammedan piety or learning, the position it has ever since retained in the Mohammedan East, a fact which it is important to remember in connection with the recent conquests of Russia. The empire of Timur was soon broken up; but his descendant, Baber, in the early part of the 16th century, still ruled at Samarcand over countries extending south and westward to the Indus. Baber invaded India in 1525, and taking Delhi and Agra, founded the empire of the Great Moguls. The modern history of the continent is that of the English conquest of India, the Russian conquest of Siberia and Turkestan, and the growth of English commerce in China and Japan. Before we refer to these subjects, it is desirable to describe separately the different countries into which Asia is divided.

GREAT DIVISIONS OF ASIA.

A line running through the steppes north of the Caspian and Aral Seas, and along the northern edge of the Desert of Gobi and Shamo to the north of Corea and the Japanese islands, divides Asia into northern and southern parts. Southern Asia is, in turn, divided into a western and eastern section by the mountains of Eastern

Afghanistan, and the western Desert of Gobi; and the eastern section is again subdivided, in a more conventional manner, by the chain of the Himalaya, into the Chinese and the Indian countries. The great divisions of Asia, with an estimate of their populations, are as follows: 1. Northern Asia, 8 millions; 2. Chinese region, 375 millions; 3. Indian region, 260 millions; 4. Western Asia, 47 millions.

NORTHERN ASIA.

The Siberian countries, as has already been seen, are traversed by a mountainous tract, which bounds the great Mongol desert on the north. It includes the Altaï and the Yablonoi Mountains. These sink on the north to the great plain which is drained by the rivers Obi, Yenisei, Lena, and Kolima, descending to the frozen plains of the Arctic Sea. Siberia is not an unproductive country; it abounds in mineral wealth, the great mining districts being those of Barnaul, in the Altaï, and Nerchinsk, in the Yablonoi Mountains. The middle valley of the Yenisei is the most favoured agricultural district; and there, rye, oats, and wheat are successfully cultivated. The countries recently annexed in Manchuria, on the banks of the Amour, have a warmer climate, and when colonised, will probably become the most productive of the Russian settlements in Northern Asia. The Siberian rivers are admirably suited to inland navigation, and have been connected along their upper courses by canals, so that it is possible to convey the products of the middle Yenisei to the confines of European Russia and the peninsula beyond the Lena. A great highway also traverses Siberia, along which Chinese products are brought from Katchta, 150 miles south of Lake Baikal, to Moscow. The length of the road between these places is 4452 miles. Politically, Siberia forms a province of the Russian empire. Its towns are unimportant. The largest is Irkutsk (pop. 28,000), on the Angara, north-west of Lake Baikal. Tomsk (pop. 21,000) depends on the mines. Although Siberia formed part of the empire of Genghis Khan, Europeans were ignorant of its existence as late as the end of the 16th century. In the year 1580, a Cossack, an absconded criminal, named Yermak, at the head of a crowd of wild adventurers, crossed the Ural, and conquered Western Siberia. In 1584, he was drowned in the Irtish; but the Russians continued their conquests. They founded Tomsk in 1604, and Irkutsk in 1661. To their conquests in Turkestan, we shall refer below.

WESTERN ASIA.

This region lies west of the Indus and the Desert of Gobi, and south of the Siberian steppes. It is Asia Proper, the Asia of history, and the ancient abode of the Arabian and Persian races. We have seen that it is covered from east to west by the lofty table-land of Iran; bounded on the north by the plains of Turkestan; on the south, by those of the Tigris and Euphrates. Arabia, south of the latter, forms an independent table-land. The whole region is characterised by its arid climate, the hills by which it is traversed shutting out all the winds which might bring rains to the parched soil. Its lofty summits, however, are reached by vapour-laden clouds; and two river-systems, that of the Oxus and Jaxartes, on the north, and the Tigris and Euphrates, on the south, of the Iranian table-land, were made the means, in ancient times, of irrigating countries which supported a vast population.

Three races inhabit Western Asia—the Aryans, chiefly Persians, the central table-land; the Semites, chiefly Arabs, Arabia, and the southern plain; and the Mongol Turks, the plain of Turkestan. The contest between these three races has lasted since history began. The most powerful governments of Western Asia are now those of Turkey and Persia, representing rival Mohammedan sects, the Sunnites and Shiites, who are bitterly hostile to each other; and they, like all eastern states, are constantly weakened by the interminable strife and feuds which, on the death of a monarch, are sure to break out among the members of his family, owing to varied and ill-understood rules of succession.

Western Asia lies between the two most populous regions of the globe, Europe and South-eastern Asia. In all ages, great commercial routes have existed between them. One passed from the Black Sea across Northern Persia into India. The traffic on this line has been interfered with by Turkish banditti in Northern Persia, and by Afghan civil wars farther east. It has been also, and more seriously, interfered with by steam-navigation in the Red Sea and Persian Gulf. There is still, however, a great necessity for a direct route overland from Europe to India. A network of railways connects all parts of Europe, and a similar system has just been completed for India. The importance of connecting the two is evident. Various schemes are suggested. One is to connect the Mediterranean with the Upper Euphrates, and to make that river and the Persian Gulf the line of a railway to India. Another is to connect Constantinople with Angora, Sivas, Diarbekir, Mosul, and Kermanshah; and to cross Persia by Ispahan and Kerman to Bender-Abbas, thence proceeding along the coast to Kurrachee. One reason for promoting this scheme is, that it would continue Turkish lines already in process of construction. A third scheme is proposed by M. de Lesseps. It would connect Orenburg with Samarcand, Balkh, Cabul, and Peshawur, on the Indian frontier. The proposal seems wild, but not more so than American undertakings recently completed. That any of these lines would confer incalculable benefits on the countries through which they pass, it is impossible to doubt. Western Asia may be divided as follows:

	Population.
Turkestan	10,000,000
Afghanistan	4,000,000
Beloochistan	2,000,000
Persia	5,000,000
Armenia (with Caucasia)	6,000,000
Asia Minor	11,000,000
Syria and Mesopotamia	3,000,000
Arabia	6,000,000
Total	47,000,000

Turkestan was said, till recently, to be bounded on the east by the Bolor Mountains; but a better knowledge of the geography of these countries has shewn that no such chain exists. In Europe, mountains and uplands form the boundaries between states; but it is different in Central Asia, where the best cultivated tracts often lie along the mountain-ridges, and wastes surround

the hollows they inclose. Turkestan is, for this reason, bounded rather by the Gobi Desert, than the 'roof of the world,' or Pamir steppe, which, in recent maps, takes the place of the Bolor chain. The country consists of the mountain-system which ramifies north-east and west from the Pamir table-land, and the low plains to which these highlands sink on all sides. Two races occupy Turkestan—the Tajiks, or Aryan and Persian speaking native population, who are agriculturists and inhabitants of towns; and the Turks, chiefly nomads, but to whom the ruling caste belongs. They are Mongol in race and language, and under their rule the independent states or khanates into which the country has been divided, have been the scene of perpetual strife and anarchy. The Russians, in those parts of Turkestan which they have annexed, have found the subject population, the Tajiks, industrious and frugal, remarkably intelligent, and, like the Japanese, anxious to adopt European habits, and to become acquainted with the arts and sciences of Europe.

The advance of the Russians in Northern Turkestan promises to confer inestimable benefits on the country. In 1864 they took possession of Tashkand, forming part of Fergana, long famous for its beauty and fertility. A religious war against the Russians followed the conquest, and they added to their territory in 1868 Samarcand, the old capital of Tamerlane and Baber—venerated all over the East, and especially in India, as a holy city, only second to Mecca. The possession of Tashkand and Samarcand enabled Russia to control two of the chief Turkish khanates. One remained, that of Khiva, at the mouth of the Oxus, surrounded by deserts, and, in consequence, deemed inaccessible. But in 1873 it too was conquered, and a treaty was concluded with the khan. The Russians have more recently subjected Merv and other districts belonging to the most savage people of the East—the Turkomans, who inhabit the northern frontier of Persia, and who have converted the once beautiful Khorassan into a desert, and destroyed all security for life and property in Northern Persia.

The chief cities of Turkestan are Tashkand (pop. 90,000), and Samarcand (pop. 20,000), both Russian. The other towns are small.

Eastern Turkestan, or Kashgaria, which lies east of the Pamir table-land, has only recently become known to us from the works of Mr Shaw and Dr G. Henderson. Shut up between the Thian Shan and Kuen Lun Mountains and the Desert of Gobi, geographers did not suspect that in this part of Asia there existed a well-cultivated, well-governed country, with three millions of inhabitants. Although the inhabitants now speak Turkish, they are said to shew many Aryan characteristics; and in the upper valley of the Pamir table-land, recent travellers have discovered what they believe to be pure Aryan tribes. East Turkestan contains cities of 100,000 inhabitants, the chief of which are Kashgar and Yarkand. In 1853 a rebellion broke out in Kashgar, which ended in throwing off the Chinese yoke; and Kashgaria was an independent Mohammedan state till the death in 1877 of Yakoob Beg, its first native prince. On the accession of his son, the Chinese authorities reasserted themselves; and in 1879 the little state was again a Chinese province.

Afghanistan forms the north-eastern part of the table-land of Iran already described. Its chief slope lies towards the Persian desert, and it is drained by the river Helmund, which falls into the Lake of Seistan. In the north, the country is traversed by ridges of hills, but to the south-east it is more level. Everywhere the soil is arid; but the tracts lying along the streams are cultivated, and considerable crops of rice, maize, sugar, cotton, and tobacco are produced. The Tajiks, who form about one-third of the population, are agricultural labourers in a state of serfdom. The Afghans, who form nearly another third, are the ruling race. They are a tall, vigorous, and handsome people. The remaining third of the population is chiefly composed of Mongols, including the Hazareh and Eimak—Mongols proper, and the Turkoman tribe of Kuzzilbashes, who act as domestic servants and soldiers. The Tajiks speak Persian, the Afghans Pushtu, which, although an Aryan language, is more akin to the languages of India than of Iran. The chief towns of Afghanistan owe their importance to their military position. They are Candahar (pop. 50,000), Cabul (50,000), and Herat (100,000). The city last named, and the country surrounding it, are inhabited by a Persian population, who differ, however, from the Persians of Western Iran in professing the Sunnee rather than the Shiite Mohammedanism. The Afghans made their first prominent appearance in the history of the East, on the death of Nadir Shah, when Persia became finally dismembered. It was then that Ahmed Khan Duranee seized Candahar, and founded the dynasty, the Duranees, who have since retained the throne. The law of succession in Afghanistan is, that the Ameer shall select his successor from his generally numerous family; and the consequence has been an interminable strife on the death of every monarch, and such a record of fratricidal crime and warfare as no other chapter of history presents. The war with Britain in 1879–80 could hardly be expected to improve the state of affairs.

Beloochistan, south of Afghanistan, and east of Persia, sinks to the low tracts adjoining the Indus and the Indian Ocean. The climate of the highlands is cold for the latitude; that of the plains, tropical and arid. The inhabitants are chiefly pastoral, and there are no important towns. Two races occupy the country—the Belooches, who speak a Persian dialect, in the west; and the Brahoes, who speak an Indian tongue, on the east. The former are a powerful, bold, military race, living in tents, and chiefly pastoral. The latter are a people of smaller stature, but patient and laborious. They are agriculturists and mechanics. The chief town is Kelat (pop. 12,000). The history of Beloochistan as an independent state is quite modern, and the country has been alternately considered as forming part of India and of Persia. England has endeavoured, by granting a subsidy to the Khan of Kelat, to enable him to establish a powerful government in Beloochistan, which may be made responsible for the conduct of the petty chiefs along our frontier.

Persia forms the middle part of the Iranian table-land. It has an elevation of from 2000 to 3000 feet above the sea-level. On the north it is bounded by the Elburz chain, continued eastward

at a lower elevation by the hills of Khorassan. The western part of the country is traversed by a series of mountains, running north-west and south-east, and inclosing numerous valleys which can be rendered exceedingly fertile by cultivation. In these districts, the grains and fruits of Southern Europe are cultivated. The central region of Persia forms a depression with a desert surface in which the streams from the surrounding hill-countries disappear. It contains, however, a few depressions which form fertile oases. The northern slope of the Elburz Mountains sloping to the Caspian, forms on the margin of that sea a country of wonderful fertility. The forests of Central America are not more luxuriant than Mazanderan and Ghilan, the two Caspian provinces of Persia. They produce rice, sugar, and all the products of the tropics, and more especially silk, which forms one of the chief exports of Persia. Persia has an importance in history much out of proportion with its present population. There is no doubt that in antiquity, and during the middle ages, while irrigation-works still fertilised great tracts of country, Persia supported a great population. A native estimate fixed the population at 200,000,000; and the French traveller, Chardin, in the 17th century, thought 40,000,000 not too high a figure. It is only within a few years that careful estimates made on the spot have reduced the current estimate to 7,653,600, 1,900,000 nomads, 1,900,000 peasants, and the rest townspeople. The same estimate states the population of the chief cities to be as follows: Tabriz, the commercial capital, 120,000; Teheran, 100,000; Meshed, 60,000; and Ispahan, 60,000. The population of Persia has been long diminishing, a fact no doubt chiefly due to the invasion of the Turkish races, and long continuance of misrule and extortion by the provincial governors, the neglect of irrigation works, and the consequent recurrence of famines, in a dry country where successful cultivation depends on an artificial supply of water.

The history of Persia in modern times is chiefly that of the struggle between the native and the invading races, the periods of prosperity generally coinciding with the success of the former. Thus the country flourished under the Sassanian kings from the 3d to the 7th century. The Arab, Mongol, and Turkish invasions followed. Early in the 16th century, the Sofi dynasty restored the prosperity of Persia. Shah Abbas the Great, who drove the Turks out of Khorassan, extended toleration to the Armenian Christians, whom he induced to settle in the country; constructed important public works, irrigation canals, and roads, and did all he could to encourage agriculture and trade. He established a splendid capital at Ispahan. Nadir Shah (1736–1747), a Turkish adventurer, put an end to the Sofi dynasty. After his death, Persia became really split into a number of independent states until 1795, when another adventurer, a Turkoman of the Kajar race, founded the present dynasty. During this century, Persia has been weakened by wars with Russia. In October 1856, the Persians took possession of Herat, which they were compelled to restore, after a war with England. They have since been engaged in disputes with the Afghans and Belooches, settled by English arbitration, and in the old struggle with the Turkomans, which the advance of the Russians now bids fair to terminate—if it be decided that the exigences of European policy do not absolutely require that there should be an artificial desert between the English and Russian possessions in the East.

Armenia and the Caucasian countries lie between Persia and Asia Minor, bounded on the north by the Caucasus, or rather by the steppe beyond, and on the south by the plains of the Euphrates. Armenia Proper forms part of the great Iranian plateau. It has an elevation of from 5000 to 6000 feet, and is a bare, treeless country, with a cold climate. Georgia is warmer, and the soil is in many places very fertile. Under Russian protection, German colonists have founded settlements in various parts of the country, and good roads have been formed. A railway is now being constructed which will connect the Black Sea and the Caspian. The Armenians are Christians of the Armenian Church; the Georgians belong to the Greek Church. Mohammedanism prevails in the Caucasus. The chief town in Armenia is Erzeroum (pop. 40,000); and in Georgia, Tiflis (pop. 60,000). Since the beginning of this century, the Caucasus, Georgia, and part of Armenia have been annexed to Russia, with great advantage to the native populations.

Asia Minor forms the western extremity of the table-land of Iran. It sinks, as it proceeds westward, from an elevation of 4000 to 1000 feet above the level of the sea, and finally subsides into low and fertile valleys drained by the rivers falling into the Ægean Sea. In the interior of the peninsula, there are desolate plains and wastes, which never can be cultivated; but there are also vast tracts of fine agricultural soil, covered with the remains of old and splendid cities, shewing that the country was at one period the abode of a numerous, a prosperous, and highly civilised people. The chief inhabitants of the interior of the table-land are now wandering Turks and Kurds. The Greek population is chiefly confined to the sea-coast. We know little of the peoples inhabiting Asia Minor before the Greeks, but it seems probable that the discoveries made in the plain of Troy by Dr Schliemann will establish the fact, that it has been occupied in succession by races which had made considerable progress in civilisation, long before its colonisation by the Greeks. It was during the Roman epoch that Asia Minor seems to have reached its highest prosperity. It was then that great roads were constructed throughout the country, that agriculture and trade flourished, and that the great and beautiful cities, to the ruins of which we have just referred, sprang up over the whole country. The religious controversies which broke out in the 5th century, and which led to so much strife in the Eastern empire, were the chief cause of the weakness which opened the way for Turkish invasion. After the Crimean war, when the Turks were less carefully watched than they had been by Russia and the other European powers, the last relic of the independent Christian communities in Asia Minor, Zeitun, was destroyed—the inhabitants being massacred in a manner which recalls the worst atrocities of Cawnpore.

Syria and Mesopotamia may be held to include all the countries lying between Armenia and Arabia, Persia and the Mediterranean Sea. Syria

is traversed from north to south by two mountain-chains, inclosing a valley, which, in the south, where it is occupied by the Dead Sea, sinks below the level of the Mediterranean. Like the rest of Western Asia, it suffers from aridity. In some places, however, where the streams have been employed for irrigation, as in the country round Damascus, it becomes amazingly fertile. The inhabitants of Syria speak Arabic, but are not Arabs; they resemble more the inhabitants of South-eastern Europe. Neither are they all Mohammedans. They are hopelessly divided by their religious creeds. The Druses of the Lebanon have a religion of their own. In 1860 their sanguinary conflicts with the Maronites, Christians who now acknowledge the supremacy of the pope, were put an end to by a French expedition. The Mohammedan population is partly Shiite, and partly Sunnite, and is split by minor distinctions, which also appear to be causes of strife. At Aleppo (pop. 70,000) there are large manufactories of silk and cotton. The city has been for a time falling off in population, due to an earthquake in 1822, and more recently to the growing competition of the West in the markets of Asia. Damascus (pop. 150,000), the capital of Syria, is less prosperous than it was, it never having recovered from the injury done to its trade in 1860, when the fanatical Mohammedan mob rose and massacred the Christian population. Beyrout (pop. 60,000) is the seaport of Damascus, and the chief seat of European commerce with Syria.

Palestine, although forming only a small, and one of the least fertile provinces of Syria, claims special notice as the scene of events which have influenced the whole course of human history. It consists of (1) The deep valley of the Jordan, in which lie the Sea of Galilee, 120 feet above, and the Dead Sea, 653 feet below, the Mediterranean; (2) The hills and table-lands of Gilead and Moab, which bound this valley on the east; (3) The table-land of Judæa, Samaria, and Galilee, with a mean elevation of 1000 feet, bounding the valley of the Jordan on the west; and (4) The plain of Sharon, which lies between the last-mentioned table-land and the sea. The geography and history of Palestine are probably better known to most Englishmen than those of any country except their own; however, the pleasure-excursions which the enterprising Mr Thomas Cook now conducts through the chief scenes of sacred history, give his pilgrims a very different impression of the Syrian landscape from that obtained from the works of the old Italian painters, and the engravings from them, which still find a place in our illustrated Bibles. The tourists return probably better pleased than when they went with the fogs and leaden skies of England, and above all, impressed with that want of water everywhere which now characterises the Promised Land. Yet they see traces of ancient cultivation. They see that the country must at one time have been highly productive, and supported a teeming population, for even in those places where it is now most desolate, are the vast remains of terraces, constructed to collect the rains and fertilise the soil, and of cities, which seem to have crowned every eminence. Jerusalem (population probably 20,000) stands on the highland of Judæa, in a rocky country, at an elevation of 2660 feet above the sea. One-half of the population is Mohammedan; one-third, Christian; and what remains, Jewish. Its only industry is the manufacture of beads and crucifixes and other objects, sold to pilgrims, of whom more than 10,000 annually visit the holy places in and around the city.

Assyria was the name once given to the country lying west of the Zagros Mountains, and drained by the Upper Tigris and its eastern tributaries. It corresponds pretty nearly with the modern Kurdistan. In the east, the mountainous districts are well watered and productive; but westward, the plains are alternately a garden and a wilderness, the heat of summer completely drying up the vegetation. The Kurds are a rude people, speaking an Indo-Germanic language, but indulging to a great extent in the predatory habits of the Turks and Arabs. Mossul (pop. 30,000) is the seat of a Syrian Christian patriarch, and was anciently the metropolis of the Mesopotamian Christians, of whom there are still said to be 10,000 in the city. It is needless to say that the ancient prosperity of Assyria is attested by wonderful ruins of reservoirs and canals for irrigation, and of splendid and populous cities, of which Nineveh was the chief.

Babylonia is the name given to that part of the plain of the Tigris and Euphrates south of the point where the rivers first approach each other. It is a low alluvial plain, and forms for the most part an unproductive and unhealthy wilderness; but in early times it had, under a skilful system of irrigation, the very highest fertility. In antiquity, the country was, in fact, traversed in all directions by great canals, which have been described by the Greek historians. The soil is now only cultivated near the villages, but where it is irrigated, its fertility is unbounded. The depredation of wandering Kurds and Arabs, and Turkish misgovernment, give no hope of any improvement in its cultivation. The capital is Bagdad (pop. 65,000). It has manufactures of silk, cotton, and leather. Bassorah (pop. 60,000), on the Shat-el-Arab, the name given to the Tigris and Euphrates after their union, is the port for Indian commerce. According to Sir Henry Rawlinson, recent researches carry back the historical period of Babylon to about 5000 years B.C. (see HISTORY OF ANCIENT NATIONS). Now that the extension of the cultivated surface of the globe has become the chief necessity of the rapidly increasing population of Europe and India, it is not impossible that modern statesmen and capitalists may consider if it would not be possible to recultivate an area which could supply with food and clothing the inhabitants of a whole series of cities which, in ancient Babylonia, seem to have rivalled the capital in size and splendour. Asia Minor, Syria, and Mesopotamia form part of the Turkish empire, as immediate possessions of the sultan.

Arabia lies south of the Syrian countries. It forms, as has been already stated, a lofty table-land, nowhere sinking to less than 1000 feet, and surrounded on the west and south by lofty mountain-chains and terraces. The southern slopes are, at certain seasons, well watered, especially in parts of Yemen on the west, and Oman on the east. Between these countries lies Dahma, or the great sandy desert which spreads over one-third of the table-land. Farther north is the

highland of Nedjed, in which rain falls at certain seasons and fertilises the soil. This district is bounded on the north by the Syrian Desert. The Nedjed was, until recently, when it was visited by Mr Palgrave, supposed to be as sterile as the coasts of the Red Sea. This has been found to be a mistake. It is a fertile and well-cultivated country, inhabited by a numerous population of settled inhabitants. It is the seat of the empire of the Wahabis, described as a sect of warlike Mohammedan Quakers, who do not recognise the claims of the Turks to any suzerainty over Arabia. Their chief city is Riad (pop. 40,000), and their territory includes a large number of towns with populations of from 10,000 to 30,000 inhabitants. The Turks exercise a nominal sovereignty over Yemen and the Hedjaz. The former is a fertile country, which seems at a remote period to have been better cultivated than now, by means of reservoirs and irrigation canals. It produces coffee, which has a high reputation. Its capital is Sana (pop. 40,000); and its chief port is Mocha (pop. 7000). Aden (pop. 20,000), the great English packet-station on the route between Suez and India, stands on a peninsula of the Yemen coast. The Hedjaz is chiefly important as the country in which is situated Mecca (settled pop. 45,000), the birthplace of Mohammed, and the seat of the Kaabah, an inclosure which contains the famous black stone which all pilgrims must kiss. Upwards of 100,000 men still assemble annually at Mecca from all parts of the Mohammedan East. The state of Oman, in Eastern Arabia, is populous. Its chief town is the seaport of Muscat (pop. 60,000). The ruler is the Imaum, who has a considerable navy, and, till recently, exercised great power on the shores of Persia and Beloochistan, and the east coast of Africa.

INDIA.

In dividing Asia into its great regions, we used the name India to describe the countries which lie south of the great mountain-wall of the Himalaya, and the mountains which continue it eastwards into Southern China. It consists of the two great promontories of Hindustan and Indo-China, and the Malay Islands. For an account of the last, we refer to AFRICA—OCEANIA.

HINDUSTAN.

It is often said that no country is so completely isolated from the rest of the world as Hindustan, by great natural barriers; but perhaps the statement has been exaggerated, for in the East it is difficult to say whether Bhotan and Assam belong properly to it or to Tibet or Indo-China; and in the west, Beloochistan is as much Indian as it is West Asian. We have already briefly referred to the great natural features of Hindustan. South of the Himalaya is an elevated terrace, which slopes towards the low plain of the Ganges. To it belong the hill-countries of Nepaul, and Bhotan, and Assam, which are separated from the low plain on the west by the great pestilential swamp or forest of the Terai, and on the east by the forests which clothe the Garrow Hills. The Vindhyan Mountains bound on the north the long and narrow valley of the Nerbudda, which falls into the Gulf of Cambay. The table-land of the Deccan lies south of them. It forms an undulating table-land, 2000 feet above the level of the sea. The Western Ghauts bound it on the west, leaving between them and the sea a narrow plain 30 or 40 miles in width. They are 2000 feet high in the north; but in the south, at the Neilgherries, have an elevation of 9000 feet. The Eastern Ghauts have a lower elevation, and are situated at a greater distance from the sea. The table-land of Malwah, 2000 feet above the level of the sea, extends from the Deccan towards the Aravilli Hills. Farther north, extends the plain of India. The Thur, or Indian Desert, separates the basin of the Indus from that of the Ganges, and the Upper from the Lower Indus. North of it lies the Punjab; south of it, Sinde, separated from Gujerat by the Runn of Cutch. The basin of the Ganges is divided into two parts at a point east of Benares, where the plain is contracted by a ridge running eastward from the plateau of the Deccan. West of this line, the plain is described as that of Hindustan proper; east of it, is that of Bengal.

The soil of India is fertile in almost all these districts where it is well watered. The Deccan, like other table-lands, does not support great forests; but its soil and climate are favourable to the growth of cotton and the grain plants. The great plains of the Indus and Ganges, where watered, are very productive, and it has been found possible by irrigation to increase their fertility to a wonderful extent, and, accordingly, the greatest efforts are now being made by the government to encourage the formation of irrigation canals, especially on the Indus and Western Ganges, and the plateau of the Deccan. The consequence has been, to avert to a great extent the recurrence of those famines which from time immemorial at intervals depopulated India.

Hindustan is rather a continent than a country, in the European sense of the term, and its inhabitants are in every stage of civilisation. In the most inaccessible districts, protected by dense forests, tribes linger in the first stages of human progress; but generally the natives are agriculturists, remarkable for their contented, sober, and industrious habits. A description of the lower classes in Bengal probably gives a tolerably correct impression of the general condition of the Indian population. It is stated that, in Bengal, the ordinary habitations of the people are built of mud, or of brushwood plastered over with mud. The frames consist of bamboos tied together, and the roofs are constructed of two sloping sides, which meet at the top in a ridge. There is no window or aperture except the doorway. Each hut is concealed by thick vegetation, to keep off the sun, and each has a patch of ground in which vegetables are cultivated. These, rice, and occasionally fish, supply the ordinary food. The only dress of the men consists of a turban, and a cloth fastened round the waist, and reaching to the knees. The dress of the women is more elaborate and elegant, and even the poorest of them have armlets of silver or brass. Of course, this description does not apply to all the people of India, or to the landlords of Bengal, who are often enormously rich. The position of the peasantry in different districts of India has been very much influenced by the systems of tenure of the land which prevail in them. These may be classed under three

heads—the village, zemindary, and ryot systems. Under the first, which seems to have belonged to the earliest period of Hindu civilisation, the country was divided into villages or districts, the inhabitants of which formed an association, in which all trades and official duties were discharged by members, who received as a reward part of the produce of the soil. The potail, or general manager, collected the revenue, and paid it. The system chiefly prevails in the North-

west Provinces. The second system seems to have sprung from the Mohammedan conquest. The collection of the revenue in many places was intrusted by the conquerors to a class of tax-collectors known as zemindars. They gradually acquired a hereditary right to act in this capacity, and being intrusted also with the administration of justice, they were supposed, by the English rulers of India, to be landed proprietors, and were accordingly recognised as such. The third or ryotwary system is that under which rents are paid by the ryots, or peasants, under leases, direct to the government. The zemindary system was that adopted in Bengal by Lord Cornwallis in 1793. The ryotwary system was favoured in Madras by Sir Thomas Munro, when governor of the presidency. It was afterwards extended to Bombay. The fact seems so far to explain the poverty of the peasant in Bengal. All over India, the formation of railways and other public works

has wonderfully helped to benefit the working-classes, who have secured and retained for their own use the wages paid to them.

The north-eastern part of India, or the Punjab, belongs to the warm temperate zone, and in it the chief products are wheat, flax, and hemp. Wheat is the grain of the Upper Ganges. Where there is too little moisture for its cultivation, as in the southern basin of the Indus, millet and maize are grown. Rice is cultivated in the irrigated parts of the Punjab and in Bengal. Cotton is produced in all parts of India, and opium in Oude and Bahar. The commerce of India is chiefly with the United Kingdom. In 1872, the value of the imports was £42,651,560; of exports, £64,661,940. The chief exports were: cotton, £12,862,500; rice, £3,432,058; indigo, £1,905,132; tea, £1,398,106. The chief imports were: cotton goods, £13,078,831; iron, raw and manufactured, £956,921. In 1872, the revenue of India amounted to £50,110,215. Of this income, £20,520,337 was derived from land revenue, £9,253,859 from opium, and £5,966,595 from a tax on salt, and £2,369,109 from the excise on spirits and drugs. The chief item of expenditure was the army, £156,781,121. In 1881, the imports were £62,105,000; the exports, £76,000,000; revenue, £72,560,000; expenditure, £76,604,000; debt in India, £86,000,000; and in Great Britain, £71,400,000. The European army had 64,500 men; the native army, 126,000.

The government of India, in 1858, was transferred from the East India Company to the English crown, by an act passed in that year 'for the better government of India.' The executive authority of India is now exercised by a viceroy, appointed by the crown, and acting under the orders of the Secretary of State for India. A supreme council sits at Calcutta, and consists of six members, including the viceroy; an imperial legislative council, consisting of the supreme council and additional members; and separate councils for Bengal, Madras, and Bombay. The chief officers of the crown after the governor-general are governors in Madras and Bombay; lieutenant-governors in Bengal, the North-west Provinces, and the Punjab; and chief commissioners in Assam, the Central Provinces, and British Burmah.

A census of India was taken during the years 1868–1872, and another in 1881. By the latter the population under British administration was 198,755,993; in the native states, 55,150,456—total 253,906,449. The tables give the results of the last census.

Presidencies and Provinces.	Area in English sq. miles.	Population.
Governor-General of India—		
Ajmere	2,711	460,722
Coorg	1,583	178,302
Berar	17,711	2,672,673
Andaman Islands	880	14,628
Madras	139,900	30,868,504
Bombay	124,122	16,454,414
Bengal	156,564	66,691,456
North-west Provinces and Oude	106,111	44,107,869
Punjab	106,632	18,850,437
Central Provinces	84,445	9,838,791
Assam	46,341	4,881,426
British Burmah	87,220	3,736,771
Total under British Administration	874,220	198,755,993

Native States not belonging to British India, but more or less under English Control.	Area in English sq. miles.	Population.
Baroda	8,570	2,185,005
Central Indian Agency	75,079	9,261,907
Hyderabad	81,807	9,845,594
Mysore	24,723	4,186,188
Rajputana Agency	129,750	10,268,392
Bengal	36,634	2,845,405
North-west Provinces	5,125	741,750
Punjab	35,817	3,861,683
Central Provinces	28,834	1,709,720
Madras	9,192	3,303,563
Bombay	73,753	6,941,249
Total Native States	509,284	55,150,456

There were 87 millions of Hindus, 50 millions of Mohammedans, 3½ millions of Buddhists (mostly in British Burmah), 85,000 Parsees, and 12,000 Jews; and 89,798 British-born persons.

India is inhabited by races in all stages of human progress. Wild tribes, in the lowest state of savagery, occupy the hills and forests, and form a strange contrast with the civilised peoples of the plains. The latter belong to three races: (1) Mongols, resembling in all respects their neighbours, the Burmese and the Tibetans; (2) Dravidians, a dark race, totally differing from Mongols in appearance, and occupying the chief part of the Deccan; (3) Aryans, so called because believed to be the result of an amalgamation of the primitive inhabitants with Aryan invaders who at a remote period entered India from the north-west, just as the Saxons invaded England. The chief language of the first group is the Tibetan of Bhotan. The Dravidian languages are more important. Tamil is spoken by 10 millions of people south of Madras; Telinga by 8 millions north of the same point; Canarese in Mysore and Malayalam on the coast of Malabar. Among the Aryan languages are (1) Hindi, the vernacular of the North-western Provinces or Hindustan Proper; (2) Punjabi; (3) Gujerati; (4) Maharati; (5) Bengali—the names of which sufficiently explain the parts of India to which they belong. It is the Hindus (by religion) who speak the various Dravidian and Aryan languages we have just enumerated; and they in each province differ not only in language, but in character and habits, and even in dress. The Mohammedans, on the other hand, speak only one language, the Hindustani or Urdu, a modified Hindi intermixed with Persian, which sprang up at the court of Delhi, and which has become the spoken and literary language of the Mohammedans all over India.

In 1879, there were 1391 publications received in the Bengal Library, of which 983 were published in the town of Calcutta. In the Bombay presidency, 1097 native publications were issued; in Madras, 824; in the North-west Provinces, 541; in the Punjab, 926.

What is known or conjectured of the early history of Hindustan is to be gathered from the history of the two dominant religions (see MOHAMMEDANISM—HINDUISM—BUDDHISM; also HISTORY OF ANCIENT NATIONS). In the 11th and 12th centuries, Buddhism had almost entirely disappeared in Hindustan, or was confined only to the hilly districts south of the Himalaya, to Ceylon, and the countries of Indo-China and Malaya, in which it had taken root and flourished. It was

in the beginning of this period that another faith was introduced into India. In 1001, Mahmoud, the Mohammedan sultan of Ghuznee, in Eastern Iran, commenced his successful expeditions into India, and he continued them till 1029, making the destruction of pagan idolatry more the object of his visits than the acquisition of wealth or power. By his successors the Mohammedan dominion was established. Genghis Khan and Timur invaded India. In 1397, the latter sacked Delhi, and proclaimed himself emperor of India. He was followed by Baber, who, in 1526, entered Delhi, and had himself proclaimed successor of Timur and emperor of India. Baber established the dynasty of the Mogul emperors, or Great Moguls. One of these was Akbar, who flourished between the years 1556 and 1605. By his daring and judicious management, the central provinces were preserved in complete tranquillity, and Gujerat, Bengal, and part of the Deccan were added to his already extensive empire. His descendant, Aurungzebe, became Mogul emperor in 1658. He imprisoned his father, and, in the most unscrupulous manner, usurped the imperial power. He raised the Mogul empire to its highest point of splendour, and by sacrifice of the treasure amassed at his frugal court, for the relief of a great famine, so far atoned for the crimes of his youth. He died in 1707, and the decay of the Mogul empire followed. It was weakened by the growth of a power among the Mahrattas in the countries lying to the east of the Gulf of Cambay. They represented the Hindus, as opposed to the Mohammedans of Delhi, and formed several states. On the invasion of India by Nadir Shah, they succeeded in wresting a large territory from the Mogul emperors. The strife between them and the Mohammedans was terminated by the growth of a new power in India—that of the English. In 1498, the route to India had been discovered by the Portuguese, and in that year they landed in Malabar, and established themselves there. Their chief settlement was Goa. The Dutch next opened a direct trade with India, and they were followed by the English and the French.

The English desired to open a commercial intercourse with India as early as 1553; but their expeditions failed in reaching the country, from their want of geographical knowledge. They at length learned which was the true course to steer for India; whereupon, in 1600, a Company of merchants was formed in London to prosecute the traffic with the East, being empowered to do so by a charter from Queen Elizabeth, which was to last fifteen years. The first expedition of these adventurers cost £69,091, and consisted of five ships, the largest of which was 600, and the smallest 130 tons burden. The articles which they took were principally bullion, iron, tin, broadcloths, cutlery, and glass. This expedition proved remarkably successful, and led immediately to a repetition of annual voyages of the same nature. Unsuccessful attempts were made to secure favour with the Mogul emperor; but the affairs of the Company continued prosperous, and factories or warehouses for storing exports and imports were in many places planted on the coasts of India. From the real or pretended dread of being attacked by marauders, the keepers, merchants, and servants at these places at length began to strengthen the defences; and so, from being mere mercantile warehouses, the factories shortly partook of the decided character of armed garrisons. In 1640, the native authorities gave permission to build Fort St George at Madras; and in 1645, a factory was established on the banks of the Hooghly, a branch of the Ganges near its mouth, which formed the foundation of Calcutta. The island of Bombay was also procured as a settlement in 1664-65, after a struggle with its Portuguese possessors.

The French, who had acquired considerable territorial possessions in Southern Hindustan, came into collision with the British merchants. It would be needless to recount the particulars of the struggle for power; it will suffice to state that the French ultimately were deprived of their possessions. By the defeat of the French forces in 1761, the British were left at liberty to pursue their schemes on India. Calcutta had in the meanwhile rapidly advanced in wealth, and excited the envy of the Subahdar of Bengal, Suraja Dowlah. He attacked it in 1756, and capturing 146 prisoners, confined them in the memorable Black Hole, in which all but 23 were suffocated. Clive hastened from Madras to the rescue of Calcutta, and defeated Suraja Dowlah at the battle of Plassey, 1757. The Mogul emperors then appointed the Company dewannee, or perpetual collector of Bengal, Bahar, and Orissa, on payment of £260,000 per annum. In 1777, the French again made India the scene of a war with England. A Mohammedan adventurer, named Hyder Ali, also had established his power as sovereign in the southern part of the Deccan; and the Mahrattas, aided by French officers, attacked the English; but the confederacy was broken up in 1781, when Hyder Ali was defeated by Sir Eyre Coote. In 1790, Lord Cornwallis, with the Mahrattas and others, made war on Tippoo, the son of Hyder Ali. He, too, was defeated, and was compelled to cede half of his dominions to England. The principal war in which the East India Company was engaged after this successful contest, was that with the Pindarees, roving tribes of Mahrattas, who, without any territory, carried on predatory warfare against all whom they could rob with impunity.

The chief events in the more recent history of India may be referred to under the heads of the successive administrations. Lord Auckland was governor-general from 1835 to 1842, and under his rule the disastrous Afghan policy was adopted which led to the massacre of an English army in the Khyber Pass. Lord Ellenborough succeeded him. In his time, Afghanistan was invaded, and Cabul sacked; Sinde was also conquered by Sir Charles Napier, and annexed. Sir Henry Hardinge was governor from 1844 to 1848. His administration was remarkable for the Sikh war, the result of which was the conquest of the Punjab. Under the governorship of Lord Dalhousie (1848-55), the Punjab, Nagpur, and Oude were annexed. Lord Canning's administration was the period of the great mutiny of 1857-58. It is now believed to have been a Mohammedan conspiracy. The last of the Great Moguls, the king of Delhi, and heir of Timur, took part in the conspiracy, and was in consequence tried, and sentenced 'to be transported across the seas as a felon.' He died in Pegu in 1862. One

consequence of the Indian mutiny was a determination on the part of the English people that India should be ruled for the benefit of the Indian population. The government was transferred from the East India Company to the crown, Queen Victoria assuming the title of Empress of India. The new administration already referred to was then called into existence. Since then, great irrigation works, canals for traffic, railways, and telegraphs, have been constructed in all parts of India; every effort has been made to promote agriculture, and, by the foundation of schools and colleges, to spread education. We shall now glance hurriedly at the various divisions of the country, which may be conveniently arranged under the three heads of Western Hindustan, Eastern Hindustan, and the Deccan.

1. Western Hindustan.

Its principal divisions are:

1. Cashmere, a mountainous country of the Western Himalaya, ruled over by Ranbir Singh, who is bound by treaty to furnish troops to the British government if required. The chief portion is a valley 50 miles long, 10 or 12 miles wide, and 5300 feet above the sea. The soil is fertile and productive, and the country is one of the most beautiful in the world. The capital, Cashmere, has a population of 200,000.

2. The Punjab, consisting chiefly of a plain traversed by tributaries of the Indus, which divide it into great natural sections called Doabs. Where there is water for irrigation, the country is fertile. The population by census of 1881 is 18½ millions. The inhabitants are chiefly Sikhs, and speak Punjabi. West of the Indus, the Patans, or Afghans, are more numerous; two-thirds of them are Mohammedans, one-sixth profess the Sikh religion, the rest are Hindus. The Sikhs have no distinction of caste. Lahore (pop. 150,000) is the chief commercial town of North-western India. Mooltan (pop. 68,000) is one of the oldest Indian towns.

3. Rajpootana lies south of the Punjab. It is a fertile hill-country on the east, but on the west extends over the Thur, or Indian Desert. It is divided into 18 independent states, with 9 millions of inhabitants. They are all under the political superintendence of an agent of the governor-general. The inhabitants are Hindus, and speak dialects resembling the Hindi. In consequence of the rule of so many native princes, and their independent interests, no great public works are carried out, but in many places English schools have been founded. Bhurtpore (pop. 66,000) is the chief town.

4. Sinde (pop. above 2 millions), at the mouth of the Indus, has a hot and dry climate. The country is rich, and produces two crops a year near the river; but to the east, it becomes an absolute desert. The trade of the country is rapidly increasing. The capital is Hyderabad (pop. 48,000); the chief port, Kurrachee, is familiar to Englishmen as a chief packet-station.

5. Gujerat, a flat and fertile country (pop. 3 millions). The ruling race is the Mahrattas. It includes many petty states, the chief of which is that of the Guicowar. Baroda (pop. 101,000) has a great trade.

6. Malwah is a name given to the elevated country lying north of the Vindhyan Mountains. It is divided into a number of principalities, the chief of which are: Indore, or Holkar's dominion; Gwalior, or Scindia's dominion; Bhopal; Bundelcund, &c.

7. The North-west Provinces (of Bengal) are so called because they were included in the presidency of Bengal. They, however, form no part of Bengal in a geographical sense, and might be better described as Hindustan Proper. They form a great plain, divided by the Jumna and the Ganges, bounded on the north by the Terai, a narrow tract of forests and pestilential swamps, infested with wild beasts; on the south, by the elevated tract of Bundelcund. The plain is arid in the west near the desert, but better watered in the east. Costly canals have recently been constructed, which have marvellously increased the productiveness of the country. The people speak Hindi; but both that language and Hindustani, or Urdu, are taught in the schools. The common people live on chupatties, or unleavened wheaten cakes. Their dress is rather fuller than that of the Bengalees; and their houses, which resemble those of the latter, are covered with tiles instead of thatch. They are Hindus and Mussulmans. Among the chief towns of the country may be included Delhi, which, for administrative purposes, is now annexed to the Punjab. Delhi, however, belongs to the Upper Ganges. It had in the time of Aurungzebe a population of 2 millions. The number of its present inhabitants is only 173,000. It still contains splendid mosques, and the imperial palace is half a mile in circuit. In the width and cleanliness of its streets, Delhi appears like a European town. It anciently occupied 20 square miles, and that space is now covered with ruins. Near Agra (pop. 160,000) is the famous Taj Mahal. Benares (pop. 199,000) is the holy city of the Hindus. It is filled with numberless temples and palaces, and is visited by pilgrims from all parts of India. Oude, which previously formed a separate province, was joined to the North-west Provinces in 1877. It resembles them in soil and climate. Lucknow (pop. 261,000) is the chief town.

2. Eastern Hindustan.

1. In this division are included the lower provinces of Bengal. They form an alluvial plain, unsurpassed in the world for luxuriance of vegetation—from one end to the other is, indeed, one enormous garden. Rice is the chief object of cultivation, but all the other grains are grown. The opium poppy, indigo, cotton, the sugar-cane, the mulberry, tobacco, hemp, and flax form the other chief objects of cultivation. On the north, the plain is bounded by the great forest which runs along the base of the Himalaya, and which is infested with wild beasts. Its inhabitants are chiefly Bengalees, the great majority of whom are agriculturists. They are very poor, a great part of the wealth of the country passing into the hands of the *zemindars*, or aristocracy. The peasants are said to be 'as innocent, temperate, and moral as the people of any country in the world.' They are also said to be destitute of manly spirit and independence of character. Calcutta (pop. 800,000) is the capital of Bengal, and the seat of the supreme government. The

European portion is described as the City of Palaces. Behind it is ranged the native town, deep, black, and dingy, with various crooked streets, huts of earth baked in the sun, or of twisted bamboos, interspersed here and there with ruinous brick bazaars, pools of dirty water, cocoa-trees, and little gardens, with some fine large dirty houses, the residences of wealthy natives.

2. Assam is remarkable as the chief seat of the cultivation of tea, which it now sends in very large quantities to the Calcutta market.

3. Of Nepaul and Bhotan, native states, in which Buddhism still prevails, we shall not stop to speak.

3. The Deccan, or Southern Hindustan.

The chief divisions of this part of India are :

1. The Bombay presidency proper, which lies at the north-eastern corner of the table-land of the Deccan, and includes the Ghauts and the sea-coast from the Gulf of Cambay south to the town of Goa, and a long tract of the table-land. It produces cotton, rice, and millet. The labouring population are rapidly improving their condition, thanks chiefly to railway and European works. Mahratta and Canarese are the chief languages of the people, who profess Hinduism. The capital, Bombay (pop. 800,000), is spread over a considerable surface, the houses of the wealthier European inhabitants standing apart among gardens and orchards. In the native town, the houses are small, and the streets narrow and crowded. Bombay is the seat of a great trade with Europe by the Suez Canal, and with the Persian Gulf. Its population is of the most varied character. The Parsees, who are descended from Persian ancestors, who left their native country to escape Mohammedan persecution, are the most remarkable section of the population. They adhere to their old religion, and conduct, as merchants, a great share of the business of Western India. Poonah (pop. 130,000), which stands at an elevation of 2000 feet, is an important military post.

2. The Madras presidency, which occupies a great part of the eastern slope of the Deccan. The alluvial tracts watered and irrigated by the Godavery and Krishna, and other rivers, supply great crops of rice; maize and sugar are also cultivated. Along the coast and in sandy districts, the cocoa-nut and other palm trees are cultivated. The population exceeds 31 millions. The chief languages are Telugu and Tamil. The chief religion is Hinduism, and Brahmans are more numerous in the presidency than elsewhere in India. The Mohammedans are not numerous. Madras (pop. 406,000) is the seat of government. The shore is here low, and dangerous to approach by vessels, which have to load and discharge by means of boats, pulled through a heavy surf. On the beach stands Fort St George, a place of considerable strength. A noble range of public edifices, including a custom-house and court-house, also adorns what is called the north beach. Madras differs in appearance from Calcutta. It has properly no European town, the settlers residing in houses in the suburbs, in the midst of gardens, and transacting business in the district appropriated to the residence of the natives.

3. The Central Provinces, which have a population of 9 millions, more backward than any in India, and consisting of Mahrattas, Mohammedans, and Gonds. A great proportion of the people, including those last named, dwell in rude huts in the forests, and subsist by the chase. Nagpoor, the capital (pop. 98,000), consists chiefly of mud huts. It has only one good street.

4. Hyderabad, the name now given to the dominions of the Nizam of the Deccan. The state has a population of 10 millions. The climate is one of the most salubrious in India. The soil is arid, but, when irrigated, produces fine crops. Hyderabad, the capital of this native state, has a pop. of 354,000.

Ceylon.

The island of Ceylon, though closely connected with British India, and also a British possession, is administratively distinct, under its own governor. Ceylon is a rich and beautiful island, rising in the centre to a table-land, round which runs a low belt of coast plains. The population is above two and a half millions. The chief inhabitants are the Singhalese, who occupy the south and south-west coasts. They are Buddhists in the interior, Christians on the coast. In the north-east, there is a Tamil population, who are Hindus. Colombo (pop. 40,000) is the residence of the governor. Point de Galle (pop. 18,000) is the point at which the Indian and Australian steamers touch. Ceylon was successively Portuguese, Dutch, and English.

INDO-CHINA.

Indo-China forms a peninsula, bounded on three sides by the sea. It has not a well-marked frontier on the north. It consists of a table-land with an elevation of from 5000 to 6000 feet, and traversed by lofty mountain-chains, which, as they run south, spread out like fingers. The basins they form correspond, or nearly so, with the old political divisions—Burmah, Siam, Cambodia, and Cochin-China. The whole country lies within the tropical zone; but the northern table-land has a temperate climate. The whole peninsula is copiously watered, and very fertile. The population, including the semi-independent Laos or Shan states in the interior, is about 40 millions. The inhabitants (save in the long peninsula of Malacca, where they are Malays) are of Mongolian stock, speaking languages resembling the Chinese, but divided into five groups : (1) the Anamese, spoken in Tonquin and Cochin-China; (2) the Cambodian; (3) the Siamese; (4) the Burmese; (5) the Mon, a dialect spoken in the delta of the Irrawadi. In the east, the inhabitants in their personal appearance and habits resemble the Chinese most closely. In the west, they have been much influenced by the languages and civilisation of India.

The chief countries are Burmah, Siam, and Anam.

1. Burmah includes the basins of the Irrawadi and Saluen, and a narrow plain to the north and south of them running along the Gulf of Bengal. The lowland country forms an elevated tract, much of which lies at an elevation of 2000 feet. The maritime provinces are low and damp, with a rich soil. They are not, however, well cultivated. Rice is the chief product. In the towns, the manufacture of pottery, silver ornaments, and jewellery,

are the chief occupations of the people. The government of Burmah is hereditary and despotic. In 1823, the Burmese invaded British India; a war ensued. At its close, they were compelled to cede Aracan. Tenasserim was annexed in 1826, after a second war with Burmah. In 1852, Pegu, the delta of the Irrawadi, also became English. The whole of these territories were thrown into one province, described as British Burmah, and placed under the government of India. The kingdom of Ava, or Burmah Proper, is now an inland country. The old capital, Ava, is now deserted for Mandalay (pop. 70,000), on the right bank of the Irrawadi. Of late years the state of the kingdom has bordered upon anarchy. The population is about 4 millions.

The coast regions, Aracan, Pegu, Irrawadi, and Tenasserim, now forming British Burmah, are governed by a chief commissioner under the Indian government. All the towns are situated on navigable rivers, and no roads existed till they were constructed by the English. The land is divided into small estates of from 8 to 10 acres, held directly from the government. The houses of the peasantry are built of bamboos, and have floors raised on platforms, so as to be above reach of the annual floods. Since the English occupation, Europeans, Chinese, and Hindus have settled in large numbers in British Burmah, and carry on a large trade in rice, timber, and petroleum, and the other products of the country. The town of Aracan (pop. 15,000) carries on a large trade with Calcutta. Rangoon (pop. 134,000) is the most important town in Pegu. It has a large and rapidly increasing commerce. Moulmein (pop. 53,000), the chief town of Tenasserim, well drained and healthy, with fine wide streets, carries on a great trade in timber.

2. Siam (pop. 6 millions) almost coincides with the basin of the Meinam. In the interior and elevated tracts, the climate is healthy; but in the lower region, which is overspread with forests, fevers prevail. The soil is exceedingly fertile, and rice, sugar, and tobacco are extensively cultivated. Chinese and Anamese colonists form one-third of the whole population, and are largely engaged in ship-building, and the mechanical arts and commerce. The government is shared by two kings, one of whom is said to be supreme, and the other subordinate; the former having two-thirds, and the latter one-third, of the power. Bankok (pop. 500,000, one-third of whom are Chinese), the present capital, is built on both sides of a mouth of the Meinam; carries on a large and increasing trade by sea with Singapore and China, in pepper and tobacco and other products. The Siamese concluded a treaty with England in 1826, which led to friendly relations, ever since maintained. In 1881, the total exports from Bangkok amounted to £2,000,000, of imports, £1,200,000, about half of this trade being carried on in British and the other half in Siamese vessels. The chief export is rice; the chief imports, cloths, hardware, and opium.

3. Anam (pop. estimated at 24 millions) includes Cochin-China, Tonquin, and Cambodia. A mountain-chain traverses it from north to south, bounded on the west by the basin of the Cambodia River; on the east, by the coast slope of the China Sea. On the north, the sea-board widens into the broad plain of Tonquin; on the south, forming the basin of the Cambodia into a broad delta. The products are rice, sugar, silk, pepper, and other spices. Tea of an inferior kind is also cultivated in the elevated tracts. The inhabitants closely resemble the Chinese, and are skilful ship-builders and mechanics. Roman Catholic missions had made, in spite of fearful persecutions, half a million of converts. A massacre of Christians broke out in 1857, which led to war; and Lower Cochin-China became permanently a French possession. Subsequently, Cambodia accepted the French protectorate. In 1883, France further occupied Tonquin; and ultimately the 'empire' of Anam has become practically a French dependency. Chief towns: in Anam or Cochin-China Proper, Hué (pop. 30,000); in French Cochin-China, Saigon (pop. 70,000); in Tonquin, Hanoi or Kesho (pop. 120,000).

The highlands of Indo-China form the Chinese province of Yun-nan, with a population of 5,600,000 inhabitants. It comprises a Mussulman population, known as the Panthays, who were recently in insurrection, but whose rebellion was erelong completely suppressed. Yun-nan is the great mining province of China, from which it is scarcely possible to reach it over the mountains and gorges by which it is traversed. Hence the vast importance of the new route up the Tonquin River, discovered recently by the French, by which steamers can reach the heart of the country. English attempts to open a route for trade to Yun-nan through Burmah have been unfortunate in their main purpose.

THE CHINESE COUNTRIES.

We have included under this name the whole of that part of Asia lying north of the Himalaya and the Gulf of Tonquin, and south and west of the Gobi. The area thus defined includes Tibet, China, Corea, and Japan. It is, as we have already seen, for the most part an elevated region. The loftiest table-land on the surface of the globe occupies its western angle, and stretches eastward towards China, where it passes into a country covered with parallel chains running south-west and north-east. North of this region, the Mongol table-land sinks into broad river-basins, and finally to the great plain of China, where the two chief Chinese rivers, the Yang-tze-kiang and the Hoang-ho, meet, and fall into the ocean. Corea is a promontory traversed by a range of lofty hills. The Japanese islands are rugged, but slope on the east to comparatively level tracts. The Chinese countries lie almost entirely within the warm temperate zone. South of the Nan-ling chain, however, China has a tropical climate, while north of Niphon the climate of Japan is that of the temperate zone. The inhabitants of the Chinese countries all belong to the Mongol race; but the Japanese and Coreans differ widely from each other, and from the Tibetans and the Chinese, in appearance as well as in language. All, however, have been influenced by a common civilisation, which connects them like the countries of the European continent.

CHINA.

The whole peninsula between the Gulfs of Tonquin and Pe-che-le, bounded by the Tibetan plateau and the Mongol Desert on the west and

north, and the sea on the east, has long been inhabited by one race, and united under one government, that of China. We have long been familiar with the coast region; but it is only within the last few years that the German traveller, Baron von Richthofen, has given us correct general notions of the geography of the interior. He has shewn that the chains represented in our maps are purely conventional. Southern China is a region of parallel mountain-chains running north-east and south-west, and the summits of which do not exceed, in general, an elevation of from 2000 to 3500 feet. No great plain is met with over this area, and the rivers which cross it pass from valley to valley between the parallel ridges by deep gorges. The streams thus run to and fro through the valleys to turn a barrier, and their courses are, in consequence, sluggish. On the north and west of the Chinese extension of the Kuen Lun, there is another system of mountains, running north-east and south-west, which separates China and the Mongolian plateau. This country sinks eastward into extended plateaux and broad valleys, covered with tertiary deposits, and finally into the great plain of China, into which flows the Yellow River. A great movement of upheaval is believed to be taking place on the northern coasts of the Chinese plain, which is damming up the mouths of the great streams, destroying their embankments and the canals fed from them, and thus causing inundations and a wide-spread misery, which has been the source of much of the present weakness of the government of Pekin. China south of the Kuen Lun, that is to say, the southern hill-country, is well cultivated in the valleys, and its hills are clad to the top with luxuriant vegetation. Everywhere the river-bottoms yield crops of the finest rice, and the hills, tea. Silk is also produced in large quantities. In the northern division of China, the surface is covered either with a rich and deep tertiary deposit, or with an alluvial soil, both of which are exceedingly fertile. There are bare ridges rising out of these, but they do not cover a great area. The northern river-basins and the great plain produce the finest crops of grain and vegetables. In addition to these products, the southern parts of the plain produce tobacco and cotton.

The government is despotic. The emperor is absolute in the empire; his governors, in the provinces. The emperor is assisted in governing by two councils, and his decisions are regularly published in the *Pekin Gazette*. A system of competitive examination exists in China, by which the most able men are supposed to be sifted from the general population, for employment as officers in the public service or mandarins.

A return published in 1844, and not very reliable, gives the revenue of China as £63,934,713. No statement of the expenditure is given in the public accounts, and it appears that the governors of provinces have constantly to make up deficiencies by extraordinary demands on the tax-payers. The trade of China is chiefly with the United Kingdom and India. The United States, as customers, stand next in importance. The exports in 1881 amounted to £20,000,000, and the imports to £25,660,000. The exports consist chiefly of tea, the value sent from the treaty ports to the United Kingdom in 1881 being £7,500,000.

The Chinese, generally, are strong and energetic. At home, they exhibit a bigotry, pride, and contempt of foreigners which were supposed to indicate stupidity. But this is not the impression they produce in America and the colonies, where the belief now seems to gain ground, that if they make themselves acquainted with the European arts and sciences, and, above all, with the modern art of warfare, the English and Russians will find them formidable rivals in any struggle for the possession of Asia. Baron von Richthofen has shewn that the population is divided by the Kuen Lun into two sections. In the south, the sea-boards, and the hills which separate them from the interior, have also produced an effect on language, and the dialects of Quang-tong and Fo-kien differ from that of the rest of China.

Neither the extent nor the population of China are known with anything like certainty. According to the most reliable estimates, the empire, with its dependencies (Mantchuria, Mongolia, Tibet, and Corea), has an area of about 4,000,000 English square miles, with a population of 375,000,000. The area of China Proper is stated at 1,538,000 square miles, with a population of 350,000,000. It is divided into eighteen provinces—Chih-le, Shan-tung, Shan-se, Honan, Keang-soo, Gan-hwuy, Keang-si, Foo-keen, Che-keang, Hoo-pih, Hunan, Shen-se, Kan-suh, Se-chuen, Kwang-tung or Canton, Kwang-si, Yun-nan, Kwei-choo.

The history of China goes back to a very remote period; but perhaps the first date that can be looked upon as historical was the erection of the Great Wall of China in 220 B.C. by the first emperor of the Tsin dynasty, as a barrier against the invasions of the Mongol Tatars. The same monarch is said to have conquered six nations, and appears to have extended his sway over the whole of China north of the Kuen Lun. About 201, the race of Tsin was followed by that of Han. In 406 A.D. two chief kingdoms appear in China, the capital of one being Honan, and of the other Nankin. They were united in 585; but after this period, civil wars and Tatar massacres weakened the country. Kublai Khan conquered the whole country in 1279, and in his time it was that Europeans first became acquainted with it from the writings of Marco Polo. In 1368, the Mongols were expelled, and the Ming native dynasty succeeded. The Mantchus invaded China towards the middle of the 17th century, and in 1651 were in possession of the whole country. Since this time they have retained supreme power, but they seem to be gradually losing control over the distant provinces of the empire. One of the most formidable revolutions the Chinese government has recently had to encounter was that of the Tae-ping rebels, who, under their leader, Hung-sew-tseuen, marched to Nankin in 1850–53, and who were only put down with the assistance of the English and French in 1864. The Mantchus were less fortunate in the western provinces of the empire, where Kashgaria threw off their yoke, and for a time was independent under a Mohammedan Emir. In early times, the Chinese do not appear to have been hostile to intercourse with foreigners. It was the attempt to proselytise made by the Spaniards and Portuguese, in the 16th century, that first excited their hostility to Europeans. For a long period, trade with England

was restricted to Canton; but dissensions between the English and Chinese officials led to the war of 1840-42, and a treaty of peace at its conclusion, by which five ports were thrown open to British trade. The war of 1857, and the capture of Pekin by the English and French in 1860, were followed by treaties under which the commerce of the country was to be fully opened up to Europeans, and Christians were to be protected in the open profession of their faith. It was subsequent to this treaty that European officers were permitted to drill the Chinese troops, and assist in putting down the Tae-ping rebellion. The Chinese government have not, however, given that assistance which was expected in opening up the commerce of the country.

We may enumerate a few of the chief towns of China. Tching-tou-fou (pop. 800,000), the capital of Se-chuen, the province just referred to, is a beautiful and opulent city, with wide streets and handsome shops. The houses are brightly painted, and very clean, reminding the visitor of the cities of Chinese pictures, more than the dingier coast towns. Canton (pop. 1,600,000) stands in a fine country south of the Nan-ling chain. At the mouth of the Canton River is the small English island of Hong-kong, 8 miles long, and from 2 to 6 broad. The chief town is Victoria, the best part of which is built after the European fashion. The population of the colony is 125,504, of whom 2034 are Europeans. Nankin, the capital of the Ming dynasty, had formerly a population, it is believed, of from 500,000 to 1,000,000. Since its destruction by the Tae-pings, more than half of the city is in ruins. Shanghae (pop. 300,000), at the mouth of the Yang-tze-kiang, is now the most important city of the Chinese empire. It is the headquarters of British trade in China. Pekin (pop. 1,600,000), the modern capital of China, is divided into two parts, a commercial city on the south, and a Tatar city on the north, in which are situated the imperial palace and the government offices.

COREA.

Corea lies to the north-east of China. It consists chiefly of a peninsula traversed by a range of mountains. It has a climate severe in the north, but in the extreme south belonging, like China, to the warm temperate zone. It is well cultivated, and in most respects resembles a Chinese province. The Coreans, however, have a language and literature of their own. They have been accustomed to pay tribute to both China and Japan, but have not had much intercourse with Europeans. Lately, our acquaintance with this curious people and country has been much extended; and commercial treaties, opening certain ports to foreign commerce, were concluded with the United States in 1882, and with Great Britain in 1884.

JAPAN.

The Japanese archipelago consists of the islands of Honshiu, Shikoku, Kiushiu, and Yezo, and a large number of smaller islands which surround these. Their surface is generally very rugged—some mountains attaining a great height. In Honshiu, Fusiyama (12,500 feet) is a dormant volcano, and Asama-Yama (8300) an active one. The plains are most extensive on the eastern coast. The greater part of the archipelago lies within the warm temperate zone, but there is a very great difference between the climates of the northern and southern islands. The surface is everywhere well cultivated. The chief products are rice, barley, wheat, and potatoes, tobacco, tea, cotton, silk, and all the fruits and vegetables of Southern Europe. The domestic animals are not much reared; buffaloes and oxen are only used for draught. In some manufactures, the Japanese have made great progress. Their paper, lackered and japanned wares, are unrivalled, and they excel in manufactures of silks and cottons, clocks, telescopes, and metallic goods generally. The area of Japan is about 150,000 square miles, the population 35 or 36 millions. Ethnologists are rather puzzled to say to what section of the inhabitants of Asia they belong. They differ from the Mantchus, Chinese, Malays, and Esquimaux, and yet, in some respects, they resemble all these races. The spoken language of Japan entirely differs from the Chinese, but the Chinese classics form the basis of their literature. Japan was till quite recently an oligarchy governed by the daimios or nobles, and the Tycoon or head of the executive. A civil war which terminated in 1868, restored power to the Mikado, the representative of the old sovereigns, and since then Japan may be considered a monarchy.

In 1542, the Portuguese settled in Japan; but there, as elsewhere, their attempts to proselytise led to strife, and they were expelled. In 1660, when the Dutch opened negotiations with the Japanese, they were allowed to send two ships annually for purposes of trade, but on condition that they should not interfere with the religion of the inhabitants. For two centuries and a half, the Dutch and Chinese had the monopoly of the Japanese trade. They were confined to a small island on the coast of Kiusiu, near Nagasaki. The government maintained its isolation until the islands were visited by the United States' expedition under Commodore Perry in 1854, which obtained entrance to the port of Simoda. The English followed the example set them in 1858, and since then the commerce of Japan has been opened to Europeans. A great revolution has been brought about: English books have been translated into Japanese; Japanese students have begun to frequent the European schools of medicine and law, our dockyards, and our engineering establishments; not one European art or science is now neglected by them; and they bid fair, in a generation, to rise to the level of European progress.

Yedo, now Tokio (pop. 823,000), the capital of Japan, covers a large space, 17 miles long, and 10 broad; this area, however, includes extensive gardens. Canals lined with trees traverse the principal streets.

AFRICA—OCEANIA.

THE continent of Africa is situated in the Eastern Hemisphere, to the south of Europe and the south-west of Asia, and lies between lat. 37° 20′ north and 34° 50′ south, and long. 17° 30′ west and 51° 30′ east. It is bounded by the Mediterranean on the north, by the Suez Canal and the Indian Ocean on the east, and by the Atlantic on the west. Five thousand miles in length, and 4700 in its greatest breadth, and comprising an area of 12,000,000 square miles, it is the second largest of the great divisions of the globe. Anciently, certain portions of Africa stood high in civilisation and advancement. Egypt, the cradle of civilisation, now contains the most renowned monuments of antiquity. Two centuries before our era, Carthage sent armies to the gates of Rome. North Africa, along with Egypt, was the granary of imperial Rome. Alexandria and Carthage were reckoned among the leading centres of learning and culture in early Christian ages; and in later times, the Moors, who succeeded in founding influential states in North Africa, extended their energy and enterprise far into the interior of the continent, and across to Europe. In more modern times, Africa had so relapsed into barbarism as to have interest for the outside world chiefly in connection with the gold and slave trades, the expeditions of the Morocco pirates, and as presenting a field for the adventures of travellers. But the rise of the united states of Liberia on the west; the possession and partial colonisation of Algeria by the French nation; the recent development of political and industrial life in Egypt; the opening of the Suez canal; the British expeditions to Abyssinia and the Gold Coast; the important and growing traffic between Central Africa and Zanzibar; the labours and explorations of Livingstone and other travellers; and the occupation and colonisation of the Cape of Good Hope, part of Kaffraria, and Port Natal, by Great Britain—have contributed somewhat to restore Africa to her place of interest and importance in the world.

PHYSICAL FEATURES, ETC.

Among the peculiar physical conditions of this great continent are—its remarkable compactness, the coast-line being marked by few indentations or projections; its insular position; and its lying for the greater part within the torrid zone. It has three main characteristics of physical conformation. These are: its mountain-system, which at a distance of from 50 to 300 miles from the shore, surrounds nearly the whole of the continent; the great raised plateau of which the interior of its triangular portion, south of Cape Guardafui and the Gulf of Guinea, consists; and the Sahara, or Great Desert.

The Atlas Mountains in the north, between the Mediterranean and the Sahara, and stretching from the Atlantic to Tripoli, are connected geologically with Southern Europe, and comprise several ranges, which ascend from the sea-board in successive terraces, and increase in height from Tripoli, where they are 2000 feet high, to Mount Miltsin (11,400 feet) and Jebel Tedla (13,000 feet) in Morocco. Between the spurs abutting to the north, lie the valleys which constitute the fertile region of the Tell. The low ground along the Atlantic, marked by a tropical luxuriance of vegetation, but with an unhealthy climate, is backed by the Kong Mountains, between the Gulf of Guinea and the Niger; the Cameroon Mountains, stretching eastward into the interior; and by several chains southward to Damara Land, the country in front rising in terraces. Similarly, in South Africa, the land rises in sandstone terraces intersected by granitic rocks, and having the Zwellendam range 20 miles inland, and 200 miles in length, whose crest is Table Mountain, 3816 feet in height; the Zwarte range, 30 miles farther back; and the range comprising Sneeuwveld (10,000 feet), Nieuwveld, &c. Along the east coast, at a certain distance from the sea, a continuous system of parallel ranges extends, increasing in height towards the equator, and bearing the names of the Drakenberg Mountains (10,000 feet), the Lupata Mountains in Mozambique (8000 feet), the Kenia and Kilimandjaro in Zanzibar (17,000 and 20,000 feet). The high table-land of Abyssinia and Upper Ethiopia forms the north-eastern crest of this system. Inside of this mountainous border the interior of the continent consists of an immense plateau, with a cup or basin shaped appearance, sloping on the whole from east to west. This table-land, by which the climate of Central Africa is to some extent modified, is of a diversified character, having undulations, mountains, valleys, plains, swamps, wastes, hollows, as well as immense lakes and rivers.

The Sahara, or Great Desert, stretches from Morocco on the west to the valley of the Nile on the east, and from the southern base of the Atlas range to Sudan. Its length, from the Atlantic to the western edge of the valley of the Nile, is about 3000 miles, and its average breadth from north to south 1000 miles. The surface of the Sahara is varied by depressions and broad plateaux from 1000 to 3000 feet above the surrounding ground. A remarkable feature of the Sahara is the Wed Mzi, which, rising in Djebel Amour, flows during almost its entire course of 400 miles underground. After an east, north-east, and finally south-east course, it falls into Chott Melr'hir. Over a great part of the Sahara, rain never falls, and everywhere it is rare; it is thus condemned to sterility. It consists partly of tracts of fine shifting sand, which frequent storms of wind raise into the air, so as often to overwhelm travellers. But the greater part of the surface consists of naked but firm soil, composed of indurated sand, sandstone, granite, and quartz rocks, often rising into ridges or hills. The desolation is interrupted at intervals by patches, sometimes of considerable extent, covered with bushes and coarse grass, and often of great beauty and fertility. These oases, or wadies, as they are called, are valleys lying below the general level of the Desert, having the water-bearing stratum, which is below the usual level of the Sahara, at or close to their surface. They are most numerous and fertile in the eastern portion of the Desert. The easiest route across the Desert to Sudan runs from Tripoli through the kingdom of Fezzan to Lake Tchad. The portion of the Desert lying east of the route above described is called the Libyan Desert; and it is chiefly in this region that the oases are susceptible of cultivation: the tracts of vegetation in the western portion are fit for little else than pasture, chiefly for goats and sheep. The chief production of the more fertile oases is dates; but other fruits and grain are also cultivated. Gum-arabic is another production. Some of the larger oases support thousands of inhabitants living in villages. Commerce is carried on across the Desert by various routes by means of caravans, consisting of from 500 to 2000 camels, with their attendants. The distance between the wells sometimes exceeds ten days' journey; and when a well is found dry, men and animals are in danger of perishing. The inhabitants consist of independent tribes of Moors, Berbers, and Arabs.

The *geology* of Africa is yet but imperfectly known. The sections recently traversed present a variety of schists, shales, limestone, syenite, sandstone, tufa, with protruding granite and trap rocks. 'The whole of the Sahara is but the upheaved bed of a tertiary, or even quaternary ocean; the deltas of the Nile, Niger, and other great rivers consist of recent alluvia; the formations of the Cape are chiefly mesozoic sandstones; the northern belt consists largely of soft tertiary limestone; the primary hills of Abyssinia and Nubia are known chiefly for their granites and porphyries; and most of the islands, whether in the Atlantic or Indian Ocean, are of recent volcanic origin.'

The *islands* connected with Africa are with one exception small, and generally far removed from the mainland. In the Indian Ocean are—Madagascar, separated from the continent by the channel of Mozambique, having an area of 230,000 square miles, or more than that of France, rich in mineral and vegetable produce, and with a population of upwards of 5,000,000; the important islands of Bourbon and Mauritius, the minor groups of Comoro, Amirante, and Seychelles, north of Madagascar; and Socotra, off Cape Guardafui. In the Atlantic are—Ichaboe and other islets along the south-west coast; St Helena, Ascension, Annobon, St Thomas, and Fernando Po, in the Gulf of Guinea; the Cape Verdes; the Canaries, which rise in Teneriffe to an altitude of 12,182 feet; Madeira, celebrated for its delighttul climate and wines—and lastly, the Azores.

The *rivers* of Africa are: on the west, the Niger, Joliba, or Quorra—for it goes by these and other names in different parts of its course—which rises in the Kong Mountains of Guinea, about 9° 25′ N. lat., 9° 45′ W. long. and flows first north, then north-east, and at last south into the Gulf of Guinea—its length is estimated at 2500 miles, and its navigability has been ascertained for a distance of 800 miles, but its banks are very pestilential; the Chadda, or Benué; the Senegal and Gambia, which enter the Atlantic near Cape Verde; the Congo, now identified with the Lualaba and Chambeze, in Central Africa; the Coanza; and the Orange River, forming the north boundary of Cape Colony. On the east, the Limpopo, falling into Delagoa Bay; and the Zambesi, rich in affluents, which falls into the Mozambique Channel. On the north-east, the Nile, which enters the Mediterranean by various branches, and is formed in Nubia by the junction of two streams—the Bahr-el-Azrek, or Blue River, rising in Abyssinia, and the Bahr-el-Abiad, or White River, which comes from the interior of equatorial Africa. The last tributary of the Nile is the Atbara, or Black River, from Abyssinia. Recent explorations have increased our knowledge of many of these rivers. Major Pinto, in his journey across Africa, 1878-9, found the Cubango rising to the west of Bihé on the west coast, and proved that it is not, as was long supposed, a tributary of the Zambesi, but that it loses itself in an enormous basin called the Makarikari in the Bamangwato country. The source of the Niger was determined by two clerks in the employment of a French merchant in Sierra Leone in July 1879. M. de Brazza, in 1875–8, traced the Ogowé close to its source, about 1° 45′ S.

Lakes.—The peculiar physical conformation of Africa, by which the water is thrown inwards on the central regions by the surrounding border mountain-ranges, makes it rich in lakes. In Northern Central Africa, between lat. 12° and 14° north, is Lake Tchad, which is of a triangular shape, and is about 180 miles long, and 100 broad. The other known principal African lakes are—N'gami, in the south, which drains the country between the Orange and Zambesi rivers; Nyassa, between lat. 14° 25′ and 10° 55′ south, being 210 miles long, and having an average breadth of 26 miles; Tanganyika, the southern end of which is in lat. 8° 42′ south, and which is 360 geographical miles long; Bangweolo, whose southern end is in lat. 12° south; Moero, 60 miles long, with exceptionally magnificent scenery; Kamolondo; Lincoln; the great Victoria N'yanza, whose southern point is in lat. 2° 44′ south, and which is 220 miles long, and 220 broad; the Albert N'yanza, about the equator, 300 miles long, and 90 broad; and the Dembea, or Tzana, in Abyssinia, through which the Blue Nile flows, about 65 miles long, and 30 broad, and situated 6000 feet above the sea-level. The aggregate area of the lakes of Central Africa has been estimated at not less than 100,000 square miles, and the lake scenery is often extremely beautiful and impressive.

CLIMATE—BOTANY AND ZOOLOGY.

The *climate* is wholly that of the torrid zone, with the exception of a belt on the north and the extreme southern projection.

The *vegetation* of Africa, without raising any question as to what may have been introduced from other continents, is decidedly less varied, and more unique, than that of Europe or Asia. Along the Mediterranean sea-board it greatly resembles that of Southern Europe. In Upper Egypt, Nubia, and Abyssinia, the characteristic plants are gum-yielding acacias, the cassia or senna-shrub, coffee, ginger, turmeric, cardamoms, the lotus or jujub, and the nelumbium or water-lily. Cape Colony is distinguished for its heaths, euphorbias, aloes, cactuses, thorn-apple, mimosa, and other prickly shrubs; and yields also luxuriantly such plants as have been introduced by the colonists. In the other known parts of the continent, the vegetation is strictly tropical, and often peculiar. Here flourish palms and dates, the banyan, gigantic adansonia, the dragon-tree, banana, papaw, tamarind, anona, sugar-cane, cotton-tree, cassava, tallow-tree, maize, manioc, yam, ground-nut, melon, pine-apple, and other forms native to warm regions; while in the islands are cultivated chiefly the vine, orange, melon, coffee, and sugar-cane.

The *Fauna*, as might be expected from the insulated nature of the continent, is in many instances peculiar, several of its forms being found in no other region. Among the more characteristic may be mentioned numerous apes and monkeys; the lion, panther, leopard, and other felinæ; the hyena, jackal, racoon, &c.; numerous species of antelopes and gazelles in the south; the buffalo, camel, dromedary, and giraffe; the horse, zebra, quagga; the elephant, rhinoceros, hippopotamus, and masked-boar; seals, dolphins, and other cetacea. Of *birds*—the ostrich, bustard, and guinea-fowl; the parrot family in great abundance; the flamingo, pelican, secretary-bird, and crane; the cuckoo, swallow, nightingale, and quail, which are only summer visitants in Europe. Of *reptiles*—crocodiles, alligators, monitors, &c.; serpents in great variety, many of which are poisonous; lizards and chameleons; and various species of turtle.

POPULATION.

The population of the whole continent is vaguely estimated at above 200 millions. The most characteristic races are those of the Negro group, occupying the central, western, and southern parts of the continent. The inhabitants of the north-east and north borders are believed to be allied to the Semitic peoples of Asia (see ANTHROPOLOGY). In the settlements belonging to European kingdoms, more or less of a foreign element has been introduced. The foreign powers having possessions in Africa are—*Britain*, occupying Cape Colony, which was taken from the Dutch in 1806; the Mauritius, with the minor islet-groups of Amirante and Seychelles, taken from the French in 1810; the islets of St Helena and Ascension; and the settlements of Sierra Leone and Cape Coast: *France*, possessing the island of Bourbon, the settlement of Senegambia, the somewhat expensive colony of Algeria, and since 1881, Tunis: *Portugal*, occupying some settlements on the Mozambique coast, the coast of South Guinea, the Cape Verde Islands, Madeira, and the Azores: *Spain*, to which belong the Canaries, and the forts or districts of Ceuta and Melilah, near

the Strait of Gibraltar: and *Turkey*, which holds a nominal superiority over Tripoli, Tunis, and Egypt.

Africa falls conveniently into five great divisions: Northern Africa, inclusive of the Great Desert; Western Africa; Southern Africa; Eastern Africa; and Central Africa.

NORTHERN AFRICA.

The countries of Northern Africa, known as the Barbary States—so named from the Berbers, the supposed original inhabitants of the district—are Morocco, Algeria, Tunis, and Tripoli, including Fezzan.

Morocco, a sultanate in the north-west, is bounded on the north and west by the Mediterranean Sea and Atlantic Ocean; on the east, by Algeria; and on the south, by a line running from Cape Nun to the Algerian frontier. It has an area of 230,000 square miles, and a population of eight millions, comprising Moors, Arabs, Berbers, Negroes, and Jews; the Moors being more than 4,250,000, and the Berbers over 3,750,000. The government is despotic. The religion is the Mohammedan. Civilisation is low. The manufactures are fine silks and leathers, in the production of which last, the Moors excel Europeans. The exports consist chiefly of wool, hides, grain, cattle and sheep, leather, &c. Two-thirds of the trade of Morocco are in the hands of British merchants. The navy, once powerful, is now inconsiderable.

Algeria.—Algeria (l'Algérie), a French colony, but belonging formerly to Turkey, lies between 2° 8′ W. long. and 8° 32′ E. long., and is bounded on the north by the Mediterranean, by Tunis on the east, by the Great Desert on the south, and by Morocco on the west. Its area is estimated at 160,000 square miles. The population at the last census was 2,921,246, of whom 217,990 were Europeans. The settled part of Algeria is divided into the three provinces of Algiers, Constantine, and Oran, which are subdivided into twelve departments. At the head of the colony is a governor-general, aided by a Colonial Council, whose members are appointed by the government of France. A French *corps d'armée* of 60,000 men is kept in Algeria. In 1870, the imports of the colony amounted to £6,907,628, and the exports to £4,978,250. Esparto for making paper, corn and flower seeds, are the principal exports. By far the largest part of the commerce is with France—on an average more than two-thirds. In 1877 the total imports were £8,112,132; exports, £6,880,251. In 1878, there were upwards of 400 miles of railway in Algeria.

Tunis, which lies on the Mediterranean, between Algeria and Tripoli, has an area of 75,000 square miles, and a population of about one million, of which the capital, Tunis, possesses 180,000, one-half being Jews; and Kairwan, the centre of the inland trade, 60,000. The state of Tunis, till 1881 practically independent, is now a regency under French protection. The recent Beys, as the rulers are styled, have succeeded in abolishing the slave-trade, and in establishing political equality. The territory of Tunis corresponds to that of ancient Carthage, and has a fine climate and fertile soil. Cattle, sheep, and horses are reared with success. Trade and manufactures flourish, particularly in Tunis and Susa.

Tripoli, a pachalik of the Turkish empire, situated on the Mediterranean, between Tunis, Fezzan, and the Libyan Desert, has an area of 200,000 square miles, and a population of 1½ million. The population of the capital, Tripoli, is 25,000. Vegetation in Tripoli is chiefly supported by copious dews. Tropical fruits are produced about the capital and Mesurata. The inhabitants rear sheep, cattle, horses, and mules. In addition to the products of the country, gold-dust, ivory, and natron, from the interior of the continent, are exported to Malta and the Levant. The natives are Berbers, Moors, and Arabs.

Fezzan, another Turkish pachalik, lying south of Tripoli, is an immense oasis, having a population of from 75,000 to 150,000. The arable ground is not more than one-tenth of the soil. Murzuk, the capital, is the starting-point from North Africa for Central Negroland. Fezzan enjoys periodic rain from the moist winds of the Mediterranean, which extend farther into the continent here than elsewhere.

WESTERN AFRICA.

The countries of Western Africa are: (1) *Senegambia*, which extends from the Great Desert to the Grain Coast. (2) *Upper Guinea*, stretching along the Gulf of Guinea, from the Grain Coast to the Bight of Biafra, and including, on the coast, *Sierra Leone*, *Liberia*, *Grain Coast*, *Ivory Coast*, *Gold Coast*, *Slave Coast*, *Calabar Coast*, and in the interior, several native kingdoms, of which *Ashantee*, *Dahomey*, and *Benin* are the chief. Sierra Leone is a British colony, founded in 1787, and since maintained, at a cost of nearly £8,000,000, with a view to the suppression of the slave-trade. Its population is about 50,000. Of the other British stations, which include *Elmina*, &c. recently ceded by the Dutch, *Cape Coast Castle*, on the Gold Coast, is the most important. Ashantee is a hilly country, but well watered and productive, having a population of 1,000,000 inhabitants, who have made some progress in agriculture and home-manufactures. Ashantee is rich in gold. It is under an absolute monarchy, and in 1873 signalised itself by a war with Great Britain, resulting in the destruction of Coomassie, and in the king's submitting to British terms, promotive of commerce and civilisation in that part of the world. Eastward from Ashantee is Dahomey, a kingdom also with an absolute monarchy, which is chiefly notorious for the human sacrifices enacted to escort into 'Deadland' a deceased monarch with a suitable ghostly retinue, or to furnish ghostly messengers to the king's departed relatives. The prevailing worship is fetichism. Dahomey is celebrated for its Amazons, or women-soldiers, who are called the king's wives, and who numbered 2500 when seen by Captain Burton. The most important state in Western Africa is *Liberia*, situated on the Grain Coast. Liberia was formerly a dependency of the United States of America, but was proclaimed a free and independent state in 1847. The total population is 720,000, all Negroes; of these, 19,000 are Americo-Liberians. The population of Monrovia, the capital, is estimated at 13,000. The revenue is 111,000 dollars. Thirty

coast-traders have been built by the Liberians, and they own other vessels, which are engaged in commercial intercourse with Great Britain and the United States. In 1881, the exports of Western Africa, including Liberia, were valued at £1,895,656.

(3.) *Lower Guinea* extends from the Bight of Biafra to Southern Africa, and includes the coast districts of Loango, Angola, and Benguela. This country remains in an undeveloped condition, and is still tainted by traffic in slaves. It belongs nominally to the Portuguese, who first discovered it, and made early settlements on its coast.

SOUTHERN AFRICA.

The *Cape Colony* was founded by the Dutch under Van Riebeek in 1652. The settlement had grown to considerable dimensions when the English took possession of it in 1796. Restored to the Dutch at the peace of Amiens, it was finally occupied by Great Britain in 1806. Inclusive of the Transvaal, now only under British suzerainty, the present boundaries of the Cape Colony in the wider sense are the Orange River and the Limpopo River, the encircled area of the Orange River Free State being, however, independent of Britain; on the south, the Indian Ocean; and on the west, the Atlantic. The area of Cape Colony proper is about 200,000 sq. miles; with dependencies, near 350,000. The dividing range of mountains, called by the various names of Stormbergen, Nieuwveld, &c. runs across the country in a south-westerly direction about 100 miles from the coast. On the east, between this principal range and the sea, lie two other ranges, less continuous and regular. Owing to the fact that the prevailing winds, which at different seasons are from the south-east and north-west, fail to deposit their stores on the opposite side of the Dividing Range, a transposition of seasons occurs in this latitude; harvest depending chiefly on the rainfall, the people are sowing and planting on the one side, while they are reaping on the other. The country is liable to long-continued droughts; it has, however, special natural adaptations for water-storage.

The population of the colony is extremely varied, including Portuguese, Dutch, English, French, Germans, Kaffirs, Hottentots, Malays, Mozambiquers, and Africanders or half-castes. Of the whole population—which, inclusive of British Kaffraria, amounts to 720,000—200,000 are Europeans, about 150,000 are Kaffirs, and over 80,000 Hottentots. Of the European population, the English are outnumbered by Dutch, Germans, and French. The colony is divided into two great provinces, the Eastern and Western, which contain sixteen divisions. Responsible government, as in the Australasian colonies, was introduced into the Cape of Good Hope in 1872. In 1871, the revenue of the colony was £836,174; in 1872, it had risen to £1,161,548. In 1871, the imports were valued at £2,585,298; and the exports, £2,531,609. In 1881, the revenue was £4,835,189; the imports, £9,227,171; the exports, £4,220,706. (It is to be remembered that between 1871 and 1881 the area of the colony had been much increased.) Wool forms the chief article of export. Other important exports are diamonds, copper ore, sheep-skins, ostrich feathers, wine, untanned hides. The agricultural farms are generally small, but the sheep-farms frequently contain from 3000 to 15,000 acres. A very large population was drawn to Griqualand West, on the discovery of diamonds there, a few years ago. Griqualand includes the territory along the Orange River, and around its junction with the Vaal. The area of the fields is 20,000 miles, of which, however, it has been calculated that the farms yielding diamonds form only a small part. Great prizes have been obtained and fortunes made on these fields, which are accessible from Port Elizabeth, Natal, East London, as well as Cape Town. One of the principal drawbacks, indeed, has been the lack of adequate means of transport; but the colonists are now face to face with the difficulties, and have made fair beginnings in opening up the country by means of railways. The colony is also deficient in good harbours, but the shipping at Cape Town is now secure, through a breakwater and docks. Cape Town, the capital of the colony, the most flourishing European settlement in Africa, is finely situated on Table Bay, has many good buildings, and contains a population of about 20,000. Its suburbs are extremely beautiful. Graham's Town, the seat of government for the Eastern province, has a population of 10,000.

Natal.—Situated between the 29th and 31st parallels of south latitude, Natal has a sea-board on the Indian Ocean of 150 miles, is bounded on the north-east by the Tugela or Buffalo River, and on the south-west by the Umzimculu, which separates it from Kaffraria; while the Quathlamba Mountains, a continuation of the Cape Range, divide it from the Free State and Basutuland. It contains an area of 25,000 square miles. The mountains which traverse the colony form it into a series of plateaux, suited for semi-tropical no less than European productions. The climate is very salubrious. Natal has but one important harbour, D'Urban or Port Natal. The chief rivers are the Tugela, Umcomanzi, Umgani, and Umzimculu. None of them is navigable, but the streams are permanent. The capital is Pietermaritzburg (pop. 2000), 50 miles inland, on a tributary of the Umgani River. Natal is a flourishing town with 1200 inhabitants.

Natal formerly belonged to Cape Colony, and was erected into an independent colony in 1856, when a constitution was granted to it, afterwards modified in 1870. It is governed by a lieutenant-governor, with an executive and legislative council. In 1871, the revenue amounted to £180,498. The population of the colony is about 315,000, and comprises original Dutch emigrant Boers, English and German settlers, and the remains of the broken Zulu tribes who originally possessed the country, the Europeans being about one-seventh of the whole population. The natives are generally docile, make good servants, and are largely employed in agricultural and pastoral pursuits. Some of them, indeed, headed by Langalibalele, rebelled in 1873, but were soon suppressed. Again in 1879 war broke out between England and Ketchwayo, king of the independent Zulu country, who inflicted several severe blows on the British army before he was finally defeated and taken prisoner. In 1871, the imports were of the value of £385,812, and the exports, £493,128. The chief export is wool; other exports are sugar,

ivory, hides, raw cotton. Coffee and maize are grown in considerable quantities.

The *Orange River Free State* consists of the territory lying between the two great branches of the Orange River, and separated from the coast by the mountain-chain of the Quathlamba, &c. It is occupied by Dutch Boers, who retired from Natal when declared a British colony, and formed a republic here, along with some coloured inhabitants. In 1880, the whites numbered 61,000 and the natives 72,500. The country itself is a vast plateau, rising from 3000 to 5000 feet above the sea-level.

The *Transvaal*, on which Dutch Boers founded a republic in 1848, became a British colony in 1877, but was restored to independence, though under British suzerainty, in 1881. It also consists of an immense plateau, sloping to the north, and having an area of 110,000 square miles. The European population is about 40,000. A considerable trade is carried on with Natal, and the Portuguese settlements are occasionally visited by trading parties. Copper, iron ore, and gold are met with in Transvaal.

EASTERN AFRICA.

EGYPT.

Egypt, properly so called, is a small country occupying the north-east corner of Africa, on both sides of the Nile, as far south as the first cataract, about 24° north lat.; but the territory now under the sway of the ruler of Egypt, embraces in addition, Nubia, Cordufan, Bariah, and undefined tracts of country in the basin of the White Nile. Previous to the acquisitions recently made by the expedition under Sir Samuel Baker, the area of Egypt, in this extended sense, was vaguely estimated at upwards of 600,000 square miles, with a population of 7,000,000.

The area of Egypt proper is only about 130,000 square miles. It consists of two great natural divisions — namely, a cultivated part, or the valley and Delta of the Nile, which are formed by deposits of that river, comprise only a tenth of the above area, and are of amazing fertility, due to the annual floods of the Nile, aided by irrigation; and barren table-lands and hilly tracts, which occupy the rest of the country, and lie on each side of the fertile part.

The valley of the Nile is, in Upper Egypt, six miles, and in Lower, twelve miles broad, on an average; at a few points, the hills approach the margin of the river, and the extreme breadth of the valley is 25 miles. The Nile, 90 miles from its mouth, divides into two widely diverging branches, called the Rosetta and Damietta branches. The space between is a triangular flat, 90 miles on each side, called the Delta, from its shape resembling the Greek letter Δ, or *Delta*. The Delta has an average height above the sea of 50 feet, and the highest parts are 100 feet. Anciently, the Nile ran in seven great divisions through the Delta into the sea; but the two extreme ones just mentioned are alone now navigable, the others having been silted up.

The grand phenomenon connected with the Nile is the annual overflow of the low lands of the valley and Delta along its banks. These inundations, and the fertility they produce, are due to periodical rains and melting of snow on the mountains of Abyssinia and in the basin of the White Nile. At Khartoum, the Nile begins to increase early in April; but in Lower Egypt, the inundation usually begins about the 25th of June, and attains its height in three months. It remains stationary about twelve days, and then subsides. The fertility of Egypt is entirely dependent on the rise of the Nile, for the country may be said to have no rain. At the end of November, the irrigated land has dried, and is sown, and is covered with green crops, which last till the end of February. In March is the harvest. The Delta and valley of the Nile consist of alluvium, or mud and sand brought down by the floods almost entirely from the Atbara, the last tributary received by the Nile. This alluvium contains few or no pebbles, and little detritus of any size. The Nile deposits every year a new layer; the average depth thus added to the soil is estimated by some at 4½ inches in a century, while others make it as much as six inches.

The climate of Egypt is very dry and warm. The chief drawbacks are the occasional hot winds of spring and summer, and the moistness of the Mediterranean sea-board. Among the chief productions of Egypt may be mentioned the date-palm; the papyrus, anciently used as material for paper, now, however, rare; and the lotus or water-lily of the Nile. The sugar-cane, cotton, indigo, and tobacco are cultivated, and gourds and melons abound. Wheat, barley, maize, and durra are raised. The country is deficient in trees.

Egypt, formerly a pashalik of the Turkish empire, came, in 1873, to be governed by a semi-independent sovereign, with the title of Khedive, but paying an annual tribute to the sultan. Since the rebellion under Arabi Pasha in 1882, Egypt has, however, been occupied by British troops, and administered under British influence. In 1873, the sultan granted the khedive the right of concluding treaties. From remote times, Egypt proper has been divided into three great districts—Lower Egypt, Middle Egypt, and Upper Egypt, which are subdivided into eleven administrative provinces. The whole population was stated in 1870 at about 5,000,000. The town population comprises 150,000 Copts, descendants of the ancient Egyptians; 8000 Jews; 3000 Armenians; and 25,000 domiciled Europeans. The total town population is 500,160, of which Cairo, the capital, contains 256,700; Alexandria, the chief port, 164,400; and Suez, 4160. The rural population is in a condition of serfdom. In Cairo and Alexandria, there are many slaves. The total commerce of Egypt averages in value £35,000,000, the greater proportion of which consists of goods in transit between India and Great Britain, being 70 per cent. of the whole. The opening of the Suez Canal, which was constructed by a French company, at a cost of £16,000,000 sterling, and was opened for navigation on November 17, 1869, has had an important influence on Egyptian commerce. In 1870, 491 ships, with a total tonnage of 436,618, passed through the canal; in 1871, the number of ships had increased to 3198 (of which 2565 were British), and the tonnage to 7,122,156. The receipts of the Suez Canal Company, in 1882, amounted to £2,500,000. Egypt possesses considerable railway and telegraph systems, which are almost wholly state

property. The revenue in 1881 was £9,229,965. The principal source of revenue is a land-tax. The Egyptian finances were managed from 1879 till 1882 under the joint control of England and France, each represented by a Controller-General. The military movement of 1882 led to the intervention of England, a short campaign, and the attempted reorganisation of Egypt under the Khedive as a constitutional sovereign. Close on this followed the rebellion of the Soudanese provinces belonging to Egypt, under the Mahdi or soldier-prophet, the English expedition to the Soudan, the siege of Khartoum, and the death of Gordon Pasha.

Nubia, lately Egyptian, lies to the south of Egypt. It contains many old Egyptian monuments from Philæ to the island of Argo. Nubia consists of two parts: the southern, which is within the limits of the tropical rains; and the northern, which is beyond those limits, and, like Egypt, is extremely dry; being, in fact, desert, excepting within a quarter of a mile on either side of the banks of the Nile, which flows through it.

ABYSSINIA.

Abyssinia, lying to the south-east of Nubia, and along the Red Sea, is for the greater part mountainous, having high table-lands and deep ravines. The Samen or Samien Mountains rise to a height of 15,000 feet. Between the highlands and the Red Sea is Adal, a flat country. The chief rivers are the Bahr-el-Azrek, or Blue Nile; the Takazze, a tributary of the Nile; and the Hawash in the south, which flows eastward into Lake Assal in Adal. Tzana, or Dembea, is the largest lake, round which the country is extremely fertile. The climate and productions vary with the varying characters of the country. Abyssinia is divided into three main districts: Tigré, which is the northern promontory of the table-land; Amhara, which is the middle province, and in which Gondar, usually reckoned the capital, is situated; and Shoa, which is the southern extension of the highlands. Abyssinia has acquired an interest from the late self-styled Emperor Theodore, who, having subdued the other chiefs or kings, began a frightful course of tyranny and cruelty. At last he imprisoned the British consul and other Europeans, and compelled the British government to send an expedition of 10,000 troops, which (1868) took his fortress of Magdala, where he was found among the slain. On the withdrawal of the British forces, the native chiefs began to struggle, as usual, for the supremacy. From the 4th century, the Abyssinians have professed Christianity, which among them is mixed with Judaism and paganism. Their bishop, or Abuna, is consecrated by the Coptic patriarch of Alexandria. The state of civilisation is low.

Somaliland, the triangular tract lying south-east of Abyssinia, is bounded on the north by the Gulf of Aden, on the east by the Indian Ocean, and on the south and west by the Indian Ocean and the river Jub, and has an area of 330,000 square miles. The principal rivers are the Jub, the Haines, and the Nogal. Between the Jub and the Haines, the country is grain-producing; between the Haines and Nogal, it is well adapted for pasture-land. The Somali are a people of Arabian descent, and addicted to pastoral pursuits. Somaliland excels all other countries in odoriferous gums, which are conveyed to Aden. The chief trading-place in Somaliland, which was explored, in 1854, by Burton and Speke, is Berbera, on the coast opposite to Aden.

ZANZIBAR.

The sultanate of Zanzibar consists of the island of that name, and a coast-tract on the mainland, extending more than 1000 miles from Somaliland to Mozambique, with an undefined breadth towards the interior. The island, which is about 25 miles from the continent, has an area of very nearly 620 square miles, with a population of 200,000, of which the town of Zanzibar, the capital of the sultanate, contains 100,000. They consist of Arabs, Banyans or Hindu traders, and negroes. Zanzibar is the commercial emporium for the central regions of the continent. A large part of the traffic has hitherto been in slaves; but the sultan, at the instance of Great Britain, has undertaken to suppress it. Zanzibar, which from 1784 was under the government of the Imaum of Muscat, became a separate dominion in 1854.

MOZAMBIQUE.

Mozambique extends from Cape Delgado to Delagoa Bay, and is divided by the Zambesi river into Mozambique Proper and Sofala. The area is 283,500 square miles, and the population 300,000. The country belongs nominally to the Portuguese, who have a governor-general there, but their actual possessions are confined to a few stations, of which Mozambique, Quilimane, Sena, and Teté are the principal. Mozambique, the capital, is situated on a small coral island, a little distance from the shore, and has a population of 8522, of whom 7000 are slaves. The country is rich, but it has an unhealthy climate.

CENTRAL AFRICA.

Central Africa includes the whole of the interior of the continent south of the Great Desert. The efforts of English and French travellers in the 17th and 18th centuries, were directed to explore the country of the Niger, in Northern Central Africa, called Sudan or Nigritia, and to reach the famous city of Timbuktu, reported as being situated on its banks. For a time, the English supposed the Gambia, and the French the Senegal, to be the outlet of the Niger. At length, in 1795, Mungo Park, having landed on the African coast, set out from the village of Pisania, on the Gambia, and after various adventures came in sight of the Niger, near Sego. In 1805, at the instance of the government, he undertook another journey with the purpose of 'proceeding up the Gambia, crossing the country to the Niger, and travelling down that river to its termination.' Mungo Park succeeded in tracing the course of the Niger eastward beyond Timbuktu, and southward as far as Boussa. Richard Lander, in 1830–31, solved the mystery attaching to the river, which was found by several outlets, and with a large delta, to enter the Gulf of Guinea. This delta is about the size of Ireland. In the years

1850–55, Dr Barth, crossing the Great Desert from Tripoli, explored the country of Nigritia as far south as Adamawa, and from the east of Lake Tchad westward to Timbuktu. From Kakawa, the capital of Bornu, a kingdom which lies west of Lake Tchad, he travelled southward to Yola, the capital of Adamawa, which is three miles in length, and has 12,000 inhabitants. Here he came upon the river Chadda, or Benué, flowing in a broad and majestic course from east to west, which joins the Niger by Kororofa. Dr Barth expressed his conviction that 'along this natural high-road, European influence and commerce will penetrate into the very heart of the continent.' He also visited Masena, capital of the country of Bagirmi, which lies upwards of a hundred miles to the south-east of Lake Tchad, and which contains a population of about a million and a half, nominally Mohammedans. He next proceeded through the Houssa states, in the direction of the Niger. Of this region the dominant inhabitants are the Fulbe, or Fellatah, an intelligent and energetic people, strongly Mohammedan. Their principal city, Kano, contains a population of from 30,000 to 40,000. Cloth is manufactured and dyed in this chief commercial emporium of Central Negroland. The capital is Sokoto. Dr Barth spent eight months at Timbuktu, and reports that city as being provincial, but important as the seat of Mohammedan learning and worship, and as being upon that point of the Niger which is nearest to Morocco. The settled population of Timbuktu is about 13,000, and the floating population from 5000 to 10,000. It has a circumference of between two and three miles. The houses, as is usual in Central Africa, are of clay. Gold, salt, and kola-nut are the chief articles of commerce. The population of Negroland is about 10,000,000.

Of *Southern Central Africa* but little was known previous to the laborious explorations of Dr Livingstone; although the continent had been crossed by two Portuguese, and on two occasions the route from Teté to Cazembé had been made. Having commenced as a medical missionary among the Betjuans, or Bechuanas, north of the Orange River in 1840, Livingstone crossed the Kalihari Desert in 1849, and came upon Lake N'gami, which drains the country between the Orange and Zambesi rivers. In 1850, he visited the chief of the Makololo, a Betjuan tribe, in the valley of the Upper Zambesi, whose capital is Linyanti. To counteract the slave-trade carried on by the Mambari, a tribe intermediate between the Makololo and the Portuguese settlements on the west coast, Livingstone returned to Linyanti in 1853, with the object of finding a direct route to the west coast. He first explored the Zambesi valley north to lat. 14° S. where the rivers Leeba and Liambye unite. This country is very fertile. The Makololo rear cattle and grow maize, beans, vegetables, and durra. In cultivating, they employ the hoe, a native manufacture of iron. Afterwards, proceeding from Linyanti, Livingstone came to the country governed by the Muata Yanoo, a flat region, with some wooded tracts, and striking westward, arrived at Loanda, the capital of the colony of Benguela, on the 31st May 1854. Returning to the interior, he next resolved to try whether a better commercial route could not be found eastward, along the Lower Zambesi. Hindered from descending the river in boats, by the great Victoria Falls, he struck north-east to the confluence of the Kafne, thence by the Zambesi to Teté, and finally to Quilimane. In 1859, Livingstone and Kirk penetrated to Lake Shirwa, and traced the Shiré to Lake Nyassa. In 1857–58, Lake Tanganyika was discovered by Burton and Speke, who crossed from Zanzibar, exploring on their way the plateau country of the Unyamuezi. Speke thereafter discovered the great Victoria N'yanza. In 1860, Speke and Grant found the northern outlet of this lake; but being obliged to part with it at its westward bend, the travellers held northward, and reached the White Nile, above Gondokoro, where they met Sir Samuel Baker, to whom they reported that they had heard of another lake lying to the west of this route. In 1864, Sir Samuel Baker explored this lake, which he called the Albert N'yanza, a great inland sea, 300 miles long, and 90 broad. In 1866, Dr Livingstone set out with the object of discovering the true source of the Nile. Starting from the east coast, he made his way into the interior, passing Lake Nyassa, and reaching the elevated region south of Lake Tanganyika. He there discovered the Chambeze, which he subsequently found to rise about 11° S. and flow westward into Lake Bangweolo, and beyond is known as Luapula and Lualaba. It has since been proved to be the head-waters of the Congo, but was regarded by its discoverer as belonging to the Nile basin. At Ujiji, Livingstone, whose long absence in the interior had caused great anxiety, was found by Stanley in November 1871. His next attempt to explore these regions more fully ended with his life at Ilala, near Lake Bangweolo, 4th May 1873, and thence his body was brought to be buried in Westminster Abbey. Lieutenant Cameron, after exploring Tanganyika, followed the Lualaba to Nyangwe, whence, striking across the continent, he reached Benguela on the Atlantic seaboard in October 1875, after a march of about 3000 miles, H. M. Stanley, in his expedition of 1874–77, conclusively proved what Cameron had rendered almost certain—that the Lualaba or Luapula is identical with the Congo. Starting from the east coast at the head of 300 men, he circumnavigated the Victoria Nyanza, examined part of Tanganyika, and, striking the Lualaba at Nyangwe, forced his way in spite of enormous difficulties along the course of the river, and arrived at the mouth of the Congo in August 1877. Since, Stanley has headed the Belgian expedition for establishing four civilising stations on this river. Major Serpa Pinto, in 1877–79, accomplished the journey across Africa from Benguela to Natal, exploring the upper waters of the Zambesi.

A remarkable incident in the recent history of Africa is the formation of the Free State of the Congo, mainly the outcome of the enterprise of Leopold II., king of the Belgians, and the traveller Stanley. A conference of the great powers at Berlin sanctioned the constitution of such a state under a European or American governor and officers. The state comprises the greater part of the basin of the Congo River from the great lakes to the Atlantic, with a coast line of nearly 40 miles on the Atlantic shore. Léopoldville is the chief station in this vast area.

OCEANIA.

This term is employed by geographers to denote the numerous islands scattered over the great ocean which extends from the south-eastern shores of Asia to the western coast of America. Oceania is separated from Asia by the Strait of Malacca, the Chinese Sea, and the Channel of Formosa ; and from America by a broad belt of ocean, comparatively free of islands. It may be said to extend from latitude 50° south to 30° north, and from longitude 96° east onward to 115° west, in the opposite hemisphere. It naturally divides itself into three great sections—Malaysia, Australasia, and Polynesia—whose aggregate area has been vaguely estimated at 4,132,000 square miles, and population at from 30,000,000 to 40,000,000.

MALAYSIA.

This division takes its name from the Malays, who are the principal inhabitants, and includes the archipelago immediately adjoining the south-eastern coasts of Asia, perhaps more generally known as the East India Islands. It lies between latitude 12° 40′ south and 20° north, and longitude 95° and 134° east.

As to *government*, the civilised powers having possessions in Malaysia are the Dutch, Spaniards, and Portuguese. The Dutch possess the whole of Java ; the greater part of Sumatra, where they are continually extending their dominions ; the Moluccas, or Spice Isles ; and generally exercise a predominating influence over all the southern portion of the archipelago. Java, inclusive of Madura, has an area of 51,000 square miles, and a population of near 20,000,000. The 'culture-system' of forced native labour prevails in Java, which is the granary of Malaysia. The imports are about £5,000,000 a year, and the exports about £8,000,000. Rice, sugar, salt, coffee, indigo, and tobacco are the staple exports. The Dutch supremacy in Sumatra has been lately challenged by the sultan of Acheen. Hostilities were begun in 1873, and though important advantages have been gained by the Dutch, the contest is hardly over yet. The greater part of Borneo, which, after Australia and Papua, is the largest island on the globe, is also ruled by the Dutch. The Dutch are also dominant in the great island of Celebes, somewhat smaller than Sumatra. The Spaniards possess the greater part of the Philippine group ; and the Portuguese retain only a portion of the island of Timor. Great Britain has possession of the island of Labuan, which has an extensive bed of excellent coal, besides other natural advantages.

AUSTRALASIA.

Australasia, which is used by some geographers in much the same sense as that here given to Oceania, is applied in its stricter sense to the central and largest section of Oceania, consisting of the great island of Australia or New Holland, and the belt of islands that lie north-east, east, and south-east of it. The chief islands forming this belt are — Papua or New Guinea, New Britain, New Ireland, Solomon's Islands, New Hebrides, New Caledonia, Norfolk Island, New Zealand, Chatham Islands, Auckland Islands, and Van Diemen's Land or Tasmania.

The island of Papua, separated by Torres Strait from the north of Australia, extends about 1300 miles in length, with an estimated area of 300,000 square miles. It is little known. Of the other islands forming the northern section of the belt, New Caledonia, taken possession of by France in 1854, is the largest, being 400 miles long, though not more than 30 miles broad. The population is estimated at about 60,000.

The great island, or rather continent, of Australia, together with New Zealand, and Tasmania, Chatham Island, &c. being British possessions, require more particular notice.

AUSTRALIA—COLONIES.

Australia extends from 10° 45′ to 38° 45′ S. lat. an extreme breadth of about 2000 miles ; and from 112° 20′ to 153° 30′ E. long. the greatest length being 2600 miles. The area is estimated at 2,970,000 square miles, or about three-fourths of that of Europe. It is probable that Australia had been long known to the Chinese ; but the first certain discovery of its existence by Europeans is due to a Spanish expedition sent from Peru in 1605, one of the commanders of which gave his name to Torres Strait. The south-east coasts were discovered by Captain Cook in 1770, who gave the country the name of New South Wales.

With the exception of two tracts—one on the south coast, between Southern and Western Australia, and the other on the north-west coast—the island is girdled by a range of mountains varying from 2000 to 6500 feet in height, sometimes approaching close to the shore, and at other times leaving from 30 to 100 miles of plain between them and the sea. The mountain range is most continuous and elevated on the east and south-east. Within the colony of New South Wales, it is called the Dividing Range ; and the southern section has the distinctive name of the Australian Alps.

The inner slopes of the bordering mountains consist of thinly wooded terraces or grassy downs, traversed by rivers rising in the heights ; and these downs form the great sheep-pastures of the colonies. They sink down towards the interior, which in some parts is well grassed and watered, and fitted for pastoral purposes.

Many of the rivers or water-courses of Australia have a peculiar character ; they spread out into marshes, lagoons, and muddy ponds, covering large tracts in the rainy seasons, and at other times forming merely a string of deep ponds or water-holes, or becoming altogether dry. The stagnant surface-water retained in the water-holes is, in the level country, the only resource of men and animals in the dry season.

The *climate* of Australia, excepting on the marshy shores of the north-west, is singularly salubrious, though liable to sudden and great changes of temperature. There is, on the whole, a deficiency of moisture, and, in the interior, the aridity and heat are sometimes excessive.

The colonies of Australasia constitute one of the most important possessions of Great Britain. For the past thirty years, they have been outlets for no small amount of British capital and enterprise. Of immense area, having extensive regions with a temperate climate, affording illimitable scope both for agricultural and pastoral pursuits; rich in minerals, particularly in gold; they have attracted a very large share of the attention of emigrants. The initial difficulties of early settlement have been already overcome throughout nearly the whole of Australasia. Connected with the great centres of civilisation by electric telegraph, Australasia has several main lines of ship communication with Great Britain—one through the Suez Canal by way of India; another by San Francisco, in special favour in New Zealand; a third by the Cape of Good Hope, returning in general by Cape Horn. Vessels also ply between the Australasian colonies and the Mauritius, Cape of Good Hope, India, China, South America, and the surrounding islands. Within the colonies, not only are there the advantages of law and order, but also of education and religion, which have kept pace with the rapid material advancement. The responsible system of government obtains throughout all these colonies, with the single exception of Western Australia.

British Colonies in Australasia.	Area in sq. miles.	Population in 1881.	Revenue in 1881.	Imports in 1881.	Exports in 1881.	Public Debt in 1881.
New South Wales	309,175	781,265	£7,377,786	£17,409,326	£16,049,503	£16,924,019
Victoria	87,884	882,232	5,186,011	16,718,521	16,252,103	22,426,502
South Australia	903,690	286,324	2,171,988	5,224,063	4,407,757	11,196,800
Queensland	668,224	226,968	2,023,668	3,601,906	3,289,253	13,245,150
Western Australia	1,057,250	32,359	254,313	404,831	502,769	510,000
Tasmania	26,215	118,923	505,872	1,438,524	1,555,576	2,003,000
New Zealand	104,403	534,032	3,737,493	7,457,045	6,060,866	29,659,111

New South Wales.

New South Wales, discovered by Captain Cook in 1770, was colonised by convicts in 1788, when a convict establishment was formed by the British government at Sydney Cove, near Botany Bay. Originally, New South Wales comprised the territories which are now included in Victoria, South Australia, and Queensland. The present colony of New South Wales is situated within the parallels of 28° and 37° south lat. and 141° and 154° east long.; its greatest length is 900 miles; its greatest breadth, 850 miles; and it contains an area of 323,437 square miles. It is bounded by the Pacific Ocean on the east, by Victoria on the south, by South Australia on the west, and by Queensland on the north.

The Dividing Range, which opposite to Sydney is called the Blue Mountains, and farther north, the Liverpool Mountains, in the southern part of the colony, attains a height, in Mount Kosciusko of the Australian Alps, of 7308 feet. The numerous streams that rise on the west side of the watershed within the colony, all converge and empty their waters into the sea through one channel within the colony of South Australia. The southern and main branch of this great river-system is the Murray, which forms the boundary between New South Wales and Victoria; on entering South Australia, it turns southward, and enters Lake Victoria, which communicates with the sea by shallow channels, impassable even to boats. The Murray is navigable for steamers for a great part of the year. The other great trunks of the system are the Murrumbidgee, also navigable; the Lachlan, at times reduced to a string of ponds; and the Darling. The Macquarie, which passes through the Bathurst district, is a large tributary of the Darling, but reaches it only in the rainy seasons. The rivers on the eastern side descend with great rapidity, and in oblique tortuous courses, their channels often forming deep ravines. Many of them are navigable in their lower course for considerable vessels. The principal are the Richmond, Clarence, Macleay, Manning, Hunter, Hawkesbury, and Shoalhaven. The Hunter River, about 60 miles north of Sydney, opens up one of the most fertile and delightful districts in the country.

Climate.—The seasons are the opposite of those of Britain. The average temperature of summer is 72°; of winter, 55°. There are occasional frosts at Sydney, and snow in the interior. The hot winds that sometimes come from the deserts raise the thermometer to 120°, and scorch vegetation. The annual fall of rain is about 50 inches. Rain sometimes descends in continuous torrents, and causes the rivers to rise to an extraordinary height. Sometimes the rains almost fail for two or three years in succession.

In 1788, the whole population of New South Wales was 1030; in 1828, 36,598—14,156 of these being male, and 1513 female convicts. (In 1840, transportation to New South Wales ceased.) In 1871, the total population, exclusive of aborigines, was 503,981; of which number Sydney, including the suburbs, contained 134,755. In 1871, the imports amounted to £9,609,508, and the exports to £11,245,032. The principal export is wool, of which the quantity exported in 1871 was 65,503,306 lbs. valued at £4,740,632. In 1872, there were 3495 runs in New South Wales; 5,615,054 sheep; 2,271,923 horned cattle; 233,220 horses; and 146,091 pigs. Land then under cultivation, 297,575 acres; under wheat, 154,030 acres; 4152 acres under vines; and under grass for hay, 31,903 acres. The other principal crops were, barley, oats, maize, potatoes, sugar-cane (acreage, 4393), and tobacco. Free selection in land prevails here, as in Victoria (under which it will be explained). New South Wales is the chief coal-producing colony of Australasia. In 1871, the three mines which were worked produced 898,784 tons of coal, value £316,340. The colony has three main gold-fields, known as the Northern Fields, the Southern Fields, and the Western Fields. Three-fourths of the whole supply comes from the Western Fields, of which Bathurst is the capital. The total gold-yield in 1871 was 296,928 oz.—value, £1,143,781. The copper mines in 1871 produced 667 tons of copper, value £44,123. Oil and tin mines are also profitably worked. In 1871, the revenue was £2,218,699—of which £1,720,722 was derived from taxation, and £497,977 from the lease and sale of crown-lands. The debt of the colony, contracted chiefly for railways and public works, amounted to £10,614,330. There are in New South Wales four railway lines—the Southern, Northern, Western, and the Richmond Line, which in 1871 conveyed 1,067,686 passengers, the receipts for the year being £307,142. In the same year, there was an electric telegraph system, which comprised 5579 miles of wire, with 89 stations. The zigzag railway across the Blue Mountains impresses travellers as remarkable. There are in New South Wales three main roads.

Sydney, the capital, is situated (35° 52′ south lat. 151° 10′ east long.) on the shores of the magnificent harbour of Port Jackson, which is one of the finest in the world, and the scenery of which is exquisite. The city is well paved, lighted with gas, and supplied with water by a tunnelled aqueduct, and has many fine buildings. The harbour is possessed of excellent defences. The mean summer temperature is 74°; winter, 55°; mean, 67°. The other principal towns are Newcastle, Maitland, Paramatta, Bathurst, and Goulburn; the first four having a population of from 5000 to 7500. Newcastle stands in importance next to Sydney, and is celebrated as the centre of the coal-mines. Paramatta, on the river Paramatta, 14 miles from Sydney, is famed for its orange-groves. Bathurst, 200 miles north-west from Sydney, is in the centre of the richest pastures, and is the capital of the best gold-diggings in New South Wales. Maitland is the chief town in the Hunter River District, the richest agricultural portion of the colony, subject, however, to frequent inundations from the river. The Riverine District, on the Murray, is a vast pastoral country belonging to New South Wales, but owing to the facility for transit afforded by the Victorian railways, close to it, its traffic is more with Melbourne than Sydney.

Since 1855, the government has been vested in a governor, a legislative council, and legislative assembly, both elective. With the exception of a few points involving imperial rights, the chief Australian colonies have now the entire management of their own affairs. Sydney has a good university, inaugurated in 1852. There are several high schools, maintained by the fees of the scholars, and a number of primary schools throughout the country supported by government.

The kangaroo, the opossum, the iguana, and a kind of bear are the most notable beasts of the country, and of Australia as a whole. Snakes are common. The emu, the cockatoo, the parakeet, the magpie, and the laughing jackass are the principal birds.

Victoria.

Victoria, the smallest of the Australian colonies in point of extent, but the most important in wealth, population, and progress, is situated on the south-east of the island, and is separated from New South Wales by the river Murray on the north and north-east; on the west, from South

Australia by the meridian of 141° east long.; while on the south and south-east it is bounded by Bass's Strait. Its greatest length from east to west is 500 miles, and its greatest breadth from north to south is 300 miles, the area being 88,198 square miles.

The eastern and central portions are variegated by mountain-ranges and hills, interspersed with plains; the north and north-west districts, lying between the Murray and the parallel of 37° south lat. are mostly flat and monotonous deserts of sandy or meagre clay-soil, covered with hard rigid plants and shrubs, interspersed with salt-bushes, on which, however, sheep thrive. What is called the 'Mallee Scrub,' consisting of dwarf eucalypti, covers extensive tracts in various parts of the colony. The eastern portion is occupied by the Australian Alps, or Snowy Mountains, a continuation of the 'Dividing Range' of New South Wales. The highest peak is 7000 feet. It ends in Wilson's Promontory, the southernmost point of the colony, and is continued in a chain of islands to Tasmania. The loftiest range west of Port Phillip is the Grampians, about longitude 142° 20′, reaching, in the summit of Mount William, 4500 feet. Eastward from the Grampians are the Pyrenees (longitude 143°), a granitic range; and north-north-west from Melbourne lie the Mount Macedon and Mount Alexander ranges, containing the chief gold-diggings. A great part of the colony is of volcanic origin, and many of the mountains are evident craters. The soil resulting from the decomposition of the lava covers large tracts of great fertility.

Victoria is much better watered than the adjacent colonies. The rivers flow either north into the Murray, or south into the ocean, the watershed or axis of the colony being about 100 miles from the coast. The chief tributaries of the Murray, beginning at the east, are the Mitta Mitta, the Ovens (both auriferous), Broken Creek, Goulburn (navigable at times for 300 miles), the Campaspe, and the Loddon (rising near Mount Alexander). These rivers are greatly reduced in the dry season. Three considerable rivers—the Avoca, the Avon, and the Wimmera—rise in the Pyrenees and Grampians, and flowing northward, terminate in lakes, without outlet, in the Mallee Scrub. The southern rivers are—the Snowy River, in the east (longitude 148° 30′), and several that fall into Lakes King and Wellington, the Yarra Yarra (on which stands Melbourne), the Barwon, the Hopkins, and the Glenelg. A remarkable feature of the colony is the great number of salt-lakes.

The splendid natural harbour of Port Phillip was discovered in 1802 by Lieutenant Murray, and named after the first governor of New South Wales. The permanent settlement was begun in 1835 by two associations of colonists from Van Diemen's Land, headed by Batman and Fawkner, the latter of whom encamped on the present site of Melbourne. In 1851, the district became a separate colony, under a lieutenant-governor; and in 1855 a new constitution was granted, establishing responsible self-government.

The white population of Victoria in 1836 was 177; in 1841, 11,738; in 1851, 236,798; in 1861, 540,322; while in 1871 it amounted to 731,528 persons, of whom 17,935 were Chinese, and 1330 aborigines. Of the Chinese in the colony, only 36 were females. The town population is one-half of that of all Victoria, Melbourne, with her suburbs, containing 206,000; Ballarat, 47,201; Sandhurst, 21,987; and Geelong, 15,026. From 1835 to 1871, 1,019,553 immigrants arrived in the colony; and during the same period, 563,277 left it; leaving a balance of 456,276.

The chief pursuits are those of the squatter, the miner, and the farmer. Till within a few years ago, the squatters, run-holders, or sheep-farmers, were the principal class in Victoria. Renting large tracts of land from the crown, and grazing immense flocks and herds, they succeeded in establishing themselves in the first position in respect of wealth and influence, and when the lands came to be disposed of, they were able to buy up enormous portions. The best runs are in the western districts. Much of the wool-growing land of Victoria now belongs to the squatters by right of purchase. As the squatters threatened to endanger the growth of the colony by their continued absorption of land, the legislature, after many attempts, succeeded in devising, some few years ago, an effective counteracting measure, which is known as the system of 'free selection.' According to this, large sections of land are successively thrown open to the public by the Department of Lands, of which any one who is willing to become a *bonâ-fide* settler, and is able to cultivate and improve so much a year, and to pay a small rental, which, standing to him as purchase-money, makes the land his own in ten years, may select from 40 to 640 acres. This system has succeeded in settling a large number of people on the soil. It is administered by a body of land agents, whose business it is to collect the rents, and see that the stipulated improvements are annually made. When the settler is unable to pay the rent, and shews generally that he is unfit to grapple with the difficulties of his situation, as not unfrequently occurs in the case of small selectors, the land reverts to the state, and is resold. On the whole, notwithstanding incidental disadvantages, the plan has succeeded well for all the purposes for which it was introduced.

For a good many years, gold-mining has been an extensive pursuit in the colony of Victoria. Before gold was discovered in Australia in 1851, Sir R. I. Murchison in Great Britain, and the Rev. W. B. Clarke in the colony, had declared their belief that it must exist, owing to the resemblance of the geological formation to that of California, and of the gold regions of the Ural in Russia. The gold is found by washing the surface detritus of the water-runs, and 'digging' holes into the strata overlying the so-called pipe-clay. Another source is the quartz-rocks, which commonly run in reefs, and are crushed by machinery, to extract the gold. A large amount of capital is invested by companies in quartz-reefing speculations; and shares change hands as railway or mining scrip in Great Britain. Large pieces of ore called 'nuggets,' have been occasionally found from 20 to 45 pounds-weight. As a settled industry, gold-digging is found to require steady labour, skill, organisation, and capital to render it remunerative. On the whole, the yield amounts to about a fair day's wage. In 1871, there were at work in Victoria 58,279 miners, of whom 15,669 were Chinese. The mining operations were carried on over 985 square miles of auriferous ground, the

chief centres being Ballarat, Sandhurst, and Castlemaine.

A few somewhat extensive vineyards, and numerous smaller ones, now exist in nearly all the most important districts of the colony. Every man who has a piece of ground may, if he chooses, rest under his own vine. Gardens are easily kept in Victoria, where, in addition to the peach, the apricot, the apple, the pear, the cherry, the almond, and other European fruit-trees, pines, cypresses, an immense variety of splendid shrubbery, and flowers of every description, flourish under ordinary care. A Victorian garden in the season of fruit-blossom presents an exquisite appearance.

Melbourne, the capital, on Hobson's Bay, is in some respects one of the finest cities in the British empire. It is situated on an undulating piece of country, admirably adapted to be the site of a large city. The reservoir of Melbourne is the Yan Yean, situated in the Plenty Ranges, 20 miles to the north, and containing an unlimited supply of water. Among the physical drawbacks of the city are the dust which attends the hot winds in summer, and the considerable streams which flow along the streets during heavy falls of rain in winter.

Ballarat is the second city in Victoria, and a great gold-digging centre. Geelong is a beautiful town, built on the westerly arm of Port Phillip. As a watering-place, it has great attractions, though, in point of fact, Queenscliffe is preferred. Like Melbourne and Ballarat, Geelong has the advantage of excellent public institutions. Education, religion, and the charities are extremely well attended to throughout the colony. The system of education is national.

For purposes of administration, Victoria is divided into 37 counties. In 1871, Victoria had 150,618 inhabited houses. In 1871, the imports were of the value of £12,341,995, and the exports, £14,557,820. The staple exports are gold, which, exclusive of coins, amounted in 1871 to 1,647,389 oz.—of value, £6,590,962; gold coins, £347,513. Preserved provisions exported amounted to 14,876,100 lbs.—value, £355,373; wool, 76,334,480 lbs.—value, £4,702,164; tallow, £401,124; hides and untanned leather, £124,976; copper, £130,366. Paper and cloth are now manufactured in the colony. The colonists strongly desire to promote native manufactures. The revenue in 1871 was £3,717,155.

The Victorian railway system consists of three main lines; its telegraph system is complete.

The legislature of Victoria consists of two chambers: a Legislative Council, consisting of 30 members, and composed of gentlemen who possess the property qualification of £250 a year; elected by persons having an income from property of £5 per annum, in municipal districts; and £100 a year beyond those districts; and a Legislative Assembly of 78 members, elected by manhood suffrage and by secret ballot. A fifth of the council retire every two years, and a complete change is made every ten years. The Legislative Assembly is elected for three years. The crown is represented by a governor-general, who has a salary of £10,000 a year. The ministry consists of nine members.

Australia is the land of bright sunshine. On the whole, the eye wearies of the perpetual blaze and the continuous blue. The finest seasons are the spring and autumn. The winter in Victoria is humid. From November to February, which is the Victorian summer, the heat is very great. Fires are frequent. The hot winds, which are from the north, blow as off a furnace. But they are rather favourable to health than otherwise. The mean temperature at Melbourne is about 59°; the mean of the warmest month, January, being 68°; of the coldest, 49°; fall of rain, 32·33 inches.

South Australia.

South Australia includes the entire centre of the Australian continent comprised between the Southern and the Indian Oceans, and between the 129th and the 141st degrees of E. long. Its area is 760,000 square miles. The population of the colony in 1871 was 189,018, of whom there were in the settled districts 3369 aborigines. The city of Adelaide, the capital, situated on the river Torrens, 7½ miles distant from Port Adelaide, having in the background the Mount Lofty Range, contains 27,208 inhabitants, and the suburbs 34,474; in all, 61,682. Adelaide is well built, and has some fine buildings. South Australia, which has a beautiful climate, is the principal wheat-growing province in Australia. In 1870–71, the harvest of South Australia yielded 6,961,164 bushels of wheat, which produced £1,827,305. The bread-stuff exported amounted to 104,000 tons, in value £1,253,342. In 1871–72, there were 692,508 acres under wheat. In 1872–73, the whole land under cultivation was 1,164,846 acres. Red rust and locusts, however, interfere with the success of farming to an uncomfortable extent. The country is also liable to serious droughts. In 1871, there were 5823 acres under vines, which yielded 896,000 gallons of wine. In 1871, the imports amounted to £2,158,022, and the exports to £3,582,397; the staple articles of the latter being corn, wool, and copper. The wool exported was in value £1,170,885, and the copper £648,569. The chief copper mines are the Moonta and Wallaroo on York's Peninsula, Gulf St Vincent, worked by from 2000 to 3000 miners; and the Burra-Burra, employing about 1000 miners. 80,000 tons of copper ore were sent to England during the first six years' working of the Burra-Burra. The bulk of the ore is now made into fine copper before shipment. In 1871, there were 133 miles of railway in the colony—7½ miles from Adelaide to Port Adelaide, and 125½ miles of north line to the copper mines. The telegraph system of South Australia is good, including, as it now does, an overland line between Adelaide and Port Darwin, opened in 1872, extending over the whole continent, a distance of 2000 miles, and connecting Australia with all the main centres of civilisation in the world.

In 1871, the revenue of the colony was £778,094; the chief sources being the sale of crown lands and customs duties.

Queensland.

Queensland comprises the whole north-eastern portion of Australia, including the adjacent islands in the Pacific Ocean and in the Gulf of Carpentaria. In 1856, its population was 17,082; in 1871, it had risen to 120,104, exclusive of

aborigines. Brisbane, the capital, situated on Brisbane River, in the district of Moreton Bay, has a population of 12,000. Next to Brisbane in population are the towns of Rockhampton and Ipswich, the former containing 5226, and the latter 5021, inhabitants in 1868.

Queensland is in general well watered. At a distance of from 50 to 100 miles from the eastern sea-coast, runs north and south a great mountain-range, which throws out numerous spurs (composed principally of quartz) towards the sea, and whose summits rise from 2000 to 6000 feet above the ocean-level. The chief rivers are the Logan, the Brisbane, the May, the Caliope, the Fitzroy, the Pioneer, and the Burdekin. The Brisbane is navigable for 75 miles by good-sized vessels. The Fitzroy, which is navigable for 60 miles, drains an area of 50,000,000 acres. Beyond the Dividing Range there are immense plains, composed of rich black soil, and watered by numerous streams. Queensland is, in several respects, among the most promising colonies of Australasia. It is a great sheep country, although not to the extent anticipated some years ago, when sheep were driven overland from some of the other colonies to its pastures. It is liable to serious periodical droughts, which wither the grass. It is admirably suited for cotton and sugar-cane. A system of free selection in land prevails here, as in New South Wales and Victoria. The imports of the colony in 1871 amounted to £2,434,480, and the exports to £1,539,968. The staple exports are wool, valued in 1871 at £517,515; tallow, of the value, in 1870, of £60,483; raw cotton, in 1871, amounting to 18,512 cwt. of the value of £73,292. In 1870, there were 5000 acres under sugar-cane in Queensland, 39 sugar-mills, and 10 distilleries. Labour from the South Sea Islands is employed in connection with the growth and manufacture of sugar. In 1867, gold was discovered. The principal gold-field is at Gympie's Creek. The total gold-produce of the colony in 1870 was in value £489,539. In that year there were 12 gold-fields and 15,000 miners. The form of government is the same as that of Victoria.

The climate of Queensland resembles that of Madeira.

Western Australia.

Western Australia includes all that portion of New Holland situated to the westward of the 129th degree of E. long.; its greatest length being 1280 miles from north to south, and its breadth from east to west about 800 miles. The area is about 1,000,000 square miles. Western Australia was first settled in 1829. In 1849, at the request of the colonists, convicts were sent to it, and the colony has the fruits of their labour in roads, bridges, &c. In 1860, the sending of convicts was discontinued. In all, there were sent to Western Australia 10,000 convicts. The whole population of the colony is 25,353. In 1871, the imports amounted to £198,010, and the exports to £199,280. The chief exports are wool, copper, lead-ore, pearl-shell, and timber. In 1871, there were 671,000 sheep, yielding an export in wool of £111,061. In 1871, sandal-wood was exported to the value of £26,926; and pearl-shell, of £12,895. Perth, the capital, is situated on a lake of brackish water formed by the Swan River, and has 6000 inhabitants. The revenue of Western Australia in 1871 was £97,605. It has no public debt.

TASMANIA.

Tasmania, formerly Van Diemen's Land, is an island lying off the southern extremity of the mainland of Australia, from which it is separated by Bass's Strait. The length of the island is 240 miles, and its breadth 200. It was first discovered in the year 1642 by Abel Jansen Tasman, a celebrated Dutch navigator, and was by him called Van Diemen's Land, in honour of Anthony Van Diemen, at that time governor-general of the Dutch possessions in the East Indies. In 1803, it was formally taken possession of on the part of Great Britain, as a receptacle for convicts, and to this purpose, Van Diemen's Land was exclusively devoted until 1819, when it was thrown open to free settlers. Convicts ceased to be sent to Tasmania in 1853.

Tasmania presents a constant alternation of hill and dale, with occasional flats or plains. These plains are in general exceedingly fertile, and being often but thinly interspersed with trees, present a most delightful appearance. The land already alienated amounts to 3,413,810 acres, leaving 13,468,971 acres of unalienated land. The climate is exceedingly pleasant and salubrious, and is especially adapted to the constitutions of the natives of Great Britain. The mean temperature of Hobart Town is 54° 92′.

In 1870, the population of Tasmania amounted to 99,328 persons. Hobart Town, the capital, contains 20,000 inhabitants. The emigrants were in excess of the immigrants in the years 1868–71. In 1871, the imports amounted to £778,087, and the exports to £740,638. The staple export is wool, of value, in 1871, £298,160. The minerals include copper, iron, lead, zinc, gold, coal, &c. The revenue in 1872 was £234,608; and the public debt, £1,455,900. A railway 43 miles in length, opened in 1871, connects Launceston with Doleraine. In April 1869, telegraphic communication with the mainland of Australia was established by a submarine cable. There is a telegraphic system with 14 stations on the island. A constitution was given to Tasmania in 1854, similar to that of the Australian colonies.

The aborigines, who numbered 3000 at the date of the first colonisation of the island, have all died out.

Determined efforts have been made by the colonists to introduce salmon and British trout into the Tasmanian rivers; the trout have succeeded, but no salmon have yet been caught. The sperm-whale abounds in Bass's Strait. Tasmania grows British fruits admirably, and produces excellent timber.

NEW ZEALAND.

New Zealand, first visited by Tasman in 1642, and surveyed by Captain Cook in 1769, is situated about 1200 miles eastward from Tasmania, between the parallels of 34° and 48° S. lat. and the meridians of 166° and 179° E. long. being about the antipodes of Great Britain, from which it is 16,000 miles distant. It consists of three main islands, lying in a line nearly north

and south, called North Island, Middle Island, and South or Stewart Island, and the area of the whole is estimated at 102,000 square miles. A great portion of the surface is occupied by mountains, among which there are many extinct, and a few active volcanoes. Many of the summits are always snow-clad. Ruapahu, an extinct volcano, is 9000 feet high, and the active volcano of Tongariro is 8500 feet. Numerous hot springs and earthquakes testify the existence of subterranean fires. In the North Island, the mountains are mostly clothed with forests of luxuriant growth, interspersed with fern-clad ranges, and occasionally treeless grassy plains; while extensive swamps, overgrown with flax and reeds, occupy much of the low-lying ground. In the Middle Island, a range of mountains runs along the west coast, of which the highest peak, Mount Cook, is 14,000 feet in height; the eastern coastline, at a varying breadth, is well adapted for agriculture; while the interior affords excellent pasture. The climate is humid, and the mountains feed numerous streams and rivers, none of which, however, are of any considerable length, or of great importance for inland navigation. No country, perhaps, is more abundantly furnished with excellent harbours.

New Zealand, formerly divided into eight distinct provinces, has now one central government, the names of the provinces being retained for the 'provincial districts,' as they are called. The most notable is Otago. Founded in 1848 by Captain Cargill, as a settlement in connection with the Free Church of Scotland, it has grown to dimensions which the original colonists could hardly have anticipated within so brief a period. Considerable progress had been already made in agricultural and pastoral pursuits, when in 1861 gold was discovered. The discovery was made near Tuapeka in Otago, and subsequently in Auckland, and at Hokitiki on the west coast. Mining operations are conducted on a large scale in the various localities in which gold occurs. Coal is found here, as in the other parts of the country, in large quantities. Dunedin, the capital of the province, with a population of about 27,000, is picturesquely situated at the head of a bay, about 9 miles from Port Chalmers, the chief port of Otago, with which it has railway communication. The scenery in the vicinity is very fine. Oamaru, in the north of the province, possessing a good harbour, with cultivated farms in the immediate neighbourhood, and sheep-runs to the north and west, is one of the most promising places in New Zealand. From Oamaru to the river Clutha, the country, including Otepopo, Hampden, Palmerston, Goodwood, and the plains of Taieri and Tokomairiro, is more or less farmed to great advantage. Otago has a fine lake-district in the interior, the principal lakes being Wakatip, Teanau, Manissori, and Wannika. On Lake Wakatip is situated Queenstown, a township with about 2000 inhabitants. The province is well watered. Otago, as a whole, along with the rest of the Middle Island, is hilly, and almost destitute of trees, which at first sight makes its aspect rather disappointing to the British emigrant. The population of Otago is 60,578; its revenue exceeds £520,000; it has more than a million acres under cultivation; the number of sheep is upwards of 4 millions; of horses, 20,000; and of horned cattle, 110,000. Its chief products are gold and wool. The provision for the educational and religious wants of the people is nowhere better than in Otago, which has a university, a first-rate high school, and an admirable system of public schools.

The province of Auckland, in the North Island, has a population of European descent of 62,335. The staple products of the province are preserved meat and wool. Of the 2,702,582 acres held by Europeans, only 2455 acres were under wheat in 1872. In the same year there were 181,521 acres under artificial grasses. The Maoris own 11,275,036 acres in the province, 2,587,350 of these having been fixed by the recognition of the crown. Gold was discovered in the province as early as 1852, but not in payable quantities; in 1867, a rush took place to the Thames River. The city of Grahamstown is the capital of the gold-fields of Auckland. The export of gold in 1871 was valued at £1,888,708, and, in the same year, kauri gum was exported to the value of £167,958. The province of Auckland is famed for its lakes and hot wells. The principal lakes are—Taupo, Iti, Kakiki, Tarawera, Kaiteriria, and Mohana, with its white and pink terraces. The Waikato, the chief river in the North Island, rises in Lake Taupo, and flows into the sea on the west coast. The town of Auckland, with a population of 20,000, has a capacious and fine harbour, and was for some time the seat of the general government.

Canterbury, inclusive of Westland, has a population of 62,158. Westland is the gold territory on the west, of which Hokitiki is the capital. As a wheat-producing province, Canterbury excels the rest of New Zealand. In 1870, it exported to the other provinces corn and flour to the value of £127,000. Christchurch has a population of 12,000. The port of Christchurch is Lyttelton. Timaru is the other principal port of the province.

The other provinces of New Zealand are Wellington (pop. 24,000); Nelson (pop. 22,501); Hawke Bay (pop. 6059); Marlborough (pop. 5235); Taranaki (pop. 4480). The whole population of New Zealand, in 1851, excluding aborigines, was 26,707; in 1878, it was 414,412.

In 1879, the Maoris, as the indigenous inhabitants call themselves, numbered 42,819—a decrease of over 4000 within four years. During the ten years, 1858-68, they had decreased at the rate of 30 per cent. They are all nominally Christian, and many of them can read and write. On the whole, they have shewn themselves more susceptible of the influences of European civilisation than any other aboriginal race. They are of Polynesian extraction. They are of average height, with black hair, broad nose, and large mouth. Of excellent physique, with good minds, skilful in the use of arms, and availing themselves of their natural fortresses, they were able, when, owing to misunderstandings about the land, wars arose, for a long time to withstand the British forces. Witnessing the occupation of their country by a race of foreigners, and imagining themselves defrauded of their ground, they flew to arms, and many Europeans fell victims to their vengeance. To some considerable extent, they were themselves the victims of competing interests and different policies. While the British troops remained in the colony, intermittent outbreaks continued; since their withdrawal, the colonists have found themselves

in a position to deal successfully with refractory Maoris, partly because they are in earnest, and partly because they are better acquainted with bush life and practices than the home soldiers. The Maoris are turning their attention to trade, agriculture, and pastoral pursuits.

In 1871, there were 10,083 immigrants into New Zealand, and 5297 emigrants from it: by far the larger part of the excess remaining in the colony, belonged to Otago. In 1852, the imports of New Zealand amounted in value to £359,444, and the exports to £145,972; while in 1871, the imports were of the value of £4,078,193, and the exports of £5,282,084. In 1878, the wool exported from New Zealand amounted to 59,270,256 lbs., of the value of £3,292,807. Ship-building and the timber trade rank next to wool. The minerals are gold, copper, iron, and coal. From the time when gold was first discovered, to 1879, the gold exports amounted to 9,107,196 oz.—in value, £35,594,938. Of this, Otago contributed 3,856,065 oz.; West-coast, 2,357,435 oz.; and Nelson, 1,620,841 oz. In 1879-80, the revenue amounted to £3,452,000. The chief sources of revenue are customs-duties, the sale of crown lands, depasturing, and gold-mining licenses. The public debt in 1879 amounted to 21½ millions.

In 1852, New Zealand received a constitution, which is in some respects peculiar in a British colony, as being modelled to some extent on that of the United States of America. Besides the general parliament, each of the provinces has its own elected superintendent and provincial council, administrative of provincial affairs in as far as they are purely provincial. The general parliament consists of a Legislative Council, composed of 46 members, nominated by the crown for life; and a House of Representatives, of 78 members, elected by the people for five years. The Maoris have equal political rights with the colonists, and four Maoris sit in the House of Representatives for Maori constituencies. The crown is represented by a governor-general. In 1863-64, the control of native affairs, and the responsibility connected with them, was transferred to the colonial government. In 1865, the seat of government was transferred from Auckland to Wellington, as being more central. The town of Wellington has a population of 8000.

The climate of New Zealand varies considerably. It is on the whole fine and bracing. Auckland in the north is warm, and Otago in the south is somewhat wet and windy; Nelson has the best climate in New Zealand. But Canterbury and the northern parts of Otago are very enjoyable. The morning is the most delightful part of a New Zealand day, and is often clear, bright, and exhilarating.

New Zealand abounds in ferns, some of which reach the size of trees; the root of one species was formerly much used as food by the natives. The forest trees grow to a very great size, many of them being larger than those of America or any country in the world.

The *Phormium tenax*, or New Zealand flax, is another important vegetable production. The fibres of the leaf of this plant have been proved capable of all the applications made of European flax.

The country is remarkably deficient in native animal life. Wild pigs, the offspring of some pigs left by Captain Cook, a so-called native dog of inferior description, and the rat, were the only quadrupeds which the colonists found on the islands. Remains of the moa, a gigantic bird, from eleven to thirteen feet high, are found in many places. The moa is now extinct.

Irregular settlements by Europeans began in New Zealand early in the 19th century; but it was not till 1840, when the native chiefs entered into a treaty ceding the sovereignty of the islands to Great Britain, that it became a regular colony.

Other islands claimed by Great Britain are:

The *Auckland Islands*, which lie 180 miles south from New Zealand, in south latitude 51°. The largest is about 30 miles long, with an area of 100,000 acres. The climate is mild and salubrious.

The *Chatham Islands*, which are situated 300 miles east from New Zealand, in south latitude 44°, east longitude 178°. Chatham Island, the largest of the group, has an area of more than 300,000 acres. The climate and soil are excellent. The inhabitants, numbering 133, are now mostly Christian. The islands are under the protection of the government of New Zealand.

And *Norfolk Island*, for some time a convict establishment, which has an area of 14 square miles, and is situated in south latitude 29°, east longitude 168°, about 900 miles east-north-east from Sydney.

POLYNESIA.

Polynesia—from two Greek words, signifying *many isles*—is the name given to the numerous groups scattered over the central parts of the Pacific Ocean, within 30 degrees on both sides of the equator. The chief clusters north of the equator are the *Sandwich* group in the east, and the *Ladrones* and *Carolines* in the west; and south of it, the *Marquesas* in the east, the *Society* Islands in the middle, and the *Friendly*, including the *Fiji* and *Navigator's*, in the west. The Fiji Islands, which were ceded to Great Britain in 1874, have acquired importance from a rising trade in cotton, which is grown there under the auspices of Australasian speculators. Honolulu, on the island of Oahu, the seat of the government of the Sandwich Islands, which is modelled on that of Great Britain, and consists of a native king and two houses of parliament, is the port of call for the line of steamers from San Francisco to New Zealand and Australia. It has a population of about 10,000. The whole population of the Sandwich group is 150,000. Within the last fifty years, a large proportion of the inhabitants of the Sandwich, Society, and Friendly Islands have embraced Christianity; and missionaries from the United States of America, Great Britain, and the Australasian colonies, have taught them reading, writing, and a number of useful arts. The population of Polynesia is about a million and a half.

The only foreign powers having possessions in Polynesia are the Spaniards, who have occupied the Ladrones since the end of the seventeenth century; and the French, who, since 1843, have established a protectorate over the Marquesas, and to some extent also over the Society Islands.

NORTH AMERICA.

THIS is the largest, and in every respect the most important division of the western hemisphere. It is bounded on the east by the Atlantic; on the south, by the Gulf of Mexico and the Pacific, save where joined to South America by the narrow Isthmus of Panama; on the west, by the Pacific; and on the north, by the Arctic Ocean. Including Greenland (which, however, is probably insular, and not continental), the area of the known continent may be stated at 8,000,000 square miles—the great mass of which lies within the northern temperate zone.

SUPERFICIAL FEATURES.

The general physical characteristics of the continent are remarkable for the magnitude of the scale upon which they are presented; the plains, lakes, and rivers being superior to those of all other countries. The following summary of these, compiled from a variety of reliable authorities on the subject, will give the reader a good idea of the geography of North America: 1. The narrow region which separates the Gulf of Mexico and the Caribbean Sea from the Pacific, traversed throughout its whole length by mountain-ranges, which leave a narrow tract of low land lying along the sea-coasts, while in certain portions of the interior they form elevated table-lands. Here the mountains—which may be considered as the commencement of the great Rocky chain—attain a culminating point in Guatemala of 14,900, and in the Mexican volcano of Popocatepetl of 17,880 feet; while the table-land of Mexico

is from 5000 to 9000 feet in general altitude. 2. The maritime region between the Pacific Ocean on the west and the ridge of mountains which extends from Cape St Lucas in California northward to Alaska. This ridge has a general elevation of 8000 or 10,000 feet, but rises near the Columbia River in several peaks—Mount Jefferson, Mount Hood, Mount St Helen's—to upwards of 15,000 feet, and in Mount St Elias, to upwards of 17,000 feet. 3. The elevated region which forms a sort of table-land between the maritime chain before mentioned on the west and the Rocky Mountains on the east. In its southern portion, it presents the arid salt plains of the Californian desert; between 40° and 45° north, it presents a fertile region, with a mild and humid atmosphere; but beyond the last-mentioned parallel it is barren and inhospitable. 4. The great central valley of the Missouri and Mississippi, extending from the Rocky Mountains on the west to the Alleghanies on the east, and from the Gulf of Mexico northward to the 45th or 50th degree north lat. Between these parallels, runs in a waving line the water-shed which divides the basins of the St Lawrence and the Mississippi from those of the streams that flow to Hudson Bay and the Arctic Ocean. On the east side, this region is rich and well wooded; in the middle, it is bare prairie-ground, but not unfertile; towards the west, it is dry, sandy, and almost a desert. The Rocky Mountains, the greatest and most continuous of the North American chains, rise from 8000 to 10,000, occasionally to 12,000, and between lat. 52° and 53° north in Mount Hooker to 15,700 feet, and in Mount Brown to 15,990 feet; while the Alleghanies reach their culminating point in Mount Washington, 6428 feet, and have an average elevation of 2500 feet. 5. The eastern declivities of the Alleghany Mountains and the maritime region, extending to the shores of the Atlantic. This is a region of natural forests, and of mixed but rather poor soil. 6. The great northern plain beyond the 50th parallel, a large part of which is a bleak and desolate waste, overspread with innumerable lakes, and having a very rigorous climate. Yet much of it is excellent wheat-bearing land, and more is suitable for pasture.

The islands, peninsulas, promontories, and other features which give diversity to the sea-coast, appear to be most numerous in the north—the region of least importance, and with which we are the least acquainted. Passing, therefore, the *islands* in that quarter, the principal on the east are—Newfoundland, a large island lying at the mouth of the Gulf of St Lawrence; Anticosti; Prince Edward Island; and Cape Breton, all in the same gulf; and the West India Islands, to the south-east of the continent. On the west or Pacific sea-board, the most important are—Vancouver's Island; Queen Charlotte's Island, Prince of Wales Island. The most striking *peninsulas* on the east or Atlantic side are—Nova Scotia, Florida, and Yucatan on the east and south; California and Alaska on the west. The more prominent *capes* are—Farewell, the southernmost point of Greenland; Capes Chudleigh and Charles in Labrador; Race in Newfoundland; Sable in Nova Scotia; Cod, Hatteras, and Sable in the United States; Catoche in Yucatan: on the west or Pacific side—St Lucas in California; Mendocino and Prince of Wales Cape in the United States: on the north side, jutting into the Arctic Ocean, are—Icy Cape, Point Barrow, and Cape Bathurst. The principal *isthmuses* are—Chignecto, connecting Nova Scotia with the continent; Tehuantepec in the south of Mexico, and most important of all, the Isthmus of Darien or Panama. Its breadth is less than 30 miles. Various routes for a ship-canal across it have been discussed; and the cutting of that promoted by M. Lesseps was begun in 1883. A railway was opened in 1855, from Aspinwall in Navy Bay, near Chagres, to Panama on the Pacific. The length is 50 miles, and the summit-level only 250 feet.

HYDROGRAPHY.

The chief gulfs are—Hudson Bay, between Labrador and the Hudson Bay Territory, a large inland sea, 800 miles long by 600 broad, frozen for the greater part of the year, and girdled by sterile desert shores; its southern extremity, known as James Bay, 250 miles long by 150 broad; while from its western side, a narrow arm, called Chesterfield Inlet, stretches westward for 250 miles; Hudson Strait, 500 miles in length, and only about 80 miles at its narrowest part, connecting Hudson Bay with the Atlantic; Davis Strait and Baffin Bay, between Greenland and the continent of America, with its northern prolongation known as Smith's Sound, through which Arctic navigators vainly try to pierce into the Polar Sea. The highest latitude yet reached is 83° 20′ 26″. From the north-west end of Baffin Bay runs westward a long channel, known in different parts by the names of Lancaster Sound and Melville Sound, and forming the famous 'North-west Passage,' though as yet nobody has really managed to push a ship through; Belleisle Strait, separating Newfoundland from the mainland; the Gulf of St Lawrence; the Bay of Fundy, between Nova Scotia and the mainland, 180 miles long, and about 35 in breadth, of dangerous navigation, in consequence of fogs and the velocity of the tide, which sometimes rises as high as 70 feet; Chesapeake Bay, a valuable inlet in the United States, 200 miles in length, with a breadth varying from 4 to 40; the large landlocked Gulf of Mexico, with a basin of 800,000 square miles, noted for its low alluvial shores, the high temperature of its waters, and its currents (Gulf Stream), which pass with great velocity through the narrow Strait of Florida; the Caribbean Sea, bounded on the east and north by the West India Islands, through which it communicates with the Atlantic by numerous passages. On the west or Pacific coast, the Gulf of California, penetrating north for 700 miles, with a breadth varying from 40 to 170 miles, celebrated for its pearls; and the Strait of St Juan de Fuca, at the south of Vancouver's Island, through the middle of which (according to the decision of the German emperor, 1872) now runs the boundary between the United States and British North America.

The fresh-water lakes of North America are the largest, and in many respects the most valuable, in the world. The whole region between 42° and 67° north is so completely covered with them, that geographers have styled it, by way of eminence, the Region of Lakes. We can only mention a few of the more important: 1. Superior, 355 miles long by 160 broad, covering an area of

about 32,000 square miles; its surface is 600 feet above that of the ocean, its mean depth upwards of 1000 feet. It has, like all the others, no tidal ebb or flow, is studded by few islands, and, from the unsheltered nature of its shores, affords no great facility for shipping. It discharges its surplus waters by the river St Mary, which, after a course of 40 miles, and a descent of 32 feet, falls into—2. Lake Huron, having a length of 280 miles, and a breadth of 250; area 20,000 square miles, and medium depth 1000 feet. It has several large islands, among which are the Manitoulin chain, which almost separates that portion known as Lake Iroquois or Georgian Bay from the main body of the lake. 3. Michigan, on nearly the same level with Huron, with which it is connected by the Mackinaw Strait, little more than four miles across. This sheet is 320 miles long, and about 70 broad; area 18,000 square miles, and depth 1000 feet. The shores, which are bold, and at certain seasons dangerous, are guarded by 23 lighthouses. Along with the lower lakes and the St Lawrence, it forms a natural outlet for one of the richest grain-growing regions in the world. 4. Lake Erie, receiving the surplus waters of Huron by the navigable rivers St Clair and Detroit—the former, after a course of 30 miles, expanding into a shallow lake, which again contracts into the latter, also about 30 miles long. Erie is 240 miles long, and from 30 to 60 broad; area 9600 square miles; its level 560 feet above the sea, and mean depth 120 feet. The shores of this sheet are low, with a marshy or sandy beach. 5. Ontario, receiving the surplus waters of Erie by the Niagara, has a descent of 330 feet, 165 of which are by the celebrated Falls of that name. This lake is 190 miles long, and 55 at its broadest; area 7200 square miles, depth 500 feet. Its shores are in general flat. The navigation has been facilitated by a system of lighthouses on both sides of the lake. Ontario discharges its waters by the Lake of the Thousand Islands, which afterwards becomes the St Lawrence. The other principal lakes are—Athabasca, Winnipeg, Great Slave Lake, and Great Bear Lake in the Hudson Bay Territory; the Great Salt Lake in Utah, and Nicaragua in Central America.

With respect to rivers, no country is more bountifully supplied than North America, almost every part of its interior being accessible by their means. The Mississippi—reckoning from the source of the Missouri, its true head—has a course of 4500 miles, for 3950 of which it is navigable for boats. It has been calculated that the basin of this river has an area of 1,220,000 square miles, and that the whole amount of boat-navigation afforded by the river-system, of which it is the main trunk, is nearly 40,000 miles. It has 1500 navigable branches, of which the principal are the Red River, Arkansas, Platte, and Yellowstone on the west; and the Tennessee, Ohio, Wabash, and Illinois on the east. The St Lawrence, estimating its course from the head-waters of the rivers flowing into Lake Superior, drains a territory of 560,000 square miles, and affords a partially interrupted boat-navigation of 4000 miles. The other large rivers are the Mackenzie, nearly 1800 miles in length, and flowing through a succession of lakes into the Arctic Ocean; the Columbia or Oregon, the largest river west of the Rocky Mountains, but with a current so rapid and obstructed that it is of little value for inland navigation; the Bravo del Norte or Rio Grande, the boundary between Mexico and the United States, and next to the Mississippi the largest river flowing into the Gulf of Mexico, being fully 1800 miles in length; and the Colorado, which rises in the Rocky Mountains, and after a broken and rapid course of 1200 miles, falls into the Pacific at the head of the Gulf of California. These, as well as many others of the minor rivers, exhibit in their course some of the magnificent and picturesque water-falls, of which Niagara (165 feet) and Montmorency in Canada (250 feet), the Katerskill (175), and Great Falls (150) in the United States, may be taken as examples.

GEOLOGY.

The geology of the New World presents some remarkable contrasts to that of the districts in the Old World which have supplied the types of geological classification. None of these is more striking than the enormous extent of country which one formation occupies, and that without interruption. American strata often stretch from the Atlantic west beyond the Mississippi. They have, on the whole, been subject to few disturbing agencies. It is not many years since attention was first directed to American geology; but during the short time that has intervened, its progress has been very remarkable. The oldest strata are a range of crystalline rocks, which occupy an area that extends from the northern shores of Lake Superior and the banks of the St Lawrence north-west to the Arctic Ocean, and lies between the line of minor lakes and Hudson Bay. The average width of this area is about 200 miles, and its length from Lake Superior to its termination on the shores of the Arctic Sea is more than 1500 miles. The rocks are chiefly gneiss with granite and trap. They also form the western slopes of the Rocky Mountains. On either side of this tract there exists a Silurian district. That on the eastern side, reaching to Hudson Bay, has a low and uniformly swampy aspect. The other covers a large extent of the continent. It bounds the southern limits of the azoic rocks along the line of the great lakes, extending in a broad band of some 200 miles, parallel to the more ancient formation, till it nears the Arctic Sea. These Silurians have been divided into Lower and Upper, each of which contains three periods. The Lower Silurian periods are the Potsdam, the Trenton, and the Hudson, comprising beds of slate, sandstone, limestone, clays, and shales, with numerous fossil remains. The Upper Silurian periods are the Medina-Clinton, the Niagara-Onondaga, and the lower Helderberg, comprising sandstone, shale, and limestone, also rich in fossil remains. The Silurian beds on their southern and western borders dip under the Devonian rocks, which are developed to a large extent north of lat. 72° N. Vast beds of conglomerate overlie the Devonian rocks, and form the basis of the carboniferous strata. This formation covers large districts in New Jersey and Pennsylvania, and in the Ohio and Mississippi valleys, with an enormous thickness of limestone, shale, and other beds. Volcanic activity has long ceased in the Appalachian range, but one can still trace its former presence in the highly metamorphosed Silurian

and carboniferous rocks of New York and Pennsylvania, which were long supposed to be primary granite, &c. The igneous agency, which at first raised the western range, is still active at intervals throughout its course. The cretaceous beds in Texas and Nebraska shew that the Mexican Gulf once covered those states. The Tertiary formation is developed as a band of about 60 miles, forming the southern extremity of North America, and stretching from North Carolina to the peninsula of Yucatan, leaving the coast-line only at the delta of the Mississippi. The only post-tertiary bed is the boulder-clay, which largely occurs in the region north of 40° N. lat., and which is so called from the immense boulders which it contains, some of them being as much as one or two thousand tons in weight.

CLIMATE—BOTANY—ZOOLOGY.

A continent of such vast extent necessarily presents a great variety of climate. It may be remarked generally, that the west coast is warmer than the east: at New Archangel, for instance, in what used to be Russian America, the mean temperature is 12° Fahrenheit above freezing; at Nain, in Labrador, in the same latitude, it is 7° below freezing. The east coast, again, is colder than the west coast of Europe; the difference between Nain and Gottenburg in Sweden being about 21°. This difference, however, diminishes towards the south; New York is only 7° colder than Naples, and Florida has the same temperature as Cairo.

The higher temperature of the west of Europe, as compared with the opposite coast of North America, is owing, partly at least, to the Gulf Stream (see PHYSICAL GEOGRAPHY), which carries the warm water of the tropical seas into the latitude of Britain and Norway, while a cold current from the polar seas flows south along the east coast of America.

On the discovery of America, Europeans regarded with astonishment its vegetable and animal productions, so different from all that they had ever seen before. The difference is least remarkable in the northern regions. There the vegetation greatly resembles that of Lapland in Europe—dwarf willows, larches, birches, and pines; mosses and lichens; and a scanty herbage, interspersed by a few wild-flowers and berries during summer. In the Canadas, and generally in the basin of the St Lawrence, the true forests of American pine and fir prevail, though the trees are inferior in size to those of the United States. Interspersed with these, and becoming more frequent as we proceed southward, are the white cedar, sugar-maple, basswood, hickory, several species of oak, and wild cherry. Here also flourish the Canadian lily, the ginseng, Venus's fly-trap; the cultivated grains and fruits of temperate Europe; with tobacco, hemp, and flax. In the United States—which present three very different zones of climate—are found a greater variety of species than in almost any other region of the same dimensions. The first zone, north of lat. 44°, exhibits birch, elm, red and white pines, sugar and other maples, a variety of oaks, and the vegetation common to Canada. Between this zone and 35°, oaks, ash, hickory, plane, white cedar, sassafras, witch-hazel, cornel, yellow birch, and red maple become more frequent, as do also fine flowering-climbers and aquatics. South of this middle zone, and up to 27°, most of the foregoing are found, with deciduous cypress, Carolina poplar, magnolias, swamp-hickory, lobelias, and a greater variety of climbers and aquatics. South of 27°, the vegetation merges into the tropical, or that to be described under the West Indies and South America. As already stated, all the common garden-fruits of Europe are reared in the north; pomegranates, melons, figs, grapes, olives, almonds, oranges, &c. in the southern zone. Maize is grown all south of Maine; tobacco, as far north as lat. 40°; cotton, to 37°; the sugar-cane, to 32°; rice, in the Carolinas, Louisiana, and Georgia; wheat, all over the Union; oats and rye, principally in the north; hemp, flax, and hops, chiefly in the western and middle districts.

The Fauna of North America is in many respects peculiar. Of *mammalia*, we may mention the tailed monkeys of Mexico, the puma, lynx, glutton, wolf, American fox; polar, black, and grisly bears, badger, otter, racoon, opossum, beaver, skunk, ermine; prairie-dog; bison, wapiti, prong-horned antelope; moose, red, Virginian, and other deer. Among *birds*—the white-headed and other eagles, various vultures, wild turkey, Canada goose, passenger-pigeon, bell-bird, mocking-bird, humming-birds, &c. Of *reptiles*—the alligator, tortoise, rattlesnake, black-snake, siren, &c. Of *fish*, a vast and useful variety—as cod, sprat, mackerel, salmon; crab, oyster, and other shell-fish. Of useful *insects*, the continent possesses the bee and cochineal insect, and is infested with the mosquito. All the domestic animals of Europe have been introduced with success.

POPULATION—COUNTRIES.

The people who inhabited the continent at the time of its discovery in 1492, belonged exclusively to the American variety of our species, but subdivisible into numerous families and tribes, differing not so much in physical aspect as in manners and customs. Without descending to minutiæ, the aborigines might be classed into the Aztecs, a civilised race who inhabited Mexico, and had made considerable progress in the domestic arts; the other Indian tribes, who led a savage life, obtaining their subsistence chiefly by hunting and fishing; and the Esquimaux, who peopled, as they do now, the shores of the northern seas. Soon after the discovery, several European settlements were formed at various points along the eastern shores of the continent, from the Isthmus of Panama to the Gulf of St Lawrence; and these settlements have been gradually extending, either by purchase from the natives or by conquest, till now nearly the whole of the country may be said to be under European supremacy, before which the Red Man is gradually but surely passing away. The Spaniards colonised Mexico; the French settlements extended along the St Lawrence and Mississippi; and the English chiefly along the eastern shores; where also settled Scotch, Dutch, Germans, and Irish. Out of all these have been formed the now dominant Anglo-American family, which uses the English tongue, but which is beginning to develop mental and temperamental characteristics that are quite distinguishable from English. In addition to the

white races of European origin, we must note the large African population, originally imported as slaves, and the various half-breeds resulting from the intermixture of the white and the negro, or the white and the Indian, *e. g.* the *Mulatto* of the States, and the *Mestizo* of Mexico.

Politically, the original settlements have undergone many mutations: most of them have declared themselves independent, and adopted republican governments; some have changed masters; and only a few remain in unaltered connection with the mother-country. The following table exhibits the existing political divisions of the continent of North America, with their areas and population, according to the most recent available authorities:

Governments.	Area in square Miles.	Population.	Capitals.
Danish America (Greenland)	380,000	9,825	Lichtenfels.
French Possessions	81	4,915	St Pierre.
British North America:			
1. The Dominion of Canada, comprising the provinces of			
Quebec	193,355	1,359,027	Quebec.
Ontario	107,780	1,923,228	Toronto.
Nova Scotia	21,731	440,572	Halifax.
New Brunswick	27,322	321,233	Fredericton.
Manitoba	14,340	65,954	Winnipeg.
Prince Edward Island	2,173	108,891	Charlotte Town.
British Columbia	213,000	49,459	Victoria.
North-west Territory	2,880,000	56,446	Regina.
2. Newfoundland	40,200	161,374	St John.
United States of America	3,603,884	50,442,066	Washington.
Mexico	761,640	9,577,279	Mexico.
San Salvador	7,334	554,785	San Salvador.
Nicaragua	47,090	300,000	Managua.
Honduras	58,168	350,000	Comayagua.
Guatemala	40,776	1,252,497	Guatemala.
Costa Rica	21,493	185,000	San Jose.
	8,420,367	67,176,507	

Such are the existing divisions or governments, the physical, political, social, and industrial features of which (omitting Danish America, as not of sufficient importance to merit special notice) we shall now endeavour to describe, as fully as our narrow limits will allow.

BRITISH NORTH AMERICA

comprehends the colonies of Canada, New Brunswick, Nova Scotia, Cape Breton, Prince Edward Island, Newfoundland, the Red River Settlement, or Manitoba, with the rest of the territories once belonging to the Hudson Bay Company, and British Columbia, including Vancouver's Island. The whole of these, with the exception of Newfoundland, are now politically confederated, and form the 'Dominion of Canada.' Formerly, they were separate and independent colonies. Now, they are 'provinces' of a great state, embracing half a continent, and send representatives to an imperial parliament, which assembles at Ottawa in Upper Canada, though their local legislatures are still preserved for provincial purposes.

DOMINION OF CANADA.

The act by which provision was made for their confederation passed the British parliament in 1867. It orders that the constitution of the Dominion shall be 'similar in principle to that of the United Kingdom,' that the executive authority shall be vested in the sovereign of Great Britain and Ireland, and carried on in her name by a governor-general and privy-council; and that the legislative power shall be exercised by a parliament of two houses, called the 'Senate' and the 'House of Commons.' The members of the Senate are nominated for life by summons of the governor-general, under the Great Seal of Canada, and are 78 in number—24 from the province of Ontario, 22 from Quebec, 12 from Nova Scotia, 12 from New Brunswick, 2 from Manitoba, 3 from British Columbia, and 3 from Prince Edward Island. A property qualification of 4000 dollars is required to make a person eligible for the office of senator. The 'House of Commons' is elected by the people for five years, at the rate of 1 representative for every 17,000 of the population. According to the census returns of 1881, it consisted of 213 members—93 for Ontario, 65 for Quebec, 21 for Nova Scotia, 16 for New Brunswick, 5 for Manitoba, 6 for British Columbia, and 7 for Prince Edward Island. The constituencies vary in the different provinces. An urban voter in Ontario and Quebec must be the owner or tenant of real property of the assessed value of 300 dollars, or of the yearly value of 30 dollars; a rural voter, of property assessed at 200 dollars, or of the yearly value of 20 dollars. In New Brunswick, a man cannot vote unless he has real property worth 100 dollars, or an annual income of 400 dollars; in Nova Scotia, the limitation is a little higher. Voting is open in every province except in New Brunswick.

Church and Education.—There is no state church in the Dominion, or anywhere in British North America. Certain portions of territory in Canada Proper were originally set apart as *clergy reserves*, for the support of the Protestant religion, and the proceeds were given chiefly to the Church of England, with a small pittance to the clergy connected with the Church of Scotland. But these 'reserves' have now been secularised. The Church of England, in the Dominion, is governed by 9 bishops; the Roman Catholic Church, by 4 archbishops and 14 bishops; and the Presbyterian Church of Canada, by annual

synods, presided over by moderators. In 1881, there were 1,792,000 Roman Catholics in the Dominion, the mass of the inhabitants of Quebec Province being French Catholics. The Presbyterians numbered 676,000; the Methodists, 743,000; Baptists, 225,000; and the Episcopal Church, 575,000. Lutherans, Congregationalists, Mennonites (21,000), and others are represented.

Education is carefully fostered in the Dominion. The province of Ontario has some 5000 educational establishments, including nearly 20 called colleges. Quebec has 3 universities, one being Catholic, and above 20 classical and industrial colleges. Manitoba has already a university at Winnipeg. Over 500 newspapers and periodicals are published in Canada, mostly in Ontario.

Revenue.—The total ordinary revenue of the year ending June 1880, was $23,307,407; but with loans, &c., amounted to $53,177,629. The ordinary expenditure was $24,850,634; but with payments on account of funding the debt, &c., it was $50,879,271. In 1882–83 the revenue was calculated at $30,600,000, and the expenditure at $27,600,000. The debt of the Dominion, incurred chiefly on account of public works, amounted in 1880 to $156,900,000.

Commerce.—The trade of the Dominion is chiefly with Great Britain and the United States. Of a total exportation of $94,000,000 in 1880–81, 54 millions went to Great Britain, 33 millions to the United States; while of a total importation of $92,000,000, 43 millions came from Great Britain, but 36 millions from the United States. The staple articles of export are wood and bread-stuffs; also fish, furs, cotton, &c., and minerals. The chief imports from the United Kingdom are iron, wrought and unwrought, woollen manufactures, and cotton goods. The protective system lately in vogue is held to promote Canadian manufactures. In 1882 there were 11 cotton-mills at work, and 9 building.

Shipping.—The merchant shipping of Canada is remarkably extensive. In 1880 there were 7377 vessels on the books of the Dominion, measuring 1,311,218 tons. Canada is, accordingly, the fifth in rank of the shipowning states of the world, following, for extent of shipping, Britain, the United States, Norway, and Italy; but taking precedence of Germany, France, and all other maritime powers.

Fisheries.—The total produce of the Canadian fisheries in 1880 was valued at £2,400,000. In that year, fish to the value of £1,400,140 were exported. This includes the fisheries of British Columbia, but of course excludes those of Newfoundland. In 1879 there were seven establishments in Canada for artificial fish-culture, from which, in the preceding year, 13,500,000 young fish (salmon, speckled trout, and white fish) were sent forth into the waters of the Dominion.

Mines.—In 1870–1880, Canadian mines produced (including coal, gold, gypsum, manganese, mineral oil, copper, iron, lead, silver, salt, slate, and stone) a value of over £700,000 a year.

Canals and Railways.—In the matter of communication, Canada is unrivalled. The St Lawrence, with its lakes and extensive canals, forms admirable waterways. In 1881 there were 7600 miles of railway in operation. There were, besides, about 3000 miles in construction, including part of the Dominion railway from the Atlantic to the Pacific, as a rival to the great Pacific line of the United States. Details are given under the particular provinces.

Canada.

Canada, as a geographical designation, has had in history a variety of meanings. Originally, it denoted an extensive range of country, reaching, under the French, as far as even the Mississippi, away beyond the boundary lakes. It was subsequently limited to a region occupying chiefly the basin of the St Lawrence, which, in 1791, was divided into two provinces—Upper or Western, and Lower or Eastern Canada. In 1840, these were re-united under one Legislative Council and House of Assembly; but in 1867 they again, under the respective names of Ontario and Quebec, became separate members of that great confederation before mentioned—the Dominion of Canada. The country composed of these two provinces extends westward from the Gulf of St Lawrence to the frontier of the district of Keewatin (lying north and east of Manitoba), in long. 90° 30′ W.; and northward from the Great Lakes and the St Lawrence to the ridge of land which forms the water-shed between that river and Hudson Bay. The northern boundary is very irregular in outline, and has not been definitely surveyed; and the westernmost portion of the province of Ontario (formerly Canada West) is a strip of land lying north of Lakes Huron and Superior, and varying in width from 30 to near 200 miles. A considerable portion of Quebec province (Canada East) lies on the south or south-east side of the St Lawrence. The principal river of Canada is the St Lawrence. Its principal tributary on the north or left side is the Ottawa, which forms the boundary between the provinces of Ontario and Quebec. Those from the south are insignificant in point of size.

Quebec, or Lower Canada, was originally a French colony; five-sixths of the population are of French descent; old French usages prevail, and the French language is generally spoken. Ontario, or Upper Canada, is occupied mainly by settlers of British descent, a very large proportion of whom are from Scotland, both Lowlands and Highlands. The two provinces have presented a striking contrast in their rates of progress. To take, for instance, the growth of towns: in Quebec, Sherbrooke, the capital of the eastern townships, situated on the river St Francis, with about 6000 inhabitants, forms almost the only addition to Quebec, Montreal, and Three Rivers—the three French foundations; while in the province of Ontario, the towns of Toronto, London, Kingston, and Hamilton, have an aggregate population of more than 100,000. A great part of both provinces, more especially the shores of Lake Superior, is valuable only for mineral resources, such as iron, zinc, lead, copper, silver, gold, cobalt, manganese, gypsum, marl, granite, sandstone, limestone, slate, and marbles of nearly every imaginable colour. Considerable portions also, though heavily timbered, chiefly with pine, are yet but little adapted to settlement and cultivation. Towards the Gulf of St Lawrence, again, a large section of territory derives importance mainly from the fisheries, being, with partial exceptions in Gaspe, comparatively worthless for every other object. Thus the area for the profitable production of ordinary

cereals cannot materially exceed 40,000 square miles, containing, however, within this space a singularly small proportion of irreclaimable surface. This cultivable block increases regularly in width and fertility, from its commencement on the Lower St Lawrence to the shores of Lake Huron. Below Quebec—to say nothing of the precarious nature of the crops—there may always be seen, on one or on both sides, the primeval forest. Between that city, again, and the basin of the Ottawa, a gradual improvement shews itself even on the north side; and towards the south, there stretches away to the frontier of the United States a broad belt of generally undulating character, probably the best field in the country for the blending of pasturage and agriculture. From the basin of the Ottawa inclusive, the parallel of the south end of Lake Nipissing may be said to cut off, towards the south-west, the entire residue of the practicable soil, in the shape of a roughly defined triangle, which, as a whole, is at least equal in the growth of grain in general, and of wheat in particular, to any region of the same extent in the whole continent.

In the matter of communications, Canada is unrivalled. The St Lawrence, with its lakes, puts it in connection at once with the most commercial sections of the United States, and with the open ocean. The navigation of this great water-system has been much assisted by art. Below Montreal, Lake St Peter has been deepened so as to admit vessels of over 1800 tons burden; and above that city, a series of cuts, skirting the rapids, admit sea-going vessels into Lake Ontario. Beyond this, the Welland Canal, a magnificent achievement, connects Lake Ontario with Lake Erie, affording passage for vessels of large size, and thus escaping the insuperable obstacle of the Falls of Niagara. The 'Allan' line of steamers plies weekly between Liverpool and Montreal in summer, and between Liverpool and Portland in winter. In addition to the navigation of the main artery, there are numerous canals and navigable streams and lakes throughout the province. Of the former, the principal is the Rideau Canal, connecting the river Ottawa with Lake Ontario.

Over and above all these facilities in the way of navigation, Canada is not deficient in roads of every description. The government has laid out, in the newer and remoter townships, two great systems of highways; seven lines for the Upper province, and five for the Lower; subsidising, as it were, the same by free grants of 100 acres to each holder of land on both sides of every route, under condition of residence and cultivation. The Grand Trunk Railway of Canada is the longest line in the world owned by any one company, and under one management. It has an unbroken line of communication from Portland to Lake Huron and Detroit. In 1881, progress began to be made with the gigantic undertaking of a railway for the Lakes through Manitoba, the North-west Territory, and British Columbia, thus connecting the Atlantic provinces with the Pacific. The company received large grants of land along the line, and undertook to finish the railway within ten years, the British government guaranteeing a loan. The Canadian Pacific Railway was completed in 1886, much within the specified time. The Megantic International and the Intercolonial give Montreal railway communication with St John and Halifax, the chief cities respectively of New Brunswick and Nova Scotia.

The *climate* of Canada presents very opposite extremes of heat and cold, and the transition from the one to the other is much more sudden than in Great Britain. Notwithstanding this, however, it is healthy. The spring in Canada generally commences about the end of April, and the fields are well covered with vegetation by the beginning of May. The thermometer rises in summer to from 80° to 90°, and even above 100°; but the average heat of the summer is generally about 75°. Spring, summer, and autumn extend from the end of April to October. 'As indications of the climate of Canada increasing in warmth as you ascend the river, it may be stated that the Isle of Orleans, immediately below Quebec, is famous for its plums, and the island of Montreal for its apples; and from the neighbourhood of Toronto to the head of Lake Erie, grapes and peaches ripen without any aid whatever. Melons, again, of large size come to maturity, through the settled parts of the province, in the open air; and pumpkins and squashes attain enormous size, some of them near Toronto having weighed 300 lbs.' Winter commences in November, when thick fogs and snow-storms are frequent. By the middle of December, the ground is generally covered with snow, and the frost, especially in Lower Canada, becomes sometimes very intense, the thermometer sometimes falling to 25° below the freezing-point.

In Upper Canada, again, about Toronto, the sleighing season, which, at Quebec, lasts for five months, is seldom longer than as many weeks. The sky of a Canadian winter is generally almost cloudless, the air bracing, and, from the absence of wind, in spite of the low temperature, the cold is not felt to be disagreeable. From Quebec to Montreal and upwards, the St Lawrence and other rivers, and also the lakes, cease to be navigable; but the firm icy surface serves as a road for the sleighs and carioles; and although the entire face of nature is now changed, yet the snows and frosts of Canada are hailed as ushering in a season which brings with it no small amount of social enjoyment.

The *chief towns* in Canada are Quebec and Montreal in the province of Quebec; and Toronto, Hamilton, Ottawa, London, and Kingston in the province of Ontario. Ottawa, the new capital of the Dominion of Canada, is picturesquely situated on the south bank of the river of the same name, about 90 miles from its junction with the St Lawrence. At the west end of the city, the river rushes over the magnificent cataract known as the Chaudière Falls; and at the north-east end there are other two cataracts, over which the Rideau tumbles into the Ottawa. The immense water-power of the city is made use of in numerous saw-mills, which send forth vast quantities of sawn timber. The finest buildings in the city, and among the finest on the American continent, are the Houses of Parliament for the Dominion. The population in 1871 amounted to 21,500, and has of late increased rapidly.

The city of Quebec stands on the extremity of a precipitous cape, on the north bank of the St Lawrence, opposite the island of Orleans. It is the great military stronghold of British North America, completely commanding the navigation of the

river, and deemed by authorities impregnable. The city is divided into an upper and lower town. The upper town is more open, regular, and better built. It is situated within the gates and walls, and is approached by a steep, serpentine street and carriage-way. On the eastern end and point stand the Grand Battery, and portions of the fort, barracks, and town; towards the north, the Esplanade; and on the west, the Citadel, which crowns the heights. The institutions are, in many instances, of French character, and the language of the inhabitants is French and English. As a port, Quebec is the first in Canada, and the third in the Dominion, coming after Halifax in Nova Scotia, and St John in New Brunswick. Its great business is ship-building and the lumber-trade. Millions of feet of timber are annually exported. Quebec is the summer port of departure of the Allan line of steamers for Liverpool and Glasgow; also of a weekly line of steamers for the gulf ports and maritime provinces. By railway, it is now connected with Western Canada and the United States. Population (1871) 60,000.

Montreal is the largest city and the commercial emporium of the Dominion of Canada. It occupies one of the most commanding positions in America, and stands on a large fertile and beautiful island of the same name, 30 miles long by 10 broad, formed by the confluence of the Ottawa and the St Lawrence. It may be said to be at the head of the sea or outward navigation, and at the end of the great chain of lake, river, and canal navigation which extends westward to Chicago and Fond du Lac, a distance of about 1400 miles. As a port, Montreal is accessible to ships over 3000 tons burden. It is also the chief seat of manufacturing operations in the Dominion. From Point St Charles, at the head of Montreal Harbour, to St Lambert, on the southern shore, a distance of about 2 miles, the St Lawrence is spanned by the Victoria Bridge, the most costly and magnificent tubular bridge ever constructed. It gives the Grand Trunk Railway an unbroken line of communication from Portland to Lake Huron and Detroit, and Montreal unrivalled facilities and advantages for commerce, whether foreign or domestic. Population (1871) 107,000.

A few words may suffice for the towns in the province of Ontario, or Upper Canada. Ottawa has been already described. Toronto, 'the Queen City of the West,' and the capital of the province, is situated on the north-west shore of Lake Ontario, and faces a spacious bay. It has many industrial establishments, including foundries, mills, tanneries, breweries, distilleries, and a great variety of other factories, all in a thriving condition. The population in 1871 amounted to 56,000.—Hamilton, called the 'Ambitious City,' is beautifully situated on Burlington Bay, at the western extremity of Lake Ontario, on a plateau of slightly elevated ground. It is in the very centre of the finest grain-producing region in the Dominion. The population in 1871 was 26,700.—London, the westernmost city in the Dominion, can boast a more rapid growth than any city in British North America. It is surrounded by a rich agricultural district, which furnishes it with a large trade in wheat and other produce. The population in 1871 was 15,700.—Kingston lies pleasantly at the head of the Thousand Islands, on the north-east shore of Lake Ontario, where the waters of the Canadian lakes issue to form the St Lawrence. It is one of the oldest settled localities in Upper Canada. The population of these towns in 1881 was as follows: Ottawa, 27,500; Quebec, 62,500; Montreal, 140,750; Toronto, 86,500; Hamilton, 36,000; London, 20,000; Kingston, 14,100.

Nova Scotia.

The province of Nova Scotia consists of the peninsula of that name and the island of Cape Breton. The peninsular part, which is connected with the mainland of New Brunswick by a narrow isthmus, is about 280 miles in length, and from 50 to 100 in breadth, and faces the Atlantic with a north-east and south-west incline. The coast-line is 1000 miles long, and the shores, which are much indented, abound in excellent bays and harbours; among others, Chedabucto Bay, Halifax Harbour, St Margaret's, Mahon, and St Mary's Bays, Chignecto and Annapolis Basins, and Pictou Harbour. Along the Atlantic sea-board, and extending inland from it for about 20 miles, is a range of highlands, while the Cobequid Mountains (1100 feet high) traverse the interior from the Bay of Fundy to the Gut of Canso. There are numerous lakes, the greater number occurring near the southern and south-western coasts, and covering about one-tenth of the entire superficies. There is no part of the land 30 miles distant from navigable water, and in all parts there are numerous small streams. The soil along the Atlantic coast is naturally rather poor; but in the valley north and south of the Cobequid Mountains, it is extremely fertile, and agriculture is carried on with great success.

The province abounds in mineral riches, including gold, coal, and iron. Copper and lead are also found. Gold was first discovered in the colony in March 1861, on Tangier River, about 40 miles east of Halifax. Since then, it has been found in more than 100 different localities. The coal raised at the various Nova Scotian collieries in 1872 amounted to 880,950 tons, being more than 200,000 tons over the produce of 1871. The cause of this great increase was the enormous advance in the price of iron and coal in Great Britain. The yield of coal in 1875 was 781,000 tons; of iron ore, 4500 tons; of gold, 11,000 oz. In the three years 1879—1881 the total value of exports ranged from $7,365,000 to $8,250,000; and the imports from $7,000,000 to $8,000,000.

The climate of Nova Scotia, like that of the adjoining districts, is salubrious and pleasant, though exposed to sudden changes of temperature and frequent fogs. From its insular position, the extremes of summer heat and winter cold are not so great as farther inland on the North American continent.

The fruits produced in the country are numerous. Besides a great variety of wild fruits, gooseberries, strawberries, cherries, and raspberries, there are pears of various kinds, all the varieties of English plums, apples of a very superior quality, and some finer fruits. The other vegetable products are cucumbers, potatoes, artichokes, cauliflowers, cabbages, beans, and peas. The grains cultivated are summer and winter wheat, rye, Indian corn, buckwheat, barley, and oats. The natural forests are elm, cherry, white, black, yellow,

and gray birch, red oak, beech, white and yellow pine, white, red, and black spruce, maples, &c. The rivers abound with the finest fish, among which are salmon and trout; and the shores yield large supplies of white and shell fish.

Halifax, the capital of Nova Scotia, is pleasantly situated on the slope of a rising ground, facing a fine spacious bay or natural harbour in front, on the eastern side of the peninsula. The harbour is easy of access for ships of every class, capacious enough to afford anchorage for all the navies of Europe, and finely sheltered from the violence of winds. Population in 1871, 29,852; in 1881, 36,100. Other important towns in the province are—Pictou, on the north coast, the headquarters of the coal export; Liverpool, on the Atlantic seaboard, and Yarmouth, at the south end of the peninsula, both engaged in the lumber-trade, ship-building, and fisheries, and each having a population of over 3000; Windsor, in the interior, built in the midst of great beds of gypsum or plaster of Paris, which is extensively quarried; and Sydney and Arichat, in the island of Cape Breton.

The most important branches of industry in Nova Scotia are the timber-trade, mining, cod-fishery, ship-building, and agriculture.

New Brunswick.

The province of New Brunswick, lying on the mainland of North America, contiguous to the United States and Lower Canada, consists of an extensive tract, comprising 27,000 square miles, the greater part of which is still covered with dense forests. The land, however, is generally fertile, and excellently adapted for the settlement of emigrants. One-third of the surface of New Brunswick is covered by a bed of coal; gold and silver occur; and copper, iron ore, gypsum, and plumbago abound; yet the total value of the mineral produce exported only amounts to $200,000 a year. The climate is salubrious; the natural products are numerous and valuable; wild animals are plentiful; the rivers and lakes abound in fish; the coasts, in cod, haddocks, salmon, and other fish. As yet, New Brunswick, though capable of supporting a population of 3,000,000, has only (1881) 321,233 inhabitants. The principal settlements are along the river St John and its lakes. At the mouth of this fine river (500 miles in length) stands St John, the commercial capital of the province, and, in 1871, the fifth largest city in the Dominion. It occupies a commanding position, and, when approached from the Bay of Fundy, presents an imposing appearance. The position of its harbour, and its entire freedom from obstruction by ice, give it great advantages over all other ports in the Dominion. Ship-building and the lumber-trade are still the principal sources of its prosperity. Since 1872, it has been connected by railway with all parts of the Dominion and the United States. Population, 26,150. Ninety miles above St John, on the same river, lies Fredericton, a small but beautiful city, the seat of the provincial legislature and university. Other places that must one day become important are: Dalhousie and Bathurst, on the Bay of Chaleur; Chatham, at the mouth of the Miramichi; Shediac, opposite to Prince Edward Island. Though little more than villages at present (with the exception of Chatham, which has a population of 3000), and almost wholly dependent on the lumber-trade and the fisheries, they are destined to increase rapidly when the agricultural and mineral resources of the country begin to be developed. Progress can be discerned. In 1871, two lines of railway were in operation, and 450 miles of telegraph. Along the coasts and the banks of the rivers, there are excellent public roads.

Manitoba.

The province of Manitoba, formed out of the Red River Settlement, was admitted into the Dominion of Canada in 1870, and commenced legislation in 1871. Its area was enormously increased in 1882 (from 13,400 square miles to about 123,200), and it now extends from 49° to 53° N. lat., and from 91° to 102° W. long. The population, which in 1870 was about 12,000, had in 1880 increased to 37,207, three times that number; and the capital (Winnipeg, formerly Fort Garry) had itself about 12,000 inhabitants. In 1869–70, the Red River region was the scene of a rebellion, headed by Louis Riel. Before its suppression in 1870, a provisional government had been established. Riel led another rising of the half-breeds and Indians of the North-west in 1885; after their defeat by General Middleton, their leader was hanged. This last rebellion cost more than £1,000,000. The soil is naturally good, and the pasture offers splendid facilities for rearing sheep, cattle, and horses. It is declared to be the best wheat-bearing soil in the world, and its fertility is something remarkable. Root crops grow admirably. The development of the province of late years is unprecedented. The imports doubled in the three years 1879—1881. The Canadian Pacific Railway, which was completed in the spring of 1886, passes through Manitoba, and has favoured its swift progress. The branch railways also aid in developing the country; a line from Winnipeg to Hudson Bay was begun in 1886.

Prince Edward Island.

This rich and productive island is situated in the south of the Gulf of St Lawrence, and is separated from New Brunswick and Nova Scotia by the strait of Northumberland. It measures 130 miles in length, and is 34 at its greatest breadth. The general appearance of this island from the sea is level, but on landing, the scenery is varied with gentle undulations. The coasts are guarded by a bold line of red sandstone cliffs, varying in height from 20 to 100 feet. It abounds with streams and lakes, and in many places it is indented with bays, several of which, as Cardigan Bay on the east, the entrance to Georgetown, and Hillsborough Bay on the south, to Charlottetown, are deep and spacious, affording safe anchorage for large vessels. Almost the whole area consists of good land, and all the fertile land, except a very small portion, is already under cultivation. The soil is exceedingly fertile, and large crops of wheat, oats, barley, beans, peas, maize, and potatoes are produced. The climate is in some respects similar to that of the neighbouring countries, but the atmosphere is noted for being free of fogs.

Prince Edward Island is poor in minerals, but its waters are rich in fish—cod, herring, mackerel, and hake. The total value of the imports for a year may amount to between £400,000 and £500,000; of the exports, to £300,000. A railway traverses the whole length of the island. The capital, Charlottetown, on the east side of the island, has about 12,000 inhabitants. The whole population of the province in 1881 was 108,891. Prince Edward Island became a province of the Dominion of Canada only in 1873.

British Columbia.

This province comprises part of the North American mainland, together with Vancouver's Island. The former is situated in lat. 49° 55′ north, and long. 115°—132° west; and measures about 420 miles in length, by 300 miles in breadth, its total area being estimated at 213,000 square miles. On the north, it is bounded by the Simpson River; on the east, by the Rocky Mountains; on the south, by the United States; and on the west, by the Pacific and Queen Charlotte Sound. The adjacent island of Vancouver has an area of about 18,000 square miles. Each of these divisions formed an independent colony till 1866, when both were united. In 1871, British Columbia entered the Dominion of Canada. The interior of the mainland—*i.e.* the region between the Rocky Mountains and the Cascade Range, facing the Pacific—is, on the whole, rugged and lofty; and though streams are numerous, they do not serve the purposes of irrigation, being often confined within deep ravines. The principal river is the Fraser, which rises in the north-east of the province, and maintains a southerly course, till at Fort Hope it is bent sharply to the right by a mountain barrier, and flows west into the Gulf of Georgia. The seaboard is singularly broken—long and narrow inlets of the Pacific running far into the land, forming splendid harbours, and communicating by navigable waters with the interior. Vancouver's Island is also in the main a mountainous region, reaching in Mount Arrowsmith an elevation of nearly 6000 feet, but possessing here and there, especially in the east and south-east parts, open stretches of fine grass-land.

The best harbours on the mainland are Burrard Inlet, on the Gulf of Georgia, a few miles from New Westminster, and the chief port for the lumber-trade; Howe Sound, north of Burrard Inlet; Bute Inlet, still farther north; and Millbank Sound, which will become valuable as the gold mines on the Peace River attract a population. In Vancouver's Island may be mentioned Victoria Harbour, which is narrow, intricate, and shoaly; Esquimault, the best harbour on the Pacific north of San Francisco; Nanaimo, in the neighbourhood of the coal-mines; and Barclay Sound, which is safe, but difficult of entrance. There are considerable tracts of arable land in the province; but the pastures, which are almost endless, are likely to prove more valuable. The forest-lands are also of immense extent, and yield most valuable timber. The Douglas pine is almost universal on the sea-coast, and up to the Cascade Range; the cedar, white-pine, and maple are found everywhere; the Scotch fir, the willow, and cotton-wood on the bottom lands. But the lumber-trade is only beginning. Whales and seals abound off the northern coasts; sturgeon are plentiful in the rivers and estuaries; the salmon of the Fraser River are famous over the American continent; so are the oulachans, small sprat-like fish, so full of oil, that, it is said, they will burn like a candle. Cod, herring, halibut, haddock, anchovies, &c. are caught in great quantities. Of wild animals, the most valuable are the black and silver fox, the sea-otter, red fox, fur seal, marten, and beaver. Buffalo are found on the plains, bears and goats on the mountains, elk on the sea-coast, and deer on the islands. The mineral resources of British Columbia are great. Coal is found extensively in Vancouver's Island; while the mainland seems to possess inexhaustible veins of gold. It is found everywhere, from the frontier of the United States up to the Simpson River, but is only beginning to be worked. In 1881, the value of the total yield of the mines was about £300,000. Silver and copper are also found in large quantities. The climate varies. In Vancouver's Island, and on the coasts of the mainland, it is moderate—the temperature ranging from 20° in winter to 80° in summer; but in the high interior it is more severe, though everywhere healthy. The total value of the exports (mainly skins and furs) from British Columbia to the United Kingdom amounts to about £80,000 a year, and of the imports from the same country to somewhat more. British Columbia sends 6 representatives to the imperial parliament at Ottawa.

The North-west Territory.

This territory, organised as part of the Dominion of Canada in 1875, occupies most of the region formerly known as the Hudson Bay Territory. Originally limited to the districts drained by the rivers falling into Hudson Bay, the Hudson Bay Territory was, after the union of the Hudson Bay and North-west Companies in 1821, held to comprehend the whole of British America, with the exception of the settled provinces. But the organisation of British Columbia in 1858, and again of Manitoba in 1870, greatly restricted its area. The remainder may be regarded as constituting the North-west Territory, which extends from the boundary of Ontario to the Rocky Mountains and Alaska, and from the frontier line of the United States on the south to the shores of the Arctic Ocean in the north. In the north, vegetation is scanty and stunted; as we travel southward, the pine-forests begin to appear, till in the southern regions on both sides they become dense, with open spaces of lake, morass, and prairie-ground. The whole territory may be regarded as a vast hunting-ground, occupied by buffaloes, musk-oxen, deer, bears, wolves, foxes, beavers, lemmings, ermines, and other fur-bearing animals—the skins of which constitute the principal value of the territory. The population consists chiefly of various Indian tribes who roam over the interior; and of Esquimaux, inhabiting the northern and eastern coasts.

The Hudson Bay Company, which was chartered in 1670, was invested, not only with the monopoly of the trade, but also with the absolute proprietorship and government of a vast but undefined territory. In honour of the king's cousin, who was a leading member of the corporation, the region was called Rupert's Land,

by which it is still historically known. In 1821, the Hudson Bay Company coalesced with a new and powerful corporation, the North-west Company of Montreal, established to secure the rights of Canadian explorers over the Indian territories; after which date the authority of the amalgamated companies extended from Labrador to the Pacific, exclusive of the colonial settlements. In 1869, the British government acquired possession of the domains of the Company; and in 1870, the region entered the Dominion of Canada. In 1882, the best part of the North-west Territory was divided into the provinces of Assiniboia, Saskatchewan, Alberta, and Athabasca.

NEWFOUNDLAND.

This colony—the only part of British North America which has not yet (1886) entered the Dominion of Canada—consists of the large island of Newfoundland, the island of Anticosti, and the coast of Labrador on the mainland. The island of Newfoundland, the area of which is estimated at 40,000 square miles, is separated from Labrador by the Strait of Belleisle, twelve miles wide. Its greatest length is about 370 miles, its greatest breadth 290 miles. It is extremely irregular in shape; the coasts are bold and lofty, and are deeply indented with spacious bays and estuaries. The surface is hilly and rugged, with numerous tracts of moss, intersected by rivers and lakes, or 'ponds,' as they are here called. As seen from the sea, it presents a wild and sterile appearance. It is but thinly wooded, except near the rivers. The settlements are confined to the coasts, and are chiefly on the peninsula of Avalon, at the south-east of the island. Here, wheat, oats, barley, potatoes, turnips, have been produced of the best quality. The island is rich in useful minerals, and lead, silver, and copper mines are being worked, but the results are still small. The atmosphere is humid, and subject to dense fogs, but is, notwithstanding, more salubrious than any part of the continent. Fishing is the great object of industry; and the exports consist almost solely of dried and pickled cod, seal, cod, and whale oil, seal-skins, herrings, sprats, and salmon. The fisheries are of two kinds—the 'shore' fishery, and the 'bank' fishery. The former comprises the bays and coasts of Newfoundland; the latter, a great tract, known as the Banks of Newfoundland, from 500 to 600 miles in length, and about 200 miles in breadth. These banks form a vast submarine plateau, from 20 to 100 fathoms under the surface of the ocean. In 1881, the value of the exports to Great Britain, chiefly fish and train-oil, amounted to £595,500; and of the imports from the same country, to £451,230.

The administration of the colony is vested in a governor, with executive and legislative councils, and a House of Assembly. The capital, St John's, is situated on the peninsula of Avalon, with a population of 30,000, and a well-protected harbour. The whole population of the island, according to the census of 1884, amounted to 196,411. The French have a small establishment on the islands of St Pierre and Miquelon, as a shelter for their fishermen; and they are allowed to catch and dry fish on the north-east and west coasts of the main island.

UNITED STATES.

These States occupy the middle division of the continent, and are bounded on the north by British America; east, by the Atlantic; south, by the Gulf and Republic of Mexico; and west, by the Pacific. They extend from lat. 24° 20′ to 49° north, and from long. 66° 56′ to 124° 30′ west; the greatest length being 2768 miles, and greatest breadth about 1600. The area is about 3,607,600 square miles, and the population in 1880 was 50,442,066. The length of coast-line is stated at about 22,600 miles.

The *United States* were originally British colonies, but in 1776 declared themselves independent. At that time, the territory extended only from the Atlantic to the Mississippi; all the country to the west of that river belonged to or was claimed by France; Florida, to Spain; and Texas, to the Mexican Confederation. In 1803, the French territory was added by purchase; in 1819, Florida was ceded in compensation for spoliations on American commerce; in 1845, Texas—which had revolted from Mexico in 1835, and erected itself into an independent republic—became part of the Union by annexation; in 1846, a large accession of territory was gained by the Oregon treaty with Great Britain; and in 1848, California and other tracts were ceded by Mexico. In 1861, a civil war broke out between the free and the slave-holding States. It lasted for four years, ending in the complete defeat of the latter, and in the formal abolition of the institution of slavery. The only states in the confederation at its first formation were the following thirteen, the others having been formed since: New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia.

When a new tract of country is first settled, it is administered as a *territory*, under the direction of the federal government, until it is organised and admitted as an independent state. The size of the states and territories may be realised from the fact that one of them, Texas, is considerably larger in area than the Austro-Hungarian Empire; while four others are each larger than the United Kingdom.

Population.

No other country has been peopled by so many European races. New England was settled by English Puritans; New York, by the Dutch; Pennsylvania, by Swedes, and by English and German Friends or Quakers; Maryland, by English Roman Catholics; Delaware and New Jersey, by Dutch, Swedes, and English; Virginia, by English Cavaliers; the Carolinas, in part by French Huguenots; Louisiana and Michigan, by the French; Florida, Texas, and California, by Spaniards; Utah, by Mormon immigrants from all quarters. But of late years the stream of immigration from Germany, Ireland, England, Sweden, Scotland, Switzerland, Denmark, and Norway, has been so great, that representatives of the different nationalities are found scattered over the whole territory of the Union—especially in the new western states. In 1882, the total

immigration amounted to 788,992; but fluctuates much from year to year. In 1877 it was only 138,000—the smallest number in any year of the period 1870—1880. From 1820 to 1880 the immigrants from Great Britain and Ireland numbered over 4,700,000. It is said that the Irish and Germans, with their descendants, constitute one-third of the entire population; about 10,000,000 being set down as of Irish descent; 6,000,000 as of German stock. At the census of 1880, of the whites foreign born, 2,772,169 were natives of the United Kingdom; 1,966,742 were Germans; 717,084 were British Americans. The coloured population amounted to 6,580,793; and there were 105,465 Chinese. In 1880, there were 180,000 tribal Indians not included in the census.

States.	Admitted.	Area in Sq. Miles.	Pop. in 1800.	Pop. in 1820.	Pop. in 1860.	Pop. in 1870.	Pop. in 1880.	Coloured Pop. in 1880.
I. New England States.								
1. Massachusetts	1788	8,315	423,845	523,159	1,231,066	1,457,351	1,783,085	18,697
2. Maine	1820	33,040	151,719	298,269	628,279	626,915	648,936	1,451
3. Connecticut	1788	4,990	251,002	275,143	460,147	537,454	622,700	11,547
4. Vermont	1791	9,565	154,465	235,966	315,098	330,551	332,286	1,057
5. New Hampshire	1788	9,305	183,762	244,022	326,073	318,300	346,991	685
6. Rhode Island	1790	1,250	69,122	83,015	174,620	217,353	276,531	6,488
II. Middle States.								
7. New York	1788	49,170	589,051	1,372,111	3,880,735	4,382,759	5,082,871	65,104
8. Pennsylvania	1787	45,215	602,365	1,047,507	2,906,215	3,521,951	4,282,891	85,535
9. New Jersey	1787	7,815	211,149	277,426	672,035	906,096	1,131,116	38,853
10. Maryland	1788	12,210	341,548	407,350	687,049	780,894	934,943	210,230
11. West Virginia	1862	24,780	....	66,557	....	442,014	618,457	25,886
12. Delaware	1787	2,050	64,273	72,749	112,216	125,015	146,608	26,442
District of Columbia	1790	70	14,093	33,039	75,080	131,700	177,624	59,596
III. South-Eastern States.								
13. Virginia	1788	42,450	880,200	1,065,116	1,596,318	1,225,163	1,512,565	631,616
14. Georgia	1788	59,475	162,686	340,985	1,057,286	1,184,109	1,542,180	725,133
15. North Carolina	1789	52,250	478,103	638,829	992,622	1,071,361	1,399,750	531,277
16. South Carolina	1788	30,570	345,591	502,741	703,708	705,606	995,577	604,332
17. Florida	1845	58,680	....	....	140,424	187,748	269,493	126,690
IV. Southern States.								
18. Kentucky	1792	40,400	220,995	564,135	1,155,684	1,321,011	1,648,690	271,451
19. Tennessee	1796	42,050	105,602	422,771	1,109,801	1,258,520	1,542,359	403,151
20. Alabama	1819	52,250	....	127,901	964,201	996,992	1,262,505	600,103
21. Mississippi	1817	46,810	8,850	75,448	791,305	827,922	1,131,597	650,291
22. Texas	1845	265,780	....	....	604,215	818,579	1,591,749	393,384
23. Louisiana	1812	48,720	....	152,923	708,002	726,915	939,946	483,655
24. Arkansas	1836	53,850	....	14,255	435,450	484,471	802,525	210,666
V. Inland States.								
25. Ohio	1802	41,060	45,365	581,295	2,339,511	2,665,260	3,198,062	79,900
26. Illinois	1818	56,650	....	55,162	1,711,951	2,539,891	3,077,871	46,368
27. Missouri	1821	69,415	....	....	1,182,012	1,721,295	2,168,380	145,350
28. Indiana	1816	36,350	5,641	147,178	1,350,428	1,680,637	1,978,301	39,228
29. Iowa	1846	56,025	....	....	674,913	1,194,020	1,624,615	9,516
30. Michigan	1837	58,915	....	8,765	749,113	1,184,059	1,636,937	15,100
31. Wisconsin	1848	56,040	....	....	775,881	1,054,670	1,315,497	2,702
32. Minnesota	1857	83,365	....	....	172,023	439,706	780,773	1,564
33. Kansas	1861	82,080	....	....	107,206	364,399	996,096	43,107
34. Kebraska	1867	76,855	....	....	28,841	122,993	452,402	2,385
35. Colorado	1875	103,925	....	....	34,277	39,864	194,327	2,435
VI. Pacific States.								
36. California	1850	158,360	....	....	379,994	560,247	864,694	6,018
37. Oregon	1859	96,030	....	....	52,465	90,923	174,768	487
38. Nevada	1864	110,700	....	....	6,857	42,491	62,266	488
Territories.								
1. New Mexico	1850	122,580	....	....	93,516	91,874	119,565	1,015
2 Arizona	1863	113,020	....	....	....	9,658	40,440	155
3. Utah	1850	84,970	....	....	40,273	86,786	143,963	232
4. Washington	1853	69,180	....	....	11,594	23,955	75,116	325
5. Idaho	1863	84,800	....	....	....	14,999	32,610	53
6. Montana	1864	146,080	....	....	....	20,595	39,159	346
7. Dakota	1861	149,100	....	....	4,837	14,181	135,177	401
8. Wyoming	1868	97,890	....	....	....	9,118	20,789	298
Total		2,954,450				38,696,984	50,155,783	
Indian Territory	....	64,690	....	....	....	63,152	76,895	....
Indians	....	....	....	....	....	....	179,232	....
Alaska	1867	577,390	....	....	....	(?) 30,000	30,156	....
Public Lands, &c	....	6,460	....	....	....	....	....	....
Total of United States		3,602,990	5,309,427	9,633,822	31,443,321	38,795,136	50,442,066	6,580,793

Government—Army—Navy.

Each of the English colonies established in America had had a certain form of government assigned it for maintaining the necessary order. This consisted generally of a House of Assembly, chosen by the people, with governor, judges, and other officers, appointed by the king, but paid out of taxes levied by the representatives. On acquiring independence after their war with the mother-country, the different colonies, now called *States*, made such alterations, each in its own constitution, as they believed to be suited to their circumstances; and a general government, framed and appointed by the consent of the whole, was formed to take charge of such national affairs as the States could not manage separately. The States have each a Senate and House of Representatives; the members of the former are fewer in

number than those of the latter, and a part of them only is chosen at each election, so that they remain in office for several years: the House of Representatives is generally elected anew every year. The resolutions agreed to by these two bodies for the government of the state, are afterwards submitted to a president or governor, whose sanction constitutes them part of the law.

The imperial government or Federal Congress of the United States is, like that of the states individually, a representative democracy, in which the people intrust the administration of affairs to executive and legislative officers of their own choice. At the head of the executive is a President, who, with a Vice-president, is elected every four years. The Federal Congress or legislative body consists of two Houses—the Senate and House of Representatives. The Senate is composed of two members from each state, chosen by its legislature for six years. The members are required to be at least thirty years of age, to have lived nine years in the United States, and to be at the time of election residents in the state by which they are returned. The House of Representatives is composed of members elected every second year by the vote of all male citizens over the age of twenty-one of the various states of the Union. They must be not less than twenty-five years of age, citizens of the United States for seven years, and residents in the particular state for which they are chosen. The number of representatives increases with the increase of the population. In 1880 there were 293 in all. The House of Representatives performs the duties allotted by the British constitution to the Commons' House of Parliament, and has the right, like them, of originating all bills for raising revenue; while the Senate, on the other hand, exercises functions analogous to those of our House of Lords. Bills which have passed the two Houses have not the sanction of law till they are signed by the President, or, on his refusal, are voted a second time by two-thirds of each of the Houses. Congress is prohibited, by the American constitution, from making any law concerning establishment or free exercise of religion, the liberty of the press, and freedom of speech, or the privilege of public meetings to express their opinions on the measures of government.

The judicial power is vested in one supreme court, and in such district courts as Congress may from time to time establish. The supreme court consists of a chief-justice and seven associate justices appointed by the President for life, who hold a court in the city of Washington annually; besides which, each judge attends in certain districts to hold circuit courts with the local justices.

The supreme court has jurisdiction in all cases arising under the constitution, laws, and treaties of the United States; in causes affecting ambassadors and consuls, of admiralty and jurisdiction; in controversies to which the United States is a party, or between a state and the citizens of another state, citizens of different states, and citizens and foreign states.

According to the original constitution of the United States, all men are equal, but this doctrine was not thoroughly carried out till the close of the civil war in 1865. On December 18 of that year, Congress solemnly declared slavery to be abolished: 'neither slavery nor involuntary servitude, except as a punishment for crime whereof the party shall have been duly convicted, shall exist within the United States, or any place subject to their jurisdiction.' The vast change in the political and social organisation of the Republic made by this new fundamental law (the 13th amendment of the constitution), was completed by the 14th and 15th amendments, passed in 1868 and 1870, which gave to the former slaves all the rights and privileges of citizenship.

In 1882, the revenue was $403,525,250, and the expenditure, $186,905,232. The public debt was $1,918,312,994, or about £383,662,600—nearly the whole of this was incurred in the course of the civil war. Between 1870 and 1882 no less than $482,500,000 of the public debt had been paid off. The chief sources of the public revenue are the customs and taxes; the principal items of expenditure are the interest on the public debt, the civil list, the army and navy, and pensions. Before the struggle of 1861–65, the *army* of the United States consisted of about 14,000 regular troops. But during these years, the federal government was forced to call into the field no fewer than 2,670,874 men, or nearly one-fourth of the entire male population of the Union States; while the Confederate Secessionists had at least 400,000 men under arms. Since then, the army has been again reduced to its normal size, and in 1881 (exclusive of the militia) numbered only 26,660 men. The term of service is five years. Each state is further supposed to have a numerous militia force; but the system is imperfectly organised. The *naval forces*, in 1881, consisted of 24 iron-clads, 65 other steamers, and 23 sailing-vessels.

Religion and Education.

Religion is free from any interference of either federal or state governments, and all denominations have equal privileges. There are a great number of different denominations of Christians in America; the principal are the same as in this country, consisting of Catholics, Protestant Episcopalians, Methodists, Presbyterians, Quakers, and the various classes of Independents. In some of the states, certain denominations are more prevalent than others. New England, for instance, was settled, as has been stated, by the Puritans in Cromwell's time, and its religious condition bears the impress of that origin. Roman Catholics are still numerous in Maryland; Quakers or Friends in Pennsylvania; while Episcopacy is strong in Virginia, the Carolinas, and Georgia. The first Presbyterians settled in Delaware and New Jersey—in the latter of which is Princeton College, their great theological seminary.

In a country where almost every adult has a voice in the management of the commonwealth, it is of vital importance that none grow up ignorant and undisciplined. Accordingly, in the United States, public schools and education generally receive a large share of public attention. It has been uniformly a part of the land-system of the federal government to provide for public schools. The articles of confederation (1787), the acts admitting the new states into the Union, all provided for the appropriation of lands in each township for the use of public schools. Where

the portion of the public school-fund of the state allotted to a district is not sufficient, the inhabitants assess themselves to meet the deficiency; more than half the expense of the primary schools is thus raised. These common schools are managed by local committees, and are entirely unsectarian.

According to the census of 1870, the total number of schools of all classes in the United States was 141,629; of pupils, 7,209,938; of teachers, 221,044; of whom 127,713, or considerably more than one-half, were females. The number of public schools was 125,059, or six-sevenths of the whole; and their total income from all sources, endowment, public funds, taxation, and tuition, was $64,030,673, or rather more than $500 for each school. In these figures are not embraced the Military Academy at West Point in New York; or the Naval Academy at Annapolis in Maryland. In 1880, there were 272,686 teachers, and, 9,424,000 pupils.

The proportion of illiterate persons in the United States is by no means so small as might be supposed from the elaborate educational machinery of the country. In 1880, the number of persons above 10 years of age who could not read was 4,923,451; of course, the majority of these were the recently emancipated slaves of the southern states, or the Irish immigrants in New York and Pennsylvania, but even Massachusetts had 75,650 illiterates.

In 1880, the total number of newspapers of all kinds published in the United States was 11,403, of which 980 were dailies, 8718 weeklies, and 1167 monthlies. There were besides 10,560 periodicals.

Minerals.

The United States are rich in mineral productions. Coal is very widely diffused. Its area is estimated at 250,000 square miles, and has been divided into four tracts: 1. The great central Appalachian coal-field, extending from Tuscaloosa in Alabama, to Pennsylvania on both sides of the Alleghanies, and covering about 40,000 workable square miles. 2. The coal-field occupying the greater part of Illinois and Indiana. 3. The coal-field of Missouri and Iowa. 4. The coal-field of Michigan, comprising almost the whole state. At Pittsburg in Pennsylvania, there is a hill principally composed of coal, and in this district it is found at many places within a few feet of the surface. In 1880, the total yield was 71,067,500 tons, of which two-thirds was obtained from Pennsylvania. Iron is found everywhere, from the richest ores in mountain masses to bog-ore. According to the census of 1880, it was worked in twenty-four states, the total production of pig-iron amounting to 4,295,414 tons, of which Pennsylvania furnished one-third. The states next in order were Ohio, New York, New Jersey, Michigan, Illinois. As, in 1874, the produce was only 2,690,000 tons, it will be seen that during the decade 1870–80, the development of the iron industry has been very rapid. Michigan, on the shores of Lake Superior, possesses perhaps the richest copper mines in the world. Masses of almost pure metal (as much as 90 per cent.) are found weighing thousands of pounds. Four-fifths of the whole produce come from this state; but it is worked in eight others, of which the most productive are Vermont, Tennessee, North Carolina, and Maryland. At the census of 1870, 181,263,502 gallons of petroleum were obtained from the four states of Pennsylvania, West Virginia, Ohio, and Kentucky, of which the first yielded 171,250,000 gallons. Lead exists in rich deposits in Missouri, Arkansas, Illinois, and Iowa; zinc, in considerable quantities in Wisconsin, New Jersey, and Pennsylvania. Tin has been found in Maine and California. Silver and gold are scattered over a pretty large area. The former is abundant in New Mexico, Arizona, Nevada, California, and Utah. Gold is found in small quantities in the eastern states; in larger deposits in Virginia, North and South Carolina, and Georgia; and in great quantities in California, Oregon, Nevada, Colorado, Washington, Arizona, New Mexico, Idaho, and Montana. The total yield of both, in 1881, was estimated at $77,700,000, of which Colorado produced the greatest amount, $20,500,000, and California the next greatest, $19,000,000.

Agriculture and Crops.

In point of productive industry, the United States is yet more an agricultural than a manufacturing country, though of late years an immense impetus has been given to the latter department. Oats, rye, and barley are raised in all the northern states, and also in the hilly districts of the south. Maize is common to every part of the Union; it is indigenous, and adapted to a greater variety of soil and climate than wheat, and yields a much larger produce. Wheat is also cultivated through the whole Union, but especially in the middle and western states.

The cultivation of tobacco begins in Maryland, in latitude 39°; it is raised to a greater extent in that state and in Virginia and Kentucky than in any others of the Union; but it thrives also in all the western states. Cotton does not succeed well further north than the latitude of 37°, though some of the districts raise it for domestic use; it forms the staple of all the districts south of the river Roanoke. The best kinds grow in South Carolina and Georgia, in dry situations, upon the sea-coast. The cultivation of rice occupies nearly the same region as that of cotton. The climate which is favourable to sugar does not extend beyond the latitude of 32°; it is raised in the States chiefly for domestic use, and is not an article of export to any extent. The crop is rather precarious, from the frosts which sometimes occur even in the most southerly districts. The vine grows spontaneously in most of the southern and western states, and is cultivated as a fruit about Philadelphia. The mulberry-tree, hops, and hemp, all succeed well in the middle and western states.

The timber-trees of the States are of numerous kinds, and many of them of the best quality. The country east of the Mississippi, except the prairies of Illinois and Indiana, was at its settlement heavily wooded; and there are still vast forests of valuable timber—beech, birch, maple, oak, pine, hemlock, spruce, walnut, hickory, ash, elm, &c.; and in the south, live-oak, water-oak, magnolia, palmetto, tulip-tree, cypress, cotton-wood, cane, &c. Forests also occur in the Rocky Mountains; and California, Oregon, and Washington Territory have the largest timber in the world.

In 1885, the acreage of maize was 73,000,000 acres, and of wheat, 34,000,000. The cereal crops of 1884 were unprecedentedly large. The production of wheat in 1884 was 512,000,000 bushels, in 1885 it was only 257,000,000; of maize, there were 1,795,000 bushels in 1884. The advance in production between 1870 and 1880 was unprecedented, amounting to about 100 per cent. The production of cotton advanced from 1540 million lbs. in 1870 to 2773 millions in 1880. More than two-thirds of the world's cotton crop is grown in the States. Till 1859, the United States used occasionally to import wheat from Europe; now they produce one-fourth of the world's crop, and have a vast yearly surplus for exporting. The shipments of cattle and meat from the United States exceeded, in 1880, the value of $25,000,000.

Manufactures.

The manufactures which are followed with most advantage in America, and without fear of English rivalry, are those which produce articles too bulky or too heavy, in proportion to their value, to bear the expense of a long carriage, or of which the materials are found in the country, and can be wrought up there at less expense than by carrying them to cheaper tradesmen at a distance. Some of these branches may be mentioned—such as the making of soap, candles, and hats; tanning and working in leather, particularly bulky articles; building of carriages; making of all kinds of agricultural implements; carpentry, sawing, and turning of most descriptions; constructing and putting up of mill-work and machinery; distilling; the employments of goldsmiths, tinsmiths, and printers.

The cotton manufacture was introduced in 1790; and at the census of 1870, there were in the United States 956 cotton manufacturing establishments. The States having the largest numbers were Massachusetts, Rhode Island, Pennsylvania, and Connecticut. The mills employed 448 steam-engines, of 47,117 horse-power; and 1250 water-wheels, of 102,409 horse-power. There were 157,310 looms, 3,694,477 frame-spindles, and 3,437,938 mule-spindles. The hands employed numbered 47,790 males above 16 years of age, 69,637 females above 15, and 22,942 under those ages. The woollen factories amounted to 2891, Pennsylvania possessing the largest number; New York came next; and then Ohio, Massachusetts, Indiana, Missouri, Delaware, Kentucky, Illinois, Connecticut, and Maine, in the order specified. These factories used 1050 steam-engines, of 35,900 horse-power; and 1092 water-wheels, of 59,333 horse-power. The hands employed numbered 42,728 males over 16 years of age, 27,681 females above 15, and 9643 children. In 1880, there were 253,840 manufacturing establishments, 2,738,930 hands employed. The cotton mills had 230,223 looms, and employed 181,628 persons. In addition to the cotton and woollen industries, agricultural implements, machinery, india-rubber goods, oil-cloth, paper, carriages of all sorts, musical instruments, soap, candles, and various sorts of spirits, are extensively manufactured.

In the southern states, there is little manufacturing: the inhabitants there depend on the northern states, or on foreign countries, for their supplies, and their exports are cotton, sugar, and other raw materials.

Commerce.

The wealthiest class in the United States are generally the merchants of the large towns. Of late years, more particularly since the outbreak of the civil war, and still more particularly since its close, swindling on a gigantic scale has been rampant in New York and elsewhere; but it would be a foul slander to insinuate that Mr Jay Gould or his confrères in rascality are a fair sample of American 'business men,' or anything more than an ugly excrescence on the surface of commercial life. Among the merchant-princes of the New World are to be found men as honourable as any in England or the world. The subjoined table gives the total value in dollars of the imports and exports for various years:

Years ending June 30.	Imports.	Exports.
1868	357,436,440	476,902,839
1869	417,506,379	439,134,529
1870	462,377,587	529,519,302
1875	553,906,153	643,094,767
1880	760,989,056	851,482,804
1882	767,111,964	776,720,003

The principal items of export were wheat, flour, cotton, tobacco, pickled pork, hams, butter, cheese, and fresh meat. More than half goes to Great Britain and Ireland.

The mercantile shipping of the United States has greatly declined since 1861. The carrying-trade is passing into the hands of other countries, and mainly into those of Great Britain. Only 241,500,000 tons of American imports and exports were carried, in 1882, in American bottoms, and 1,241,350,000 in foreign vessels.

Years ending June 30.	U.S. Tonnage.	Foreign Tonnage.	Excess of U.S. Tonnage over Foreign.	Excess of Foreign Tonnage over U.S.
1830	967,227	131,900	835,327	....
1840	1,576,946	712,363	864,583	....
1850	2,573,016	1,775,623	797,393	....
1860	5,921,285	2,353,911	3,567,374	....
1861	5,023,917	2,217,554	2,806,363	....
1864	3,066,434	3,471,219	....	404,785
1866	3,372,060	4,410,424	....	1,038,364
1869	3,402,668	5,347,694	....	1,945,026
1870	3,486,038	5,669,621	....	2,183,583
1871	3,742,740	6,266,444	....	2,523,704
1872	3,711,846	7,094,577	....	3,382,731
1873	3,612,631	8,083,087	....	4,470,456

The growth of the railway system in the United States dates from 1827, when the first line was opened for traffic at Quincy, Massachusetts. Three years later, there were only 23 miles in operation; in 1840, there were 2818; in 1850, 9021; in 1860, 30,635; in 1870, 53,399; and in 1882, 104,324. Railways extend from the Atlantic to the Pacific, intersecting the republic in every direction. The total amount of capital expended on the various lines at the close of 1881 was £1,115,600,000. The number of telegraph offices, on the 1st of January 1881, was 11,320; the length of lines, 120,000 miles; and the length of wires, 395,000 miles.

MEXICO.

Mexico, occupying that portion of the North American continent which lies between 16° and 32° north latitude, and 95° and 115° west longitude, was conquered by the Spaniards, under Cortes, in

1521, and continued a colony of Spain till 1821, when it became an independent republic. From 1821 to 1837, the states were severally independent, but united into one federal republic like the United States; in 1837 they resigned their separate independence, and became a consolidated or central republic. Mexico originally comprehended Texas, which revolted in 1835, and is now part of the United States; and California, which declared its independence in 1836, and in 1848 also joined the United States. In 1862, Napoleon III. declared war against Mexico, and a French army invaded the country. An Austrian archduke, Maximilian, was forced on the people, with the title of emperor; but at the close of the civil war in America (1865), the United States ordered the French to withdraw. This was done, and Maximilian was afterwards taken prisoner, and shot at Queretaro, July 19, 1867. The so-called empire immediately disappeared, and Benito Juarez, the successful leader of the national party, again became president of the republic. On his death, in 1872, he was succeeded by Lerdo de Tejada, who was overthrown in 1876 by Porfirio Diaz. The history of Mexico since its separation from Spain has been a series of anarchic insurrections, varied with unscrupulous dictatorships. The government of Juarez was distinctly one of the best. That ruler was an able, intelligent, liberal-minded man, penetrated with modern ideas. But the Mexicans are very ignorant, unpatriotic, and corrupt, and it is impossible to be seriously sanguine about their future. The area of the country is stated at 745,000 square miles, with a population, according to the government estimates for 1884, of 10,460,700—of whom about one-third are Indian aborigines, from 500,000 to 1,000,000 whites, and the remainder mixed races. By the constitution of 1824, persons of all colours are admitted to the equal enjoyment of civil and political rights. The Mexican Congress consists of a president, vice-president, and of two legislative bodies—the Senate and the House of Representatives. Capital, Mexico, with a population of 200,000.

Geographically, about one-half of Mexico lies within the tropics, while the rest belongs to the temperate zone; but a large proportion of the tropical region enjoys a mild temperate climate in consequence of its elevation—being from 5000 to 9000 feet above the sea. This table-land is formed by the three great chains of mountains or cordilleras which run parallel to each other in a northerly direction; the most eastern chain is called the Sierra Potosi; the central, the Sierra Madre; and the western, the Sierra Sonora. The highest peaks are Orizaba (17,370 feet), Popocatepetl or 'Smoking Mountain' (17,880 feet), and Istaccihuatl or 'White Woman' (15,700 feet). The coast is humid, and unhealthy for strangers; but the table-land is remarkable for its salubrity, and it is here that the population is concentrated. Maize is the chief object of culture; besides which, the banana, manioc, cereal grains, rice, and the potato, form the common food of the people. All the fruits of Central and Southern Europe are here produced abundantly, oranges, lemons, grapes, olives, &c. The narrow insalubrious plain along the coast called the *tierras calientes*, or hot country, is remarkable for its luxuriant vegetation. The chief productions of this region are the sugar-cane, cotton, cocoa, indigo, and tobacco. The southern part of the country forming the isthmus is celebrated for the variety and importance of its woods and drugs, including mahogany, rosewood, ebony, logwood, caoutchouc, vanilla, jalap, sarsaparilla, and the trees upon which the cochineal insect feeds. Vast herds of horses, mules, and horned cattle also cover the plains of the southern district.

'The mines of Mexico, however, constitute the chief source of its wealth, particularly those of silver. Gold is also to be found, though in lesser quantities; and copper, tin, iron, lead, and mercury occur in various districts. Manufactures are generally in a rude state; agriculture indifferently attended to; and trade and commerce incessantly injured and obstructed by the internal dissensions of the country.' The total value of the imports of Mexico, consisting chiefly of cotton and linen goods, wrought-iron and machinery, amounts to about £5,500,000; of her exports, chiefly silver, copper ores, cochineal, indigo, hides, mahogany and other woods, to £5,000,000. More than two-thirds of the trade of Mexico is carried on with the United States. The railway system is being introduced into the country. The 'National Mexican' line, from the capital to Vera Cruz, 300 miles long, was completed in 1869, and others are being made. At the end of 1881, there were 11,000 miles of telegraph laid down and in operation. The public debt in the same year amounted to £86,000,000. The chief ports for foreign trade are Vera Cruz, Tampico, Matamoras, and Campeachy, in the Gulf of Mexico; and San Blas, Mazatlan, and Acapulco, on the Pacific sea-board.

CENTRAL AMERICA.

The Central States include that narrow tract of the continent which lies between Mexico on the north and the Isthmus of Panama on the south—being about 1000 miles in length, and from 80 to 250 in breadth. The states were at first united in a confederation; but now constitute five separate and independent republics—namely, San Salvador, Nicaragua, Honduras, Guatemala, and Costa Rica, with the protected kingdom of Mosquitia. (The British settlement of Honduras will be noticed in the following number, in connection with the West India Islands.) The country is extremely diversified, well watered, fertile, rich in minerals, favourably situated for commerce, has numerous ports on both sea-boards, and is altogether calculated to support a large and thriving population. The great curse of these countries is the want of a settled and firm government. Their commercial intercourse is chiefly with Great Britain and the United States. The exports chiefly consist of specie, indigo, coffee, cochineal, brazil-wood, and other articles of tropical produce. The imports are cotton and woollen fabrics, hardware, and other dry goods from Britain; silks, wines, and trinkets, from France and Spain. The total value of the exports from Central America to Great Britain amount to about £1,500,000; and the imports, to £1,000,000. The chief ports for foreign trade are Izabal and San Jose in Guatemala, La Libertad in San Salvador, San Juan in Nicaragua, Port Cortez in Honduras, and Punta Arenas in Costa Rica. This last-mentioned state has got a railway, which was opened for traffic in 1873.

SOUTH AMERICA—WEST INDIA ISLANDS.

THIS great division of the western hemisphere is a triangular peninsula, joined to North America by the Isthmus of Panama. With its apex projected far into the Southern Ocean, its western shores are washed by the Pacific, its eastern by the Atlantic, and its base by the Atlantic and the Caribbean Sea. It extends from 12° 10′ N. lat. to 52° 30′ S. lat. or, including the archipelago of Tierra del Fuego, to 56°—Cape Horn in this parallel being generally reckoned the extreme point of South America. Taken at its widest part—from Cape St Roque in Brazil to Cape Blanco in Peru—it extends from longitude 35° to 82° west. Its area is estimated at 6,429,853 square miles, of which about two-thirds lie within the tropics.

SUPERFICIAL FEATURES—GEOLOGY.

The surface of the continent falls into the following natural divisions: 1. The low, narrow belt of country skirting the Pacific, of which the

extremities are fertile, and the middle sandy and arid. 2. The basin of the Orinoco, consisting of extensive plains called *llanos*, covered with high herbage. 3. The basin of the Amazon, a vast plain of more than 2,000,000 square miles, with a rich soil and humid climate, and covered with dense forests. 4. The valley of the Plata, occupied by plains called *pampas*, in some parts barren, but in general covered with weeds, thistles, and tall grasses, on which feed prodigious herds of wild horses and cattle. 5. The high country of Brazil, eastward of the Parana and Uruguay, presenting alternate ridges and valleys, covered with wood towards the Atlantic, but opening into grassy steppes in the interior. 6. Patagonia, consisting of a succession of terraced plains called pampas, often sterile, but containing large tracts covered with coarse grass, shrubs, and thistles, the home of large numbers of guanacos, ostriches, pumas, armadillos, &c.

Two systems of mountains—the Cordilleras or Andes Proper, and the Brazilian Andes—traverse the continent. The former extend from the Strait of Magellan to the Caribbean Sea, embracing lofty table-lands and mountain-lakes, and intersected by steep valleys, ravines, and water-falls. At Popayan, the main chain divides into three ridges, one of which shoots off into the Isthmus of Panama; a second separates the valleys of the Cauca and Magdalena; and a third divides the valley of the Magdalena from the plains of the Meta. The chain attains its greatest elevation in Chili, where Aconcagua, the highest summit of the Andes, and the highest known volcano in the world, rises to 22,296, and the mountain-passes are seldom under 12,000 feet. In the Bolivian Andes, Illimani and Sorata are respectively 21,181 and 21,286 feet high. The Peruvian and equatorial portions of the chain are less elevated. Altogether, the Andes present a most magnificent spectacle—their lofty summits permanently snow-capped, and vast volumes of smoke and fire being occasionally poured forth from the numerous volcanoes which stud the entire range. The Brazilian Andes occupy a greater breadth of country, but seldom exceed an elevation of 6000 feet.

The resemblance of the geology of South America to that of North America is so close, that it is hardly necessary to enter into details, and for a conception of its general character, the reader is referred to the previous number. It may here be noticed, that those crystalline rocks which occupy the vast region between the Great Lakes and the Arctic Ocean, also stretch over nearly the whole of the eastern portion of South America, extending from its northern shores to the mouth of the La Plata, though hidden in the valley of the Amazon by its alluvial deposits. On the other hand, the Silurian system is only slightly developed on the eastern slopes of the Andes. The Tertiary formation occupies a large amount of the surface. From Patagonia to Venezuela it can be traced throughout the space intervening between the base of the Andes and the azoic rocks of Brazil and Guiana. The older Silurian and carboniferous deposits are not found in the same positions as in the northern continent: the gneiss, &c. dip directly under the Tertiaries. The valleys of the Amazon and the La Plata contain extensive alluvial deposits. Post-tertiary beds occur in Patagonia and the pampas of the Argentine Confederation, and are covered with a deposit of clay and sand, containing the bones of the megatherium and mylodon, genera allied to the sloths, and of the glyptodon, a huge armadillo.

HYDROGRAPHY, ETC.

The *islands*, *capes*, *straits*, *gulfs*, &c. connected with this continent present no very remarkable features. The chief islands are—the alluvial flats in the estuary of the Amazon; the Falkland and Georgian groups on the south-east; the desolate and rugged archipelago of Tierra del Fuego; the memorable islet of Juan Fernandez, off the coast of Chili; and the Galapagos in the Pacific. The more prominent capes are—St Elena and Blanco on the west, Cape Horn on the south, and Frio and St Roque on the east. Among the bays and gulfs which indent the coast are—the Bay of Panama on the west of the isthmus; and the Gulf of Darien on the east; the estuaries of the Amazon, the La Plata, and the Orinoco; the Bay of All Saints; and the Gulfs of Guayaquil and Maracaybo. The principal strait is that of Magellan, about 300 miles long, with a breadth varying from 1½ to 40.

The *rivers* of South America, like its other features, are on the grandest scale. The areas drained by the Amazon (the largest river in the world), the La Plata, and the Orinoco, are respectively 2,000,000, 1,250,000, and 400,000 square miles in extent, while their respective courses are 4000, 2400, and 1960 miles in length. The Amazon, with its tributaries, gives 50,000, the La Plata 20,000, and the Orinoco 8000 miles of boat-navigation. Not to speak of such important affluents as the Parana, the Paraguay, and the Salado, which flow into the La Plata, many of the tributaries of the great rivers of this continent, which are seldom named even in maps, are larger than the largest of European rivers. The other independent rivers worthy of note are—the Magdalena, Tocantins, Parnaiba, San Francisco, Uruguay, and Colorado. In the high table-land of Bolivia and Peru, are several fresh-water lakes, the largest of which, Titicaca, at an altitude of 12,700 feet, covers an area of 5000 square miles. The salt lakes of La Plata are also of considerable size, but so shallow, that many of them are annually dried up, leaving incrustations of common salt, nitrate of soda, and the like, which are of considerable economical importance.

CLIMATE—BOTANY—ZOOLOGY.

South America is sharply defined into three zones of temperature—the frigid, the temperate, and the torrid; but, as this division originates in the enormous difference of level of its various regions, and not in difference of latitude, the temperature is almost uniform throughout the year, and the salutary vicissitudes of the seasons are wanting. Not the intensity, but the continuance of cold in the frigid, and of heat in the torrid zone, renders these regions unhealthy; while the moderate and constant warmth of the temperate zone excludes from it all but its own peculiar plants and animals, which can live neither above nor below its limits. In the words of Malte Brun: 'The summer, the spring, and the winter are here

seated on three distinct thrones, which they never quit, and are constantly surrounded by the attributes of their power.' Within the tropics, between the Andes and the Atlantic, the year is divided almost equally into the rainy and the dry seasons, the former extending from November to May. The belt along the Pacific is almost rainless. In Patagonia, except in the sheltered valleys, winter holds an endless reign.

Of the *vegetable* productions more especially characteristic of the continent, we may mention the following: The forests of Brazil and other tropical parts present the most luxuriant vegetation of palms, and tree-ferns tangled with rope-vines and other climbers, and studded with the strangest forms of the orchidaceæ. Here also flourish the mahogany and other timber-trees; the dye-woods of commerce; the banana, anana, cocoa; the cinchona, or Peruvian bark; the native potato; the caoutchouc-tree, Brazil-nut, castor-bean, pine-apple, agavé, and cactuses of innumerable species; while the rivers are covered with gorgeous floaters, among which is the celebrated *Victoria regia* of Schomburgk. In the high grounds of Peru and Bolivia, araucaria, the milk-tree, and gigantic courbaril, are met with; in Paraguay, the maté, or Paraguay tea-tree; La Plata is noted for its extensive tracts of thistles; under the tropics, are cultivated coffee, sugar-cane, cocoa, tapioca, indigo, tobacco, cotton, and a thousand luscious fruits; while in Chili, 'the Italy of South America,' are grown the vine, olive, and ordinary European grains.

The *animals* deserving of notice are the wild horses and oxen of the pampas (none of which existed till introduced by Europeans); the llama and alpaca of the Andes; the tapir, jaguar, and tiger-cat; ant-eater, sloth, monkeys; the crocodile, guana, boa-constrictor, tree-frog, and other reptiles; the condor, rhea, albatross, and innumerable sea-fowl, whose droppings on the rainless islets of Peru constitute the *guano* of commerce; the electric eel, Silurus, and other curious fishes; the cochineal insect, gigantic spiders, centipedes, luminous flies, and other insect forms unknown to the Old World.

POPULATION—GOVERNMENTS.

The population of South America is estimated at about 27½ millions, consisting of whites, Indians, negroes, and mixed breeds. The original settlers from Europe were chiefly Spaniards and Portuguese; but recently there has been a large immigration from different European countries, and also from the United States, the East Indies, and China. The Indians, the original possessors of the continent, were subdued in the early part of the sixteenth century by the Spaniards and Portuguese. Except in Peru, where they had attained a considerable degree of civilisation, they were then in a state of the rudest barbarism. Most of the aborigines are now in some sort Christianised and subject to the several governments; but many tribes are still heathen, and live in wild independence. Except in British and Dutch Guiana, the Roman Catholic religion prevails throughout the continent.

In the early part of the present century, during the troubles in Spain and Portugal, their South American colonies asserted their independence. The Spanish provinces now constitute the *republics* of Venezuela, Colombia, Ecuador, Peru, Bolivia, Chili, the Argentine Confederation, Paraguay, and Uruguay. The constitutions of all these republics are copied more or less closely from that of the United States. All are governed by a president and a legislative body, composed of two chambers. Brazil is a limited *monarchy*, under an emperor; and the only *colonies* are British, Dutch, and French Guiana, and the Falkland Islands, now a British dependency. The following table exhibits the names, extent, population, and chief towns of the different states, according to the latest authorities:

States.	Area in sq. Miles.	Population.	Capitals.
Venezuela	368,235	2,200,000	Caracas.
Colombia	432,400	3,000,633	Sta. Fe de Bogota.
Ecuador	218,984	1,300,000	Quito.
Peru	502,760	3,199,000	Lima.
Bolivia	473,300	1,988,000	Orúro.
Chili	130,977	2,008,861	Santiago.
Argentine Confederation	515,700	1,736,922	Buenos Ayres.
Paraguay	57,303	1,200,000	Assuncion.
Uruguay	73,538	350,000	Monte Video.
Brazil	3,100,104	10,095,978	Rio de Janeiro.
Guiana, British	76,000	193,491	Georgetown.
" Dutch	59,052	50,210	Paramaribo.
" French	35,000	24,432	Cayenne.
Patagonia	380,000	24,000	Punto Arenas.
Falkland Islands	6,500	803	Port Louis.
	6,429,853	27,372,000	

The next table gives the annual revenue, yearly value of imports and exports, and debt of the several independent South American states for the period 1880 to 1883:

	Revenue.	Imports.	Exports.	Debt.
Venezuela	£936,000	£2,960,000	£2,260,000	£13,461,997
Colombia	1,100,000	2,436,774	3,161,200	4,151,282
Ecuador	500,000	1,200,000	1,160,000	2,464,500
Peru	6,650,000	4,800,000	7,900,000	56,000,000
Bolivia	693,158	1,090,000	1,400,000	6,000,000
Chili	4,051,700	6,069,145	10,216,762	15,707,447
Argentina	5,123,400	10,500,000	9,500,000	27,500,000
Paraguay	56,000	255,000	362,000	47,200,000
Uruguay	1,722,471	3,275,620	3,160,000	12,223,184
Brazil	11,854,000	17,000,000	22,000,000	85,655,000

VENEZUELA.

Area, 368,235 square miles; population, 1,564,433 of European descent, 600,000 aborigines.

On the death of the celebrated Bolivar in 1830, the republic of Colombia founded by him was broken up into the three independent states of Venezuela, New Granada, and Ecuador. After a long period of intestine struggles, the charter of Venezuela, which dates from 1830, was re-proclaimed with modifications in 1864. This charter differs from that of the United States chiefly in giving more power to the provincial governments. The country is divided into thirteen provinces, each of which has its own legislature. All citizens who are able to read and write are eligible to all offices of state, without distinction of birth, colour, or race.

Venezuela extends from Brazil to the Caribbean

Sea. It is traversed by the great river Orinoco, and by a branch of the Andes, and contains the large lakes of Maracaybo and Valencia. The northern part is mountainous; but in the south, on the Orinoco, are immense plains or *llanos*, whose pastures support numerous herds of cattle. The productions are sugar, coffee, indigo, cotton, and tobacco. The year is completely divided into the rainy and the dry seasons; the former commencing in November, and ending in April.

The trade, which is comparatively small, is carried on chiefly with Great Britain and the United States. The chief article of export to Britain is raw cotton, and the principal imports are cotton and linen fabrics. The total imports amount to about £1,000,000, and the exports to £1,200,000 annually. The chief towns are—Caracas, the capital (pop. 50,000); Cumana, a sea-port; and Maracaybo, on the lake or gulf of the same name.

COLOMBIA.

Area, 432,400 square miles; population, 2,900,633 of European descent, 100,000 Indians.

This federative republic, officially designated 'The United States of Colombia,' was established by the convention of Bogota, 20th September 1861, and consists of nine states, which formerly composed New Granada. The central government consists of a president, a senate, and a house of representatives; but each state has its own local governor and legislature. Colombia is bounded on the north by the Caribbean Sea and Costa Rica; on the east, by Venezuela; on the south, by Ecuador; and on the west, by the Pacific. The Andes traverse this country in three parallel ridges; and the mountains are extremely rich in gold and silver; and there are also mines of platina, copper, lead, and emeralds. The commerce is small. The chief exports are raw cotton, caoutchouc, indigo, and Peruvian bark. The imports are cotton, woollen, and linen fabrics. A railway connects the port of Panama, on the Pacific, with that of Aspinwall or Colon, on the Atlantic, and an inter-oceanic ship-canal is being constructed parallel to the railway. The yearly revenue of the republic is somewhat over £1,000,000, while the debt is nearly £10,000,000. Santa Fe de Bogota (pop. 46,000) is the seat of government. The other principal towns are Popayan (pop. 20,000), Antioquia (pop. 20,000), and Carthagena (pop. 25,000).

ECUADOR.

Area, 218,984 square miles; population, 1,100,000 of European descent, 200,000 aborigines.

Ecuador, extending from 1° 40′ north to 5° 50′ south lat. and from 69° to 81° 20′ west long. is bounded on the north by Colombia; on the west, by the Pacific; on the south, by Peru; and on the east, by Brazil. Intersected by both chains of the Andes, this state presents great diversity of surface and climate. In consequence of their great elevation, the valleys enjoy a temperate climate, and are extremely fertile; but they are not unfrequently visited by destructive earthquakes and volcanic eruptions, there being no fewer than sixteen active volcanoes in the department of Quito alone. Chimborazo, which rises to a height of 21,440 feet above the sea, and the volcanoes Cotopaxi, Antisana, and Pichincha (from 16,000 to 19,000 feet high), are within the territory of this republic. Gold and silver are found in the mountains.

Ecuador was constituted into an independent republic in 1830; but its present constitution, which is extremely democratic, dates from 1843. The state is divided into three departments. Quito, the capital (pop. 76,000), 9530 feet above the sea, has a genial climate, and is the seat of two colleges, and many churches and convents. The revenue of Ecuador is about £370,000; the expenditure frequently exceeds the revenue; the debt is about £4,000,000. Commerce is principally carried on with Great Britain by the port of Guayaquil, the imports consisting of cotton goods; and the exports, of cocoa, caoutchouc, and Peruvian bark. This state has very frequently been the scene of civil war.

PERU.

Area, 502,760 square miles; population, 3,199,000.

Peru was declared an independent republic in 1821, after eleven years of war; but it was not till 1867, and after a long series of political disturbances, that its present constitution was adopted. Under this constitution there is absolute political freedom; but all public religious services save the Roman Catholic are prohibited. Peru is bounded on the north by Ecuador; on the east, by Brazil; on the south, by Bolivia; and on the west, by the Pacific. It extends from 3° 30′ to 22° S. lat. and from 69° to 81° 15′ W. long. Its surface is of the most varied description. Along the shore of the Pacific stretches a belt of barren sand, of an average breadth of 30 or 40 miles, on which no rain ever falls, but which contains many oases of remarkable fertility, and which is intersected by valleys equally fertile. Here are situated Lima and other large towns, the only sea-ports of the republic. Beyond this belt is the slope of the Andes, grooved by streams formed by the melting snows. Higher still is the ridge of the Cordillera, with its snowy volcanic peaks, from 14,000 to 18,000 feet high, and its rugged, cold, and barren plains. Beyond this, towards the south, is the lake basin of Titicaca; while towards the north and west, the plains slope downwards to the valley of the Amazon. Here rise those vast rivers—the largest in the world—which traverse the whole continent of South America. Peru thus presents a great diversity of soil and climate, and produces every variety of vegetation, from the dwarf plants of Lapland, on the lofty mountain-tops, to the aromatic species of Sumatra, which shed their odours at the base. The sloping plains to the east of the Andes are almost unrivalled in fertility; and the mineral wealth of the country is immense, comprising gold, silver, platina, tin, copper, lead, quicksilver, precious stones, salt, alum, saltpetre, coal, sulphur, and others. The most valuable of these are in great plenty.

Foreign trade is carried on chiefly with Great Britain and the United States by the port of Callao. The principal article of exportation to Britain is guano. It was calculated that the whole stock of this article remaining in Peru (believed to be about 3,000,000 tons) would be exhausted within comparatively few years; but a very

large additional supply has recently been discovered in the islands lying to the south. The other exports are—cubic nitre, sheep and alpaca wool, hides, Peruvian bark, sugar, cotton, gold, silver, &c. The imports are cotton and woollen fabrics and iron. Between 1875 and 1885 the total imports had a value of about £5,000,000 a year; the exports, of £6,000,000 (by far the greater part of which go to Britain). Owing to recent disasters, the revenue has fallen to some £3,000,000, while the debt has risen to above £50,000,000. Of the population, 57 per cent. are Indian, 23 per cent. mixed races, and the remaining 20 per cent. consist of Spanish creoles, negroes, Chinese, and Europeans. The principal towns are—Lima, the capital (population upwards of 100,000); Cuzco, the ancient capital of the Incas; and the sea-ports of Callao and Arequipa. Lima has been three times, and Arequipa six, times almost entirely destroyed; the former by earthquakes, and the latter by volcanic eruptions. Peru has recently entered upon a new career of improvement. Internal reforms have been made, the old municipal institutions have been remodelled, schools have been established, educational and scientific schemes have been encouraged, and grants have been made to aid immigration. By means of the Pacific Steam Navigation Company, Callao has been brought into regular intercourse with Panama on the one hand, and Liverpool on the other. A system of railways, to the extent of more than 1600 miles, undertaken mostly by the state, but partly also by private companies, several lines of which are already open, have been undertaken on a costly scale; and only two of the shorter lines are a commercial success. One line runs to near the summit of the Andes, almost 14,000 feet high! The recent disastrous war with Chili, in which Peru had Bolivia for an ally, but was utterly defeated by sea and land, has resulted in the loss of territory to both states, the payment of a large war indemnity, the waste and destruction of enormous wealth, and the total disorganisation of the state, its finances and commerce.

BOLIVIA.

Area, 473,300 square miles; population, 1,742,352 of European descent, 245,000 Indians.

This republic, so named in honour of the liberator, Simon Bolivar, is bounded on the north by Peru and Brazil; on the east, by Brazil; on the south, by the Argentine Republic and Chili; and on the west, by the Pacific Ocean and Peru. It lies between 12° 10′ and 25° 30′ south lat. and between 58° and 70° 40′ west long. It includes the departments of Potósi, Chuqúisaca, La Paz, Santa Cruz, Cochabámba, and Orúro. The seat of government is at the fortified town of Oruro, having been transferred thither from La Paz in 1869. The constitution originally framed by Bolivar in 1826, has been several times modified, the latest modification having been made in 1869. Since 1839, the fundamental law, which requires that the president shall be elected every four years, has been disregarded; and the government of the state has generally been seized by successful soldiers.

The greater part of Bolivia is situated at a very high elevation, but it stretches down in extensive plains towards Brazil. From Potosi, at an average elevation of 13,400 feet, through Oruro, at 12,400, La Paz, at 12,000, Chuquisaca, at 9300, Cochabamba, at 8400, down to the plains of Majos and Chiquitos, the climate passes through all known degrees of temperature, from extreme cold to extreme heat. This mountainous region is rich in mines of gold and silver—the silver mines of Potosi being inferior in importance only to those of Guanaxuato in Mexico. Bolivia possesses only a very small coast-line, and only one sea-port, Cobija. Through this port, and that of Arica, in Peru, the whole foreign trade, which is carried on principally with Great Britain, passed, until recently, that a new route to the Atlantic, by means of the Amazon and its tributaries, has been opened up by the National Bolivian Navigation Company. Owing to the want of roads, the whole internal traffic used to be carried on by means of mules and pack-horses; but lately, roads have been constructed; railways have been planned, and sanctioned by government, and one line from La Paz to the port of Aygacha, on Lake Titicaca, was opened in 1872. The exports, amounting annually to £1,324,000, consist of silver, copper, tin, and other ores, guano, cubic nitre, Peruvian bark, cocoa, coffee, and alpaca wool. The imports (value £1,288,900) consist chiefly of cotton goods and iron. The chief towns are—La Paz (pop. 76,372), Cochabamba (pop. 40,678), Sucre (23,979), Potosi (22,850), Santa Cruz (9780), and Oruro, the capital (7980).

CHILI.

Area, 130,977 square miles; population, 1,938,861 of European descent, 70,000 Indians.

Chili is bounded on the north by Bolivia; on the east, by the Argentine Confederation, from which it is separated by the Andes; and on the west, by the Pacific Ocean, along the shores of which it stretches from 23° to 43° 20′ of south latitude. It is 1400 miles long, and from 100 to 200 broad. The ground ascends gradually from the ocean to the Andes, but is intersected by their projecting branches, some of which run almost down to the sea-shore. The soil in the northern parts, where irrigation is deficient, is barren; but in others, the finest crops of wheat, barley, rye, and other species of grain are raised, with scarcely any trouble beyond scattering the seed. Cotton, vines, &c. are also extensively cultivated; and the whole country is rich in mines. The numerous rivers which descend from the Andes to the Pacific are of the utmost importance to agriculture in a country where it rains very little; but, from the shortness of their course, they are not adapted for navigation. There were, however, at the end of 1872, 620 miles of railway open, and 195 in course of construction; the most important being the lines from Valparaiso to Santiago (115 miles), and from Santiago to Curico (116 miles), both the property of the state.

Chili revolted from Spain in 1810, succeeded in achieving its independence in 1818, and adopted its present republican constitution in 1833. The capital is Santiago (pop. 115,377); and the principal sea-port is Valparaiso (pop. 70,438). The yearly revenue and expenditure amount each to nearly £6,000,000, and the debt is upwards of £17,000,000. The foreign commerce of Chili is mainly carried on with Great Britain, from which

are imported cotton and woollen manufactures, iron, hardware, cutlery, &c.; and which receives in return, copper (to the amount of £2,000,000 in some years), wheat, silver ore, raw cotton, and wool. The total imports amount to £1,000,000 annually, and the exports to a little less. The territory of the Araucanians, lying on the southern frontier, with an area of 120,000 square miles, and a warlike population of 70,000 aborigines, was annexed to Chili in 1862. In this territory, which extends from 37° 51′ to 39° 40′, is situated Valdivia, an important German settlement; and on the Bay of Arauco there are coal-mines at full work, yielding 200,000 tons annually. This state also laid claim to the whole of Patagonia and Tierra del Fuego; but the claim was ultimately settled mainly in favour of the Argentine Confederation some years ago.

ARGENTINE CONFEDERATION.

Area, 515,700 square miles; population, 1,736,922 white.

This republic comprises fourteen provinces, and stretches from the Chilian Andes to the Atlantic; and from the Bolivian frontier to the Rio Negro, which separates it from Patagonia. It thus extends from 22° to 41° south lat. and from 54° to 92° west long. After the declaration of independence in 1816, the provinces which had composed the viceroyalty of Buenos Ayres continued long in a state of anarchy; but in 1831, they coalesced into the Argentine Confederation. In 1853, Buenos Ayres separated from the other provinces, and became an independent state. It has again been re-united with them; and the city of Buenos Ayres has since 1862 been the capital of the Confederation. The country, with the exception of the western border occupied by the Andes and their offshoots, consists mostly of vast treeless plains called pampas. These present interminable expanses of coarse tall grass, alternating with tracts entirely covered with gigantic thistles, and with salt lakes. Many parts, however, are entirely desert; and one immense plain, west of the river Salado, is named the Great Salina, from its being covered with a thick incrustation of salt. The pampas afford pasture to immense herds of cattle and horses. The principal river is the Parana, with its western tributaries, the Paraguay, Pilcomayo, Vermejo, and Salado. A number of rivers in the interior are lost in salt lakes and swamps. South of the estuary of La Plata are the Salado of Buenos Ayres, the Rio Colorado, and the Rio Negro. The soil is capable of a great variety of productions. In the north, Indian corn, rice, cotton, tobacco, wine, &c.; in the south, wheat, Indian corn, barley, &c. are cultivated. But the great wealth of the country consists in its countless herds of cattle, and flocks of sheep. The public revenue is about £8,000,000 per annum; and the expenditure is a little less; while the debt amounts to more than £25,000,000. The imports consist of cotton and woollen goods, machinery, coal, and iron; and the exports, of wool and tallow (these two articles forming more than one-half of the total), hides, sheep-skins, jerked beef, horse-hair, and ostrich feathers. Until recently, there were only two roads, or rather routes, of communication through the territory: one from Buenos Ayres west to Mendoza, and over a pass of the Andes to Santiago; the other, to the northern provinces, and thence to Bolivia and Peru. During the last few years, however, a complete network of railways, at the expense of the state, has been in course of construction; and several lines are open for traffic. There has been of late years a large immigration from Europe into this republic, chiefly from Italy, Spain, and France. The capital is Buenos Ayres (pop. 177,787), situated on the southern margin of the estuary of the Plata; the other chief towns are —Cordova (pop. 28,523), Tucuman (pop. 17,438), Salta (pop. 11,716), Corrientes (pop. 11,218), and Santa Fe (pop. 10,670). Buenos Ayres, founded by the Spaniards in 1535, is a fortified town, with a university, a cathedral, and many churches, Protestant as well as Catholic, and is the chief seat of commerce in the republic. The boundaries of this republic, except on the side of Brazil, have never been formally settled; and, in addition to its home territory, it disputes with Chili the right to the possession of the whole of Patagonia.

PARAGUAY.

Area, 57,303 square miles; population, 1,200,000 in 1871.

The republic of Paraguay is situated between the rivers Parana and Paraguay, and extends from 22° to 27° S. lat. and from 57° to 60° W. long. It is one of the most fertile countries in South America. The hills towards Brazil are clothed with forests, which, besides timber, yield dye-woods, gums, &c.; and the low grounds, which occupy the centre of the country, abound in rich pastures and cultivated farms; but towards the south-east, the country is swampy. The climate is warm, but on the whole salubrious. A large portion of the soil is planted with *yerba maté*, or Paraguayan tea, which is extensively used in South America, and forms one of the chief articles of commerce. Other tropical productions, such as sugar, tobacco, cotton, &c. are also raised in great abundance.

Paraguay was first colonised by the Spaniards in 1535. The first mission of the Jesuits was established in 1608; and this society soon after became the rulers of the country, and continued to govern it till 1768, when they were expelled by the Spanish government. On the subversion of the Spanish dominion in 1814, Dr Francia made himself dictator, and ruled the country in the spirit of the Jesuits, prohibiting all intercourse with foreigners, and keeping up a system of terror till his death in 1840. In 1844, the country adopted a republican constitution, and was opened to commercial intercourse. In 1865, a dispute with the Brazilian government led to the invasion of Paraguay by the united forces of Brazil, the Argentine Confederation, and Uruguay; and, after five years' warfare, to the defeat and death of President Lopez in the battle of Aquidaban in 1870. By this war, Paraguay lost both in territory and population. Her boundaries were previously ill defined; but her area, which was formerly reckoned at 103,145 square miles, has been reduced to 57,303, and her population, which, in 1857, was 1,337,439, amounted, in 1885, only to 500,000. About one-third of the population resides in the central province, which contains the capital; the rest is spread thinly over the country.

The larger part of the land belongs to the government, and is farmed out at moderate rents for the purposes of agriculture and pasturage. The public revenue is now about £170,000, and the expenditure £150,000. There was no debt till the late war, when a foreign loan of £2,000,000 was raised on the security of state property. There is no direct commerce between Paraguay and Europe, all the foreign trade passing through Brazil or the Argentine Confederation. The population consists mostly of native Indians, with a good many *mestizos*, and a smaller number of Spanish creoles. The capital is Assuncion, situated at the junction of the Paraguay and Pilcomayo. Paraguay possesses great commercial capabilities in its rivers, the Parana and the Paraguay, the latter of which is navigable for vessels of 300 tons to Assuncion, and for smaller vessels on to Bolivia and Brazil.

URUGUAY, OR REPUBLICA ORIENTAL DEL URUGUAY.

Area, 73,538 square miles; total population, 350,000 (102,000 of foreign birth).

This republic, formerly known as Banda Oriental, extending from 30° to 35° south lat. and from 53° to 58° west long. is bounded south by the Plata, west by the Uruguay River, north by Brazil, and east by the Atlantic. On the overthrow of the Spanish dominion, it was seized by Brazil; but after a war of several years' duration, it became an independent republic in 1828. Its constitution dates from 1831.

The region along the coast is flat and treeless; but the interior is rugged, hilly, and well wooded. The soil is well adapted both for cultivation and pasturage. The climate, although moist, is temperate and salubrious. All sorts of grain and European fruits thrive well, as do also cotton and the sugar-cane. The greater part of the inhabitants are *guachos*, or herdsmen, who mostly live on horseback, and are almost as rude as Indians, many of them having Indian blood in their veins. Considerable attention, however, is now paid to agriculture. There has been, during late years, a constantly increasing flow of immigration from Europe. The annual public revenue is about £2,000,000; and the foreign debt is upwards of £12,000,000. More than a half of the foreign trade is with Great Britain, which, in return for cotton goods and manufactured iron, receives hides, tallow, wool, sheep-skins, grease, bones, bone-ash, and a considerable quantity of Liebig's extract of meat. To the list of exports may now be added preserved beef. Most of the commerce is in the hands of foreigners. The yearly imports exceed £3,000,000, and the exports £2,500,000. The capital is Monte Video, on the estuary of La Plata, with a population (1870) of 125,728. Uruguay is divided into thirteen provinces.

BRAZIL.

Area, 3,100,104 square miles; total population, 10,095,978 (1,683,164 slaves; 250,000 aborigines).

Brazil is by far the largest and most important state in South America. The climate is more salubrious than in other tropical countries, and the soil is amazingly rich and fertile. It is bounded on the land side by Uruguay, Paraguay, Bolivia, Peru, Ecuador, Venezuela, and Guiana; and on the east and north-east by the Atlantic, extending from 4° 30′ north to 33° south lat. and from 35° to 70° west long.

Brazil was colonised by Portugal early in the 16th century. In 1807, to escape the power of Bonaparte, the king and the royal family of Portugal fled to Brazil, where they were warmly received. In 1815, the colony was raised to the rank of an independent kingdom, subject to the crown of Portugal. The court returned to Europe in 1821; and afraid of seeing their country again reduced to the condition of a subject colony, a national congress chose Pedro, eldest son of Joamo VI. perpetual dictator of Brazil. In September of the same year, Pedro proclaimed the independence of the state, and in October was appointed constitutional emperor as well as perpetual dictator. Owing to his unpopular and despotic measures, Pedro was, in 1831, compelled to abdicate in favour of his son, the present Emperor Pedro II. then a child six years of age.

The form of government is that of a constitutional hereditary monarchy. Four political powers are recognised: 1. The *legislative*, which resides in a general assembly, consisting of a senate and congress, the members of both being chosen in the first instance by the people, by a system of indirect election; although the ultimate choice of the senators, who are appointed for life, rests with the emperor or his ministers. 2. The *executive*, exercised by the king through his responsible ministers. 3. The *judicial*, intrusted to the established tribunals; and 4, the *moderating* power, or royal prerogative. Each province, besides a president, appointed by the emperor, has its own provincial legislative assembly. The local powers of these bodies are very considerable, resembling those of the individual states of the North American Union. The state religion is the Roman Catholic; but the exercise of all others is tolerated, provided that the places of worship have not the exterior form of temples.

Many of the earliest Portuguese settlers married Indian women, thus giving rise to mixed breeds. Then came negro slavery, introducing a new element of race. Hence the population of Brazil contains every possible combination of white, red, and black blood. All citizens, provided that they are free, are not only equal in the eye of the law, and enjoy the same political privileges, but are on the same footing of social equality, irrespective of all distinctions of race. The Indian element prevails in the north, and the European in the sea-ports. These are crowded with dense masses of population, while vast tracts of country remain uninhabited, or only sparsely peopled. A law for the gradual emancipation of slaves was passed in 1871, which provides that the children of female slaves born after the passing of the act shall serve as apprentices, till the age of 21, and shall then be absolutely free. There has lately been a large immigration into Brazil from Europe and the United States; and in 1879, there were fifty European colonies with 40,000 settlers (chiefly Swiss and German), each forming the nucleus of a settlement. These colonies, however, are not prosperous.

To describe minutely the physical characteristics of so vast a region as that of Brazil, would

carry us far beyond our limits. Generally speaking, there is not on the globe a finer country, one blessed with a more genial climate or a more fertile soil; more happily diversified with wood and water, or with abundance of navigable rivers. Nearly the whole of the most highly valued productions of the earth are raised within its territory. The land rises by gentle gradations from the shore to the interior, to the height of from 3000 to 6000 feet above the level of the sea. At this elevation within the tropics, the climate is temperate, and European fruits and grains are raised in abundance. The intervening valleys have a warmer temperature, and consequently are extremely favourable to the growth of sugar, coffee, cotton, and every description of tropical produce. Magnificent forests overspread a great part of the interior. The trees are closely interwoven with brushwood and shrubs, and covered with creeping-plants adorned with the most resplendent flowers, thus imparting a peculiar and rich appearance to the scenery. These forests abound in valuable woods, adapted for every purpose to which art can apply them. The climate in the neighbourhood of the Amazon and in the northern parts is hot, but moist; in the southern regions, it is temperate, and in general healthy.

Brazil has considerable mineral treasures, especially in gold and diamonds. Gold is found in the beds of most of the rivers that rise in the interior, and almost all the towns were founded by men searching for gold. Next to gold, diamonds form the staple of Brazilian mineral riches. They were first accidentally discovered about 1730. There are several large mines of nitre and iron, but no silver is found. Salt is extremely abundant.

Until recently, little was done to develop the resources of this magnificent country; but within the last few years, advantage has been taken of the vast capacity of the rivers for steam-navigation; and six lines of railway, of the aggregate length of 410 miles, have been opened for traffic. The yearly revenue of the country is about £18,000,000, and the public debt about £70,000,000. The imports amount to £19,000,000, and the exports to £22,500,000. Great Britain sends about one-half of the imports, and receives about one-third of the exports. The other countries with which Brazil carries on trade are the United States, France, Portugal, Germany, and the Argentine Confederation. The articles of export are raw cotton, sugar, coffee, cocoa, caoutchouc, tobacco, hides, gums, drugs, dye-woods, hard-woods, and diamonds. The chief imports are cotton, linen, and woollen fabrics, and iron both wrought and unwrought. The high import duties, amounting to 40 or 50 per cent. greatly impede the development of commerce.

The capital of Brazil is Rio de Janeiro (pop. 450,000), with one of the finest harbours in the world. The other principal towns are Bahia or St Salvador, the former capital (pop. 152,000), situated on the Bay of All Saints; Pernambuco (pop. 100,000), and Para, on the southern branch of the Amazon, about 80 miles from the ocean.

GUIANA.

This territory, situated on the north-east coast, between the mouths of the Orinoco and Amazon, is divided into British, Dutch, and French Guiana.

British Guiana extends from the river Corentyn, in 57°, to the southern outlet of the Orinoco, in 60° 6′ west long. Its inland limits have never been formally defined, and large tracts claimed by Britain are claimed also by Venezuela and Brazil. The coast is flat, and from the sea nothing is visible but the tops of the trees, which seem to be growing out of the water. This alluvial flat extends from ten to forty miles inland, and is terminated by a range of sand-hills. Parallel with these run several groups of hillocks, of moderate elevation. Further into the interior, the country is diversified with mountains and valleys. It has three great rivers—the Essequibo, the Berbice, and the Demerara. The Essequibo, the largest of these, is about 620 miles in length, and opens out into an estuary eight miles broad, but, from the number of rapids, it is only navigable for 50 miles from its mouth. It receives several tributaries, which irrigate an immense tract of country. To the eastward, is the Demerara, navigable for vessels of small size about 85 miles above Georgetown. The Berbice is free for vessels drawing twelve feet water about 105 miles, and for vessels of seven feet draught 165 miles. The river Corentyn, the boundary between the British and Dutch possessions, is navigable 150 miles for vessels drawing seven feet of water. There are also several smaller streams, which, although not navigable, are extremely useful in the irrigation of the country. The fertility is kept up during the dry season by heavy falls of dew. The soil is very fertile, in some parts sandy, but growing abundance of grass; and in others it is a strong retentive loam, so rich as to require no manure, and well adapted for the cultivation of coffee, sugar, rice, and other tropical produce. The coast is covered with mangrove and curina bushes; and in the interior, extensive savannahs and thick forests occur, the latter yielding valuable timber, drugs, and dye-stuffs.

British Guiana is divided into three counties—Demerara, Essequibo, and Berbice. These colonies were first settled by the Dutch, captured by the British in 1796, given up to the Batavian Republic in 1802, retaken in 1803, and finally ceded to this country at the general peace of 1814. The settlements are all situated upon the banks of the rivers from which they receive their name, extending along both sides, and generally as far inland as the rivers are navigable. Each plantation has a wharf or landing-place of its own, and canals are cut into the land for the admission of boats, and the draining of the surrounding country. For 50 miles along the sea-coast of the county of Berbice, a huge embankment has been raised against the sea, on which is a carriage-road 60 feet broad. A comparatively small portion of Guiana is yet cultivated, and an immense field for colonial industry still lies open. The staple products consist of sugar, rum, coffee, and cotton; pine-apples and other fruits are produced in abundance. The climate is genial and regular throughout the year, the maximum heat being 90°, the minimum 74°, and the mean temperature about 82°. Two wet and two dry seasons constitute the changes of the year.

The area is 76,000 square miles, and the population 193,491, principally coloured, but containing also Dutch, English, Portuguese, Chinese, and a great number of coolies from the East Indies.

The greater part of the aborigines lead a wandering life in the unsettled parts of the colony. The government is vested in a governor and court of policy, the latter consisting of ten members—namely, governor, chief-justice, attorney-general, collector of customs, government secretary, and five persons elected from among the colonists. The local government has made great efforts to promote education, and many schools and churches have been erected at considerable expense. This colony is in a highly prosperous condition. Steam-machinery has been introduced into every plantation, and the most improved methods of cultivation have been adopted.

The capital of British Guiana is Georgetown, on the right bank of the river Demerara, with a population of 25,000. New Amsterdam, the chief town in the county of Berbice, extends about a mile and a half along the bank of the river Berbice.

Dutch Guiana formerly comprehended Surinam, Berbice, Demerara, and Essequibo, but the last three were, in 1814, ceded to Great Britain, which had been in possession of them since 1803. The remaining province of Surinam lies between the rivers Corentyn and Marony, is traversed by the Surinam, and has an area of 59,052 square miles, and 50,210 inhabitants. The population consists chiefly of negroes. Slavery was abolished in the colony in 1863. The soil is low, rich, and fertile, and produces sugar, rum, cotton, and coffee, for exportation. The capital is Paramaribo, on the river Surinam.

French Guiana lies between the rivers Marony and Oyapok, the former separating it from Dutch Guiana, and the latter from Brazil. It was acquired by France in 1604.

The settlement of Cayenne was first formed about 1624, by a colony from Caen, in Normandy, after which it is called. It did not succeed, and passed alternately into the hands of the Dutch, British, Portuguese, and French, but was finally restored to France at the peace of 1814. There are two settlements, one on the mainland, another on the island of the same name, separated from the former by the river Cayenne, making in all an area of about 35,000 square miles. This colony is notorious for its unhealthy climate. It was used as a place of banishment during the first French Revolution; and the island is still used as a penal settlement for political offenders. Attempts are making to cultivate the clove, pepper, and nutmeg of Asia, and with success. Extremely little of the surface is under culture, and the population is only 24,432. The produce consists chiefly of sugar, coffee, pepper, dye-woods, cotton, and hides.

PATAGONIA AND TIERRA DEL FUEGO.

Area, 380,000 square miles; population, 24,000.

Patagonia, the southern portion of the continent of South America, extends from the river Cusu Leubu or Rio Negro in 40° S. lat. to the Strait of Magellan. Except on the west side occupied by the Andes, it consists of a succession of undulating plains called *pampas*, covered occasionally with coarse grass, and more frequently with a sparse growth of stunted bushes and thistles, but often absolutely barren, shewing nothing but a surface of bare clay or gravel, in many places strewed with boulders, or rugged with rocks. These pampas rise in terraces one above the other, culminating in hills, which occupy the crest of the country, and are intersected by valleys or ravines, formed by the frequent streams, which, rising in the Andes, either go to swell the rivers which flow into the Atlantic, or are lost in the lagoons with which the pampas abound. These valleys are generally fertile and well wooded; and the pampas themselves, with their tufts of coarse grass and clumps of thistles, furnish subsistence to vast numbers of guanacos, ostriches, and other animals. The pampas are covered with snow in winter; and the climate at all seasons is severe.

The Tehuelches, or Patagonians proper, are originally of the same stock with the inhabitants of Tierra del Fuego, but have a great advantage over the latter in the possession of horses. They are tall as compared with other Indian races, although by no means of the fabulous stature once ascribed to them, few of them exceeding six feet in height.

Besides the Tehuelches, two other Indian tribes, the Pampas and the Chenna or Manzanares, range over the country. They all subsist chiefly by the chase, although some possess cattle and sheep. Between the Rio Negro and the Strait, there are now about 500 fighting-men, representing a population of 3000, and their numbers are on the decrease. During the last thirty years, both Chili and the Argentine Confederation have founded settlements in Patagonia, and both countries lay claim to the whole territory. The Chilian penal settlement of Punto Arenas, or Sandy Point, on the Strait of Magellan, founded in 1853, has a population of 850, and is a place of call for the steam-ships from Liverpool to Callao. Coal has been found here; but the settlers, principally Chilotes, of mixed Spanish and Indian blood, described as 'a hardy and sturdy race, accustomed to the use of the axe,' are engaged chiefly in carrying on a trade in timber. Santa Cruz, on the Rio Chico, in 50° S. lat. is a trading station belonging to the Argentine Confederation; but it consists only of three houses. Patagones, on the Rio Negro (pop. 2000), is an Argentine colony, and can scarcely be included in Patagonia proper.

Tierra del Fuego is a large archipelago of rocky islands, separated from Patagonia by the Strait of Magellan. The mountains rise to the height of from 6000 to 8000 feet. The climate is cold and gloomy, with incessant rain or snow and boisterous winds. The natives in the north resemble the Patagonians; while those in the south-east are described as 'low in stature, ill-looking, badly proportioned, and with the worst description of savage features.' They live chiefly on shell-fish, the islands furnishing hardly any edible plants. The population is guessed at about 2000. Horn Island, a naked mass of rock, the southernmost of the group, forms the extremity of South America.

FALKLAND ISLANDS.

This insular group, situated in the Southern Ocean, about 300 miles north-east of Cape Horn, consists of two large islands, East and West Falkland, and 200 of smaller dimensions. They were discovered by Davis in 1592; and settlements made

at different times on the larger islands by the English, French, and Spaniards, were successively abandoned, till, in 1833, they were formally taken possession of by Britain. They now constitute a British colony under a governor. The settlement is a place of call for whalers and vessels on the route round Cape Horn, for refitting and provisioning. The soil consists of peat, and is covered with tall palm-like nutritious grasses, which support great numbers of wild cattle. Barley, oats, and turnips succeed, but not wheat. The only settlement is at Port Louis. The population of the colony is 803, and the area is 6500 square miles.

WEST INDIA ISLANDS.

This important archipelago extends from lat. 10° to 28° north, and from long. 59° 30′ to 85° west, studding that large indentation of the Atlantic Ocean which lies between North and South America. It is separated from the former by the Strait of Florida, and from the latter by the Gulf of Paria; thus having the Caribbean Sea, the Bay of Honduras, and the Gulf of Mexico, on the south and west, and the Atlantic on the north and east. It is commonly divided into the following groups: The *Bahamas*, consisting of 14 principal islands, and upwards of 600 rocky islets or cays; the *Greater Antilles*, comprising Cuba, Haiti, Jamaica, and Puerto Rico, with their subordinate islets; and the *Lesser Antilles*. The Lesser Antilles are again divided into the *Leeward Isles*, from Puerto Rico to Dominica; the *Windward*, including Martinique and the isles to the south of it; and a group lying along the coast of Venezuela. The northern portion of the Leeward Isles are sometimes called the *Virgin Isles;* while the *Caribbean Isles* is a name embracing both the Leeward and Windward groups.

SUPERFICIAL FEATURES—PRODUCTS.

The general aspect of the West India islands is mountainous; and they appear to belong to one great axis of elevation. Many of them exhibit proofs of volcanic origin; and they are all less or more subject to earthquakes. In the larger islands the craters seem to be extinct; but in St Lucia, Martinique, Guadeloupe, Montserrat, &c. several have thrown out smoke and ashes since the middle of the last century. Various degrees of elevation are exhibited in the great chain: in San Domingo, the highest point is 9000 feet; in Jamaica, 7278; in Cuba, 7200; Dominica, 5300; Guadeloupe, 5100; Puerto Rico, 4000; and in St Lucia, 2700. Numerous streams descend from these mountains, and water the plains and valleys, whose fertility is mainly owing to their influence. Several of the Lesser Antilles are not much elevated above the sea; while the Bahamas are generally low, with a scanty soil, and interspersed with coral reefs and shoals. The mineral

products are copper, in Cuba; sulphur, in Guadeloupe; and pitch, in Barbadoes and Trinidad.

Lying almost wholly within the tropics, these islands know no winter, the year being divided into *wet* and *dry* seasons. During the rains, the climate is unhealthy; but throughout the dry season, nothing can exceed the softness of the air, the brilliancy of the heavens, and the luxuriance and splendour of the vegetation. Between August and the end of October, most of the islands are subject to hurricanes, luckily not very frequent, and unknown except during this short period.

'The rich and varied productions of the West Indies give them an important place in the commercial world. To their valuable native plants, art and industry have added others not less valuable: the sugar-cane, yielding its threefold tribute of sugar, molasses, and rum; the coffee-plant; pimento or allspice; the plantain and the banana; the pine-apple, anana, yam, sweet-potato, maize, cassava, manioc; with cacao, tobacco, and cotton; various dye-woods and stuffs, as fustic, logwood, indigo; medicinal plants, as liquorice, arrowroot, ginger, jalap, ipecacuanha; building and cabinet timber, as mahogany, lignum-vitæ, and cedar: to which list must be added the bread-fruit, cocoa, mango, papaw, guava, orange, lemon, tamarind, fig, and other tropical fruits. The cattle are generally of diminutive size; only a few of the islands contain sheep and goats; few horses, asses, or mules are reared, and consequently great numbers of these are imported from the continent. Hogs are more abundant than other domestic animals. There are few wild animals but wild swine, tajassoes, monkeys, rats, and some smaller animals. The manati is found in Trinidad and Tobago; the cayman, turtle, and other reptiles are common; and fish are everywhere abundant. Land and sea crabs are also common; and amongst the more remarkable insects are mosquitoes, cockroaches, scorpions, ants, and the valuable cochineal insect.'

POPULATION—GOVERNMENTS.

The natives have long since become extinct, except a few families in Trinidad. On their discovery by Columbus in 1492, the southern islands were inhabited by the fierce and warlike Caribs, and the northern by the Arrowauks, a more mild and gentle race. The latter appear to have been indolent and sensual in their habits, but mild and forgiving in disposition, affectionate to their wives, and of a domestic turn of character. They were fond of dancing and other peaceable amusements and games. Their government was monarchical, the kings being called *caciques*, and their power hereditary. They had likewise a priesthood; and they believed in a Deity and in a future state. At present, the great mass of the population is of African origin, the remainder consisting of Spaniards, French, English, Dutch, and Danes —who have carried with them their religion, laws, manners, and industry. The following table exhibits the names, areas, and population of the principal islands, with the governing powers to which they belong:

	Islands.	Area in sq. Miles.	Population.	Chief Towns.
	BRITISH—			
Windw. Is.	Jamaica	6,400	506,154	Kingston.
	Turk's Islands, Caicos	500	4,723	
	Trinidad	1,755	109,638	Port of Spain.
	Tobago	97	17,054	Scarborough.
	Grenada	133	38,423	St George.
	St Vincent	131	35,688	Kingstown.
	Barbadoes	166	162,042	Bridgetown.
	St Lucia	250	31,610	Castries.
Leeward Is.	Dominica	291	27,178	Roseau.
	Montserrat	47	8,693	Plymouth.
	Antigua	183	35,157	St John's.
	St Christopher	68	25,169	Basseterre.
	Anguilla	35	3,000	
	Barbuda	75	629	
	Nevis	50	11,735	Charlestown.
	Virgin Isles	57	6,651	
	Bahamas	3,021	39,162	Nassau.
	Bermudas	24	12,121	Hamilton.
	SPANISH—			
	Cuba	43,220	1,414,508	Havana.
	Puerto Rico	3,552	646,362	San Juan.
	FRENCH—			
	Guadeloupe, St Martin, Marie Galante, Desirade, Les Saintes	643	152,910	Point-à-Pitre.
	Martinique	386	153,334	Fort Royal.
	St Pierre, Miguelon	82	3,971	
	DUTCH—			
	Curaçoa	162	21,319	Williamstadt.
	Oruba	76	4,185	
	Bonaire	94·5	3,870	
	St Martin	13·65	2,820	
	St Eustatius	11	2,884	St Eustatius.
	Saba	6·3	1,883	
	DANISH—			
	St Croix	60	23,124	Christianstadt.
	St Thomas	13	13,463	St Thomas.
	St John	13	1,574	
	SWEDISH— *			
	St Bartholomew	35	2,802	Gustavia.
	INDEPENDT.—Haiti—			
	Republic of Haiti	10,204	572,000	Port-au-Prince.
	Republic of San Domingo	18,045	136,500	San Domingo.

* Ceded to France in 1878.

BRITISH POSSESSIONS.

The British colonies are grouped into the following administrative divisions: 1. Jamaica, with Turk's Islands and the Caicos, which, since 1873, have been governed by a captain-general, appointed by the crown. 2. Trinidad, which has a governor and legislative council. 3. The Windward Islands, comprising Barbadoes, St Lucia, St Vincent, Grenada, and Tobago. 4. The Leeward Islands, including Antigua, Barbuda, Montserrat, St Christopher, Nevis, Anguilla, the Virgin Islands, and Dominica. 5. The Bahamas; and 6. The Bermudas. The last four groups enjoy representative institutions, having each a governor, council, and legislative assembly. Justice is administered according to English law. With these preliminary observations, we proceed to notice the principal islands:

Jamaica.

This is the third island in point of size in the West Indies; being inferior only to Cuba and San Domingo. It is 150 miles long, and 45 broad, and contains about 4,000,000 acres. It was discovered by Columbus during his second voyage, and was at that period well peopled. Although opposed by the natives at first, Columbus soon effected a reconciliation with them, and took possession of the island in the name of his sovereign.

In 1509, it was occupied by Spanish settlers, who for many years were engaged in incessant warfare with the natives. These were at last completely extirpated, not a single native being left alive when the English took possession of the island in 1655, nor, it is said, for a century before. Cromwell greatly encouraged the settlement of Jamaica, and in a few years the population rapidly increased, the settlers being principally soldiers from the disbanded Parliamentary army, and outlaws from the mother-country. Numerous importations of negro slaves also took place; and from that time till now, the population has gradually increased.

Jamaica has been subjected to several dreadful earthquakes, one of which, in 1692, caused almost the entire loss of the town of Port Royal. It was also much injured in 1722 by one of those dreadful hurricanes so frequent in tropical climes. The white inhabitants have been repeatedly in danger from the revolts of their slaves, which were the occasions of much bloodshed and cruelty on both sides. The most remarkable rebellion broke out in 1795, and which has been known since by the name of the Maroon War; Maroons being the name assumed by negroes who had escaped from slavery and fled to the mountains. No other event occurred to disturb the peace of Jamaica until 1831, when an extensive revolt took place, from the exaggerated hopes of the negroes for emancipation. Since the passing of the Emancipation Act, no disturbances of any importance occurred till 1865, when a serious insurrection broke out, which was promptly quelled by the vigorous measures adopted for its suppression by Governor Eyre.

Jamaica is of an oval shape, and presents a greater variety of scenery and climate than any other island in the West Indies. The Blue Mountains run from one end to the other, and rise in some parts to the height of 7278 feet. These are intersected by cross-ridges running north and south. At the south end, these mountains, covered with forests, are high, abrupt, and difficult of access. On the other side, the hills rise gently, and are separated by vales, the vegetation of which is extremely luxuriant and beautiful.

There are numerous rivers in Jamaica, but none are navigable for vessels of any burden. They are extremely valuable, however, in irrigating the country, and turning mills upon plantations. There are sixteen principal harbours, which afford secure havens for shipping, and about thirty bays or roadsteads with good anchorage.

The soil is generally deep and fertile. The best is termed the brick-mould, which is so rich as to require no manure. A rich lead ore, impregnated with silver, is found in some parts of the country; and varieties of copper, striated antimony, and ironstone have also been obtained.

Jamaica is divided into three counties—Middlesex, Surrey, and Cornwall. The seat of government is Spanishtown, in the county of Middlesex. The town, with the exception of the public buildings, is mean and dirty. Kingston, the most important town in the island, is the commercial capital. It is situated upon the margin of the harbour, on a gentle slope, which terminates above in a fine plateau, behind which rise a range of mountains. The harbour, which is a sort of lagoon inclosed by a sandbank, running parallel to the coast, affords excellent anchorage, and the largest merchant-ships can ride close inshore. It is defended by numerous batteries, and is considered unassailable from the sea. At the termination of the sandbank is situated Port Royal, where a flag-ship is stationed, and where are also a dockyard and naval hospital. Montego Bay, on the opposite side of the island from Kingston, is a sea-port of some importance. Falmouth, about fifteen miles east of Montego, has risen rapidly. There is more produce shipped from this port than from any other in the island except Kingston.

The produce of Jamaica and the value of estates suffered great diminution after the abolition of slavery and the removal of the protective duties on sugar. Many estates were thrown almost or wholly out of cultivation, and the emancipated negroes preferred to squat in idleness on their provision-grounds, rather than to labour on the plantations. From the depression thus occasioned, and which was more felt in Jamaica than elsewhere, the island is gradually recovering.

Honduras or Belize.—Although belonging to continental America, this British settlement may be noticed here, as, until recently, it belonged to the government of Jamaica. It has now a separate government under a lieutenant-governor, appointed by the crown. It is situated on the east coast of Central America, between Yucatan and Guatemala. The area is 13,500 square miles, with a population of 24,700, mostly negroes and Caribs. It is valuable chiefly for its vast forests of mahogany, and the logwood-trees that grow in its swamps. The cutting of timber forms the principal industry, although the soil yields abundantly cotton, sugar, and coffee. The chief exports are mahogany and logwood, together with cochineal, indigo, and sarsaparilla, which, however, are not produced in the colony, but in the Central American states. Belize, the chief town, is in 17° 30′ N. lat., and 88° 8′ W. long.

Trinidad.

This island, the next in importance to Jamaica of the British West India possessions, is situated at the mouths of the Orinoco; being separated from South America by the channel called the Serpent's Mouth and the Gulf of Paria. It is 50 miles long, and 35 broad, with an area of 1755 square miles. It was discovered by Columbus in 1498, and was colonised by the Spaniards in 1588, at which time it was well peopled with Indians, who were of mild disposition and industrious habits. These were soon either destroyed or sent to the continent of America to work in the mines. The island was taken by the British in 1797, and has ever since belonged to this country.

Along the south and north sides of this island run two ridges of mountains. The western side for some distance is flat, and richly wooded. The centre is diversified with finely wooded hills and valleys of the greatest fertility. There are numerous navigable rivers, and several excellent harbours; and anywhere in the gulf on the west coast vessels may anchor in safety. Several craters exist in Trinidad, some of which give occasional indications of not being quite extinct. Mud-volcanoes also occur, the largest of which

is 150 feet in diameter. The celebrated pitch-lake, situated on a small peninsula, about eighty feet above the level of the sea, is about a mile and a half in circumference, and contains several islands, while the country around is wooded to its banks. The soil of Trinidad generally is good; the only barren parts being the sandy plains, and even these occasionally afford pasturage for cattle. The sugar-cane, coffee, and cocoa are cultivated to a considerable extent, and the produce is increasing very rapidly. Improved methods of cultivation and of sugar-manufacture have been adopted, and large numbers of coolies and other labourers have been introduced, so that on the whole the condition of this island may be described as highly prosperous.

The capital is Port of Spain, one of the finest towns in the West Indies. There are also numerous other sea-ports, which are gradually rising in importance.

Tobago.

This island, about 32 miles long, and 9 broad, was discovered by Columbus in 1496; and in 1580 it was taken possession of by the English. It was afterwards settled by Dutch colonists; and after many takings and retakings, was ceded to Britain at the peace of 1763. In 1781, Tobago was captured by the French, but was retaken in 1793 by the British, with whom it has ever since remained. It is principally composed of conical hills and ridges, which in some parts reach the height of 1800 feet. There are a number of small streams, which, rising in the hills, water the low country down to the sea. The natural harbours are numerous, and several of them adapted for ships of the largest class. The chief town is Scarborough, on the south-west side, about half a mile from Fort King George, the principal military station. The soil is rich, and the produce as varied as in any of the other islands.

Grenada and its Dependencies.

This beautiful island, situated about sixty miles from the American coast, is 25 miles long, and 12 at its greatest breadth, with an area of 133 square miles. It was discovered by Columbus in 1498, and was settled in 1650, by a party of French from Martinique. It was taken by the British in 1762; again retaken, but finally ceded to Britain in 1783. This island is hilly, irregular, and extremely picturesque. There are a number of rivers, of no great importance for commercial purposes, but all useful for irrigating the country. Several hot springs exist; and a fresh-water lake, 2½ miles in circumference, probably the crater of an extinct volcano, is situated 1500 feet above the level of the sea. The capital is St George, situated within an amphitheatre of hills. The harbour is spacious, protected on all sides from hurricanes, and capable of containing 1000 ships. Sugar, cocoa, and coffee are the principal products.

The Grenadines are a group of small islands lying between Grenada and St Vincent, the principal ones being Becquia and Cariacou. Several of these islands are inhabited, and produce sugar, cotton, fruits, live-stock, &c. in great abundance.

St Vincent and its Dependencies.

This is thought by some the most beautiful of the Caribbean islands. It is about 24 miles long, and 20 broad; fifty-five miles west of Barbadoes, and about the same distance from Grenada. It was discovered by Columbus in 1498; was first settled by the French; captured by the British, and retaken; but finally ceded to this country in 1783. Its character is decidedly volcanic. The mountains are high and sharp at the top, with deep valleys between. The soil is a strong loam in the valleys, but of a more sandy nature on the hilly ground. In 1812, St Vincent was visited by a severe volcanic eruption, the matter from which nearly covered the whole surface of the island. Fifty persons lost their lives on the occasion. The most celebrated object in this island is the Soufrière, a volcano, the crater of which is 3 miles in circumference, and 500 feet in depth. The climate is healthy; but hurricanes are frequent, and sometimes very destructive. There are eight small islands adjoining to St Vincent, which are cultivated, but do not merit particular mention here.

Barbadoes.

This, the most easterly of the Caribbean islands, was the first British settlement in the West Indies. It is about 22 miles in length, and 14 in breadth, containing an area of 106,470 acres. It was colonised in 1625, Charles I. having made a grant of it to the Earl of Carlisle, who encouraged emigration to the island. It is generally level, except in the north-east, where the hills reach the height of 1100 feet. It has a beautiful appearance, the land being well cultivated, and the vegetation luxuriant. There are a number of springs, one of which casts up a bituminous matter called Barbadoes tar, and another emits a stream of sulphuretted hydrogen gas, which can be ignited. Oxen and horses are plentiful, the first being most generally used for labour. Hogs and poultry are also reared; and, indeed, this island is distinguished from most of the West India colonies by the quantity of provisions which are raised, the inhabitants depending little upon foreign supplies.

The capital is Bridgetown, on Carlisle Bay. The climate is healthy, the heat being moderated by the constant trade-winds. The island is subject to hurricanes, one of which, in 1780, laid waste its whole extent, and destroyed 4000 lives, and upwards of £1,000,000 of property. Barbadoes is one of the most prosperous of the West Indian colonies. It scarcely suffered at all from the abolition of slavery, there being no unoccupied ground on which the negroes could squat; so that, in order to live, they were obliged to continue to work on the plantations.

St Lucia.

This island is about 32 miles long, and 12 broad. The English who first made a settlement in St Lucia were completely destroyed by the natives. It was again settled, and passed repeatedly from the British to the French, until 1803, when it was finally captured by the British. It is traversed from north to south by a ridge of densely wooded mountains, which terminate in fantastic peaks. On the west coast, there is an

excellent harbour called the 'Little Careenage,' which, admitting only one ship at a time, is capable of containing thirty ships of the line. The capital is Castries, the only town in the island, and a place of no importance.

Dominica.

This island, situated between Martinique and Guadeloupe, is about 29 miles in length, and 14 in breadth. It is of volcanic origin, and has many mountains, the highest of which is 5314 feet above the sea's level. Several of these contain volcanoes, which frequently discharge vast quantities of burning sulphur; and there are many hot-water springs throughout the island. The valleys are fertile and well watered. Dominica yields the finest timber, such as locust-wood, rosewood, mastic, ironwood, cinnamon, bastard mahogany, and a gum-tree of considerable value. The capital is Roseau. Prince Rupert's Bay is the safest harbour in the island, and capable of containing a whole navy.

Montserrat.

This is one of the smallest of the British West India Islands, being only about 12 miles long, and 7½ broad. It is of volcanic origin, and presents a very uneven and mountainous surface. It is extremely difficult of access, from the broken character of the land, and the coral beds and rocks which stud the sea around the southern part of it. Both mountains and valleys are covered with wood; and many fine streams water the low lands. Indigo, formerly much cultivated in this island, has been abandoned; and the principal productions now are cotton and sugar, the latter of which is much esteemed. This island has been called the Montpelier of the West Indies, from its healthy climate, although it is occasionally subject to hurricanes.

Antigua.

This island, discovered by Columbus in 1493, is about 20 miles long. It was first settled in 1632 by the English, but in consequence of the want of water, its progress was slow at first. Antigua is indented with bays, and surrounded with small islands, rocks, and shoals, which render it difficult of access. The country in the north-east is low, and even marshy, but it gradually rises towards the south and west. The island being almost destitute of water, the rain which falls during the wet season is collected in tanks. The land, however, is very fertile, and vegetation luxuriant. The capital, St John's, situated on the north-west, possesses a capacious harbour. Englishtown, on the south, has a fine harbour, with a royal naval-yard, arsenal, &c. The coast is indented with bays, which afford excellent shelter to shipping. The climate is dry and healthy; and the island is not subjected to either heavy dews or severe hurricanes, like most of the other islands. Antigua was the first island to ameliorate the slave-laws, by affording the accused slave the benefit of trial by jury; and it anticipated the British parliament, by putting an end to negro apprenticeship in 1834.

St Christopher or St Kitt's.

This island, situated in lat. 17° 18′, and long. 62° 40′, is 72 miles in circumference. It was discovered by Columbus, and was first settled by an Englishman of the name of Warner, and fourteen associates. Warner found several Frenchmen already on the island; and these two parties, after making war upon the natives, divided the island between them—one part called Capisterre, or high country, being assigned to the French; and the other part, called Basseterre, or low country, to the English. Many battles were fought between the parties till 1713, when the whole island was ceded to Britain. St Christopher is of an irregular oblong shape, traversed lengthwise by a ridge of mountains; and slopes gradually from the centre to the sea. The greatest height, Mount Misery, rises 3711 feet, almost perpendicularly, and is clothed with vegetation nearly to the summit. The vale of Basseterre is extremely beautiful, the ground being very rich, and everywhere highly cultivated. The soil is considered the finest in the West Indies for the cultivation of the sugar-cane. The island is watered by four small rivers; and there are numerous springs in the low lands. These, however, from strong saline impregnations, are not fit for drinking, and the rain-water is collected in tanks for domestic purposes. The capital is Basseterre, which is the best shipping-station.

Nevis.

This beautiful little island, consisting of a single mountain, which rises like a cone out of the sea, unbroken, and verdant to the summit, was discovered by Columbus at the same time with St Christopher, from which it is separated by a channel about two miles broad. It was first taken possession of by a party of English from St Christopher. The hill is well cultivated; and where cultivation ceases, evergreen forest-trees grow luxuriantly, the whole island having a cheerful picturesque aspect.

Barbuda and Anguilla.

These two islands, although far separated, may be classed together, from the similarity of their scenery and the occupations of the inhabitants. Barbuda is situated about thirty miles north of Antigua. It is about 20 miles long, and 12 broad. The first notice made of Barbuda is in the time of Queen Anne, when it was granted to General Codrington, by whose descendants the greater portion of it is still possessed. Anguilla, or Snake Island, is about 100 miles north-west of Barbuda. It is 30 miles long, and 3 broad, and receives its name (signifying an *eel*) from the peculiarly winding shape it presents. These islands were both first settled by the British; and they have always remained in the possession of this country. Their aspect is different from that of any of our other West Indian settlements, being in many respects indeed quite *English*. The occupation of the inhabitants is rearing stock and cultivating provisions, for which a ready market is found in the neighbouring islands.

Virgin Islands.

This name was given by Columbus (in 1493) to a group of about forty small islands, forming a part of the Leeward Islands, and lying near Puerto Rico on the east. They are divided among the British, Danes, and Spaniards, but much the

larger and more valuable number belong to Britain. The British Virgin Islands were first possessed by Dutch buccaneers, who built a fort on Tortola, but were expelled by the English, who have remained in possession ever since. The largest of these islands is Anegada; the next, Tortola. The harbour of Tortola is very extensive, completely landlocked, and afforded shelter in many cases during war to 400 vessels. Virgin Gorda is of an irregular shape, and contains two good bays, where ships may ride in security.

The Bahamas or Lucayos Islands.

These, the most northerly of the West India islands, were the first land discovered by Columbus in 1492, and they amount in number to fully 500. The island which gives the name to the whole is the most northern, as well as the most important of the group. A settlement established by the British in 1629, was ravaged by the French and Spaniards several times, and the Bahamas became a nest for pirates, until they were expelled by the British in the beginning of the last century. The Bahamas are of coral formation, and although flat, have a very pleasing aspect, from the richness of the vegetation. The chief island is New Providence, which contains the capital, Nassau. These islands are very healthy, and their climate is delightful. The chief article of exportation is cotton, neither sugar nor coffee having succeeded. Provisions of all sorts are plentiful, cattle and sheep thrive well, and the shores abound with fish and turtle. *Turk's Islands and the Caicos*, at the south-east of the group, are included in the government of Jamaica.

Bermudas or Somers' Islands.

These are a cluster of small islands, in latitude 32° 20′, and longitude 64° 50′, distant about 600 miles from the American continent. They are upwards of 300 in number, with an aggregate area of 24 square miles. The principal are St George, Ireland, St David, Somerset, Long and Birds' Islands, &c. These lie close together, and form capacious bays, which afford good anchorage. The coast, however, is of the most dangerous description, being studded with rocks, which are visible at low-water, and disappear at flood-tide. The soil is very fertile, and produces maize, barley, potatoes, onions, and all sorts of garden vegetables in great abundance. Arrowroot is a principal article of culture; and medicinal plants, such as the aloe, jalap, &c. grow spontaneously. There are no fresh-water streams, and only a few wells of brackish water, so that the inhabitants are obliged to have recourse to tanks. The climate is generally healthy. The Bermudas are chiefly important as a naval station on the homeward-bound route from the West Indies. There are also convict establishments on the islands.

For a long period after the abolition of slavery, and the removal of the protective duties on sugar, the British West India colonies continued in a very unprosperous condition. But the lowest point of depression seems to have been reached; and by means of improved machinery, the introduction of coolie labour into several of the islands, and the increased demand for West India produce, these colonies have entered upon a new career of prosperity—a prosperity apparently more sound and stable than they ever before experienced.

FOREIGN POSSESSIONS.

French.

The French possessions in the West Indies comprise the islands of Martinique, Guadeloupe, Marie Galante, and Désirade. Martinique, at the entrance to the Gulf of Mexico, is about 50 miles long, and 20 broad. It is of volcanic origin; romantic in appearance; and the mountains are covered with almost impenetrable woods. Martinique is well watered; and the soil is good, although it varies much, on account of the volcanic eruptions, which have in some places covered the surface of the land. About two-fifths of the island are cultivated; the rest being occupied with mountains, forests, and plains, which last yield good herbage for cattle. Fort Royal, the capital, is situated on one of the bays which indent the coast, and possesses the safest and most capacious harbour in the West Indies. The chief commercial town is St Pierre.

Guadeloupe is situated in lat. 16° 20′ north, and long. 62° west. It is divided through the centre by a small channel, which is navigable for vessels of fifty tons, and forms, as it were, two islands. There are several volcanic mountains in Guadeloupe, one of which still emits smoke, and sometimes sparks of fire. The chief town is Basseterre.

The island of St Bartholomew, lying about 30 miles north of St Christopher, was a Swedish possession from 1784, when it was ceded by France, till 1878, when it was ceded by Sweden to France for a sum of money. It produces sugar, tobacco, cotton, and cocoa; and has only one town and one harbour, namely, Gustavia and La Carenage. St Bartholomew is now a dependence of Gaudeloupe. Its area is about 8 square miles, and the population is near 2500.

Désirade and Marie Galante are small islands, situated near Guadeloupe, and subject to its government. The former is famous for its cotton, and the latter yields chiefly sugar and coffee. The slave population of the French West Indies were set free at the Revolution of 1848.

Spanish.

Sixty years ago, the colonial possessions of Spain extended from the frontiers of the United States almost to Cape Horn. Now, she has not a foot of land on the American continent; and of the islands, she possesses only two worth mentioning—Cuba and Puerto Rico.

Cuba is by far the largest island in the West Indies, being 800 miles in length, and 127 at its greatest breadth. It is traversed throughout its length by chains and mountains, some of which reach the height of 7200 feet. From these mountains flow numerous streams, which water the soil, and render it highly productive. The savannas, or plains, are very extensive, stretching on both sides from the mountains to the sea. The soil of these plains is so fertile, that two, and even three,

crops of grain have been cut annually. The island is very rich in minerals, particularly copper and iron; and mines of gold and silver have also been worked. Coal-mines have likewise been opened, but it does not appear that they have been worked to any extent. The position of Cuba, commanding the entrance to the Gulf of Mexico, gives it great commercial importance; and after the ports were opened to foreigners, the productions and trade of the island for some years greatly increased. The chief exports are sugar, coffee, and tobacco, which, manufactured into cigars, is in high estimation. The capital is Havana, situated on the north side of the island, and the finest city in the West Indies. It possesses a splendid harbour, which, although narrow at the entrance, is without bar, and inside is capable of containing 1000 ships. The population of Cuba in 1877 was 1,394,516, and the number of slaves in 1872 was 269,000. In 1868, a civil war broke out in Cuba, which was not brought to an end till 1878; and in consequence, the commercial prosperity of the island, which was on the decline before, has been greatly diminished.

Puerto Rico, the only other island belonging to Spain, is situated about twenty-five leagues to the eastward of San Domingo. It is intersected by a chain of lofty mountains, which run through it lengthwise, and possesses table-lands and valleys of great fertility. The climate of this island is somewhat peculiar; on the north coast, it often rains during the whole year, while on the south coast an entire want of rain for twelve months is no uncommon phenomenon. The chief productions are sugar, coffee, indigo, rice, and live-stock. The chief town is San Juan. The population of the island is 760,000, of whom about half are white. The coloured people were formerly slaves; but in 1873 a bill for the total abolition of slavery was passed.

Dutch.

Holland possesses the islands of Curaçoa, Bonaire, and Oruba, on the coast of Venezuela; and St Eustatius, Saba, and the southern part of St Martin (the northern part belonging to France), in the leeward group, between St Christopher and Anguilla. The three first-mentioned islands were taken from the Spaniards in 1632. The three latter were colonised by the Dutch about 1635, and were finally secured to them by the peace of 1814. The principal productions of all these islands are sugar and tobacco.

Danish.

The Danish settlements, all belonging to the Virgin group, are three in number—St Croix, St Thomas, and St John. St Thomas is the meeting-place and general depot of all the West India mail steam-packets. All the three islands are well cultivated, and produce sugar and tobacco. The imports from Great Britain vary in annual amount from £150,000 to over £200,000 (mainly cotton and coals); the exports from the three islands to Great Britain, from £40,000 to £100,000 (mainly sugar).

INDEPENDENT ISLAND.

Haiti, San Domingo, or Hispaniola.

This island, lying between Puerto Rico on the east, and Jamaica and Cuba on the west, was discovered by Columbus, and called by him Hispaniola; but the native name is Haiti. In 1650, the French and the Spaniards took possession of it, and divided it between them. At the French Revolution, the negroes rose in a body, massacred the whites, and asserted their independence. After various vicissitudes of government under negro chiefs (Toussaint l'Ouverture, Christophe, Soulouque, &c.), the western or French part of the island is now the republic of Haiti, with an area of 10,204 square miles, and a population variously estimated at from 572,000 to 800,000. The capital of this republic is Port-au-Prince, situated on a large bay, with an excellent harbour, and a population of 22,000. The Spanish or eastern part of the island is now the republic of San Domingo (area 18,045 square miles, pop. 136,500), founded in 1844, and reconstructed in 1865, after a revolution, in which the Spanish troops, who had held possession for two years, were expelled. The capital, San Domingo, at the mouth of the river Ozama, founded in 1494 (pop. 15,000), is the oldest European city in the Western Hemisphere. The population of both states consists chiefly of negroes and mulattoes; but in San Domingo there are also many white inhabitants. The exports and imports of Haiti amount respectively to £1,820,000 and £1,250,000 yearly, and those of San Domingo to £140,000 and £134,000. The exports are raw cotton from Haiti; and from both states, coffee, mahogany, dye-woods, guano, &c.; and the imports consist chiefly of cotton and linen fabrics. Trade is carried on principally with Great Britain and the United States.

The greater part of the coast of San Domingo is rocky and dangerous; but the Bays of Samana and Neyba afford secure anchorage for large ships. There are also many ports in which small vessels can anchor with safety. The rivers are numerous, the principal being the Haina, the Nigua, the Neyba, and the Yima, which are navigable for some leagues from their entrance. The country is mountainous, but interspersed with fine plains of great fertility. The mountains intersect the island from east to west, some of them reaching the height of 9000 feet above the level of the sea. The soil is of the finest description, and is distinguished by the variety of its productions. The French and Spaniards introduced breeds of horned cattle, hogs, sheep, horses, mules, and asses, which have multiplied exceedingly, and are of great value to the inhabitants. Mines of gold, silver, iron, and copper were formerly found, but it does not appear that they are worked to any extent at present.

San Domingo was formerly considered one of the most important islands in the West Indies, and it is evident, from its size and the fertility of the soil, that it might be made so again. But the present inhabitants being averse to all labour but what suffices to supply their few wants, produce little for exportation. Commerce is also fettered by vexatious restrictions. The chief articles are mahogany, dye-woods, coffee, tobacco, and cotton.

THE HUMAN MIND.

THE various properties that distinguish Mind from what is not Mind are summed up in three great general properties, named Emotion or Feeling, Volition or Will, and Intellect or Thought.

EMOTION, or FEELING, is exemplified in the gratifications and pains of the Senses, and in Wonder, Love, Anger, Fear, &c. The mental states produced by sunshine and the fragrance of a garden are emotions. Everything that we denominate by the two contrasting terms, 'pleasure' and 'pain,' and whatever is called mental excitement, comes under this general head. The term 'Consciousness' also signalises more especially this first general property of mind. The members of the human race agree in manifesting Feeling. The orders of the brute creation give like symptoms of the same endowment. The vegetable and mineral worlds are devoid of it.

VOLITION involves feeling, and something more; that something being *action*, or the putting forth of power for some end. Eating, walking, fighting, building, sowing, reaping, are operations rising above the play of mere emotion, but which yet derive their stimulus and owe all their meaning to our various susceptibilities to pleasure or pain. All voluntary actions whatsoever have for their immediate or remote end the procuring of something pleasurable, or the staving off of something the reverse; any actions performed without some conscious end, are involuntary, and are not included in the sphere of mind, properly so called. Such are the reflex or automatic operations of breathing and propelling the blood. The powers of nature, as gravity, heat, &c. are not mental actions, because they are not associated with consciousness as a regulating principle.

INTELLECT, or THOUGHT, is the comprehensive summary of such mental faculties or attributes as Memory, Reason, Judgment, Imagination, &c. It implies, among other things, the persistence in the mind of the impressions of the senses after the original object is gone, thus giving birth to what are called *ideas*, which can answer most of the ends of the actual and present sensations. Thus the feeling of cold can continue in the mind in a certain shape after the reality has ceased, and this ideal cold is capable of inspiring the will to a series of precautionary operations bearing on the future, even while we are immersed in the most comfortable warmth.

The mental phenomena thus summed up in three grand distinctive modes or manifestations, are found to be in close alliance with certain portions of our bodily organisation, and chiefly with the brain. Properly speaking, the Nerves and Nerve-centres (principally collected in the brain), the Organs of Sense, and the Muscular System, are the parts concerned in the mental functions, while ministering also to some of the bodily functions. That the brain is the principal organ of mind, is proved by such facts as the following: 1. From the local feelings we experience during mental excitement. As indigestion is felt in the stomach, and toothache in the jaws, so intense mental workings usually make themselves felt by pains in the head. 2. Injury or disease of the brain impairs in some way or other the powers of the mind. 3. There is an indisputable connection between size of brain and the mental energy displayed by the individual man or animal. There may be differences of quality in the nervous substance, as in the muscle or any other tissue; but, as a general rule, largeness of size gives greater vigour of mental impulse. The average weight of the human brain is 3 pounds; that of Cuvier weighed upwards of 64 ounces (4 pounds). In idiots, the weight is as low as 27, 25, 22, and 20 ounces.

Much is now known of the structure and functions of the nervous system, and a certain degree of light has been thrown upon the mental operations in consequence; but we must refer to the treatises on Physiology and the larger works on Mental Philosophy for a full account of those discoveries. The general inference derived from the whole is, that the nervous action connected with the mental life is a *current* action, or consists of nerve-currents propagated from the senses to the brain, thence to the muscles, and from one part of the nervous system to another. Hitherto, the notion has prevailed that the brain is a sort of receptacle or storehouse of passive impressions, called a *sensorium commune;* but we are now led to believe that the brain and mental life are stagnant, except when those currents of nervous force are in the course of transmission from one part to another.

The most convenient division of the subject for the purposes of exposition is into the four following heads: 1. SENSATION, with certain allied subjects that go naturally along with it, such as the Muscular Feelings, the Appetites, and the Instincts. This is usually reckoned the first and lowest department of mind. It takes in one important branch of the Emotions, and the most simple and primitive Volitions, and gives an account of the primitive mechanism on which acquisitions have to be based. 2. INTELLECT. 3. THE EMOTIONS; including those species that remain to be treated of, and the discussion of the subject of emotion generally. 4. THE WILL, or the nature of voluntary power, and the different varieties of it.

MOVEMENT, SENSE, AND INSTINCT.

This includes in all four subjects—Movement and the Feelings of Movement, the Senses and Sensations, the Appetites, and the Instincts.

MOVEMENT AND THE FEELINGS OF MOVEMENT.

The feelings connected with the movements of the body, or the action of the muscles, have come

to be recognised as a distinct class, differing materially from the sensations of the five senses. They have been regarded by some mental philosophers as proceeding from a sense apart, a sixth, or muscular sense, and have accordingly been enrolled under the general head of sensations. There are, however, strong grounds for separating them from those, and giving them both an independent position, and a priority in the exposition. It is maintained to be a fact, that movement precedes sensation at the outset of life, and is constantly breaking out without reference to the impressions of sense. An animal in the freshness of its morning vigour is disposed to exercise for its own sake, gathering sensations as it goes, but not urged by these in the first instance. Moreover, action enters as a component element into our principal senses. The feelings of Touch involve the movements of the hand; in the ear there is a muscular apparatus; and the eye contains no less than six muscles, which participate in the impressions made during vision. Thus, in fact, the senses are compounds of muscle and their own special sensibility; so that it would appear advisable to ascertain, in the first instance, what is the characteristic sensibility of the muscles taken apart, as a preparation for considering them in combination with the tactile, auditory, and visible impressions. Besides, we must remember that a large amount of pleasure and pain is associated with muscular exercise generally, of which an account ought to be given somewhere, and nothing is gained by postponing these to the termination of the discussion of the senses. It will appear as we proceed that muscle and sense present a grand *contrast* in the system, being the foundation of the great distinction of *active* and *passive* that runs through the whole of mind. The nerve-currents proceed from the senses inward to the nerve-centres, and from these outward to the muscular organs; and therefore in the primitive anatomical structure the two are placed in contradistinction.

The muscles in the living body are always under a certain degree of contraction, least during sleep, and greatest when strong efforts are made. The entirely flaccid condition is seen only in death. For this and many other reasons, it is argued that power flows into the active system from the nerve-centres without any reference to outward stimulations or sensations, rendering movement spontaneous to a certain extent, while capable of being reinforced by the impressions conveyed through the senses. Thus, for example, the eyes are opened in the morning by this central energy, and are still further stimulated to remain open and to move in various directions by the effect of the objects that they encounter. The one cause is termed the spontaneous or the central energy, the other is the sensational or outward prompting.

In classifying the Feelings arising in the mind in consequence of muscular states, we may put aside those arising from injuries to the muscle, hurts, cuts, lacerations, diseases. The resulting pain is distinctive, that is, has a different character from the pains produced by injury to bones or nerves; but the distinction of most importance to the psychologist is that between muscular feelings that have a strongly marked emotional character, and muscular feelings whose emotional character is feeble, but which supply materials to the intelligence.

1. The feelings of muscular exercise differ considerably according to the manner of the exertion. The dead strain is the best case for shewing the pleasures and pains incident to mere expenditure of muscular force. When the muscles are fresh and healthy, exertion is highly pleasurable, and is expressly sought after as a pleasure in field-sports and gymnastics. In athletic constitutions, muscular pleasures take a prominent rank among the ends and pursuits of life. On the other hand, the pain of over-wrought muscle is exceedingly acute and repulsive, and unless submerged by some very exciting occasion, as in a keen contest, is looked upon as a severe form of endurance.

In most sports, however, the element of movement comes in to affect the pleasures and pains of mere muscular expenditure. The kind of the feeling varies a good deal with the character of the movement. *Slow* movements—such as a sauntering walk, a drawling speech, a solemn gesticulation—produce a massive or voluminous state of feeling, both abundant and strong, approaching to the class of passive emotions. *Quick* movements, on the other hand, are exciting, inflaming the system into elation and boisterous display—what may be called mechanical intoxication. Muscular expenditure generally is a sedative, but rapid movements of the smaller muscles—those, for example, of the eyes, or the features, or the voice—have a quite opposite tendency.

Movements gradually increasing or diminishing, have a more pleasurable charm than those of a uniform character. The pleasure of being carried along by another power—which may be called *passive* movement—is very high: this kind of movement gives a very gentle stimulus to the active organs, and produces much of the pleasure without the fatigue of exertion.

2. For the purposes of our intelligence, we need to be distinctively aware of degrees in our motive energy put forth. It is in this way that we attain perceptions of many properties of the outward world. We are so far differently affected by two unequal *weights* or *resistances* as to distinguish the one from the other, and identify each with its equal. This graduated sensibility becomes confirmed into a series of enduring and revivable impressions corresponding to the differences of external things. We discriminate between one pound, and two, five, or fifty, and can acquire the sensibility to nice shades of gradation by the help of special practice. The movements of the muscles are also a subject of discrimination. We are differently affected by a partial and a total contraction of a muscle, and therefore, to a smaller or larger sweep of the organ, as in the arm or the eye; which corresponds with differences of *linear extension*, the basis of our notion of *space* generally. We are, further, unequally acted on by the various degrees of rapidity of contraction, which is our internal measure of *velocity* of movement. These differences of sensibility are not the same as the more or less pleasure or pain that we derive from active exercise; although it may be that they are associated with the emotional discrimination in the first instance. The more we give ourselves up to feeling or enjoyment, and the reverse, the less acutely do we draw those distinctions that relate to the facts of the world; and the more

engrossed we are with these, the less do we experience emotion, properly so called.

SENSATION.

This is defined by a reference to the organs termed Senses, which are commonly reckoned five in number—Taste, Smell, Touch, Hearing, Sight. There is good reason for including with these the sensibility of the body generally, from which results a large amount of pleasure and pain, although not so important as regards the perceptions of the external world. We have already excluded the so-called Muscular Sense, as not being homogeneous with those now enumerated.

We shall take the senses in the order of their subserviency to the intelligence, beginning with those that have this property in the smallest degree.

Sensations of Organic Life.

These include the many and often intense feelings that have their seat in the different organs and tissues of the body.

They may be classified as follows. 1. Pains arising from injury or disease of *Bones* or *Ligaments*. These are often very excruciating, the periosteum of the bone being the sensitive part. 2. *Organic Sensations of Nerve*. Pains arising from wounds and diseases of the nerve-tissue, such as the well-known neuralgic diseases, toothache and tic, are among the most distressing ailments of humanity. Nervous fatigue, arising from too much brain-work, or insufficient nourishment, is an extremely trying condition. On the other hand, the exhilaration of fresh and healthy nerves, whether natural or brought on by stimulants, is, in itself, a very blissful condition. 3. Feelings arising from the state of the *Circulation* or the *Nutrition*. Feeble heart-action and deficient nourishment have a powerful effect in depressing the feelings, and *vice versâ*. 4. Feelings related to *Respiration*. The sensations of *freshness* and *suffocation* depend upon the action of the air on the lungs. 5. Feelings of *Heat* and *Cold*—very important elements in the comfort of life. Feelings arising from the *Digestion*. The action of healthy organs on wholesome food is productive of great enjoyment; on the other hand, bad digestion produces a host of pains, some acute, and others massive and depressing.

Sense of Taste.

The sensations of Taste may be classified as follows, a complete enumeration of kinds being impossible: (1) *relishes*—the agreeable feelings connected with the mastication of savoury food—and their opposites, *disgusts*—which are even more repulsive as pains than the other are attractive as pleasures; (2) *sweet* tastes—the pleasure proper to taste as a sense in its own right, or in contradistinction to its being a part of the alimentary canal—and *bitter* tastes—the characteristic pain of taste, strictly so called; (3) *saline* tastes; (4) *alkaline* tastes; (5) *acid* or *sour*—which have a sharp penetrating action, of the nature of a burn; (6) *astringent*—for example, the taste of alum; (7) *fiery*—a good designation for alcoholic liquors; (8) *acrid*—a combination of the fiery with the bitter.

Smell.

The sensations of smell may be reduced to such heads as the following: (1) *fresh* odours—those that stimulate the lungs to increased activity, such as *eau-de-Cologne*—and their opposites, *close* or suffocating odours, and *nauseous* odours; (2) *sweet* or *fragrant*—the proper pleasures of smell, produced solely by action on the organs of smell, without any influence on the stomach—and their opposites, *stinks*—represented by sulphuretted hydrogen and asafœtida; (3) *pungent*—such as snuff, ammonia, &c.; (4) *ethereal*—alcohol and the ethers; (5) *acrid*—a mixture of pungency and bad smell, as from gas-tar; (6) *appetising* odours—which stimulate carnivorous animals to the pursuit of their food.

Touch.

When we come to the higher senses, we have to consider finer and more difficult distinctions. The following are the chief points for consideration under this sense. 1. *Sensations of Soft Touch*. These, which are familiarly exemplified by the contact of the bed-clothes, are not highly acute or intense, but of considerable volume or mass. They resemble the sensations of gentle warmth, but the two, although so apt to go together, are quite distinguishable feelings. There is a certain blankness of sensation felt by the naked body, apart altogether from the want of the warmth of the covering. 2. *Pungent and Painful Sensations of Touch*.—When, instead of a diffusive soft contact, we have an intense action on limited spots, mere points, as in the stroke of a whip, a sensation of smartness is produced, in marked contrast to the above. In moderate degree, this gives a pleasurable pungency; beyond this, it is acutely painful; exciting the most decisive acts of avoidance, and leaving behind a strong mental aversion. 3. *Impressions of Distinguishable Points*.—It was found by Weber that the skin is very unequally discriminative to a plurality of points, as tested by a pair of compasses applied to different parts of the body. In the tip of the tongue, we feel the double touch of the two points a thirtieth of an inch apart; while on the back, the two will seem one at a stride of about three inches. The tip of the finger is next to the tongue. The hand and foot excel the arm and leg, and the hand the foot, in this comparison. The palms and soles excel the opposite surfaces. 4. *Sensations of Touch involving Muscular Perception*.—The sense of movement is so mixed up with touch that, in most cases, the feeling that results is a compound, and sometimes the tactile part is the least considerable. Thus *weight* is, as already seen, an almost purely muscular feeling, although we judge of pressure, to some extent, by the compression of the skin, and the consequent influence on the nerves of touch. *Hardness* and *softness* are appreciated by the same combined sensibility; the one means a great resistance to the compression; the other, a less. *Elasticity* is only a particular case of resistance. *Roughness* and *smoothness* are recognised very much by the sensibility to distinguishable points, and, when the thing is rubbed, by the equality or inequality of the resistance. The important attributes of Extension, Size, Form, are impressed upon the mind through the movements they require us to make, and are

therefore pure feelings of muscularity. The use of touch in connection with those perceptions is to give marks or starting-points, and a definite course in making the sweep. Simple Length is motion in one direction. Surface implies movements along and across, while Solidity needs us to sweep in three different directions. The hand, with its plurality of fingers, each distinctly sensitive, has a peculiar advantage in taking in the different dimensions of bodies. By the span of the hand, we appreciate Length; by the extended hand, we feel a Surface; and by combining this with the thumb, we are aware of what distinguishes a Solid. Distance, Direction, and Situation are got at in a similar manner.

Hearing.

This sense is more special and local than the foregoing, but agrees with it, in being a mechanical sense, as distinguished from the two chemical senses—Taste and Smell. The Sensations of sound may be divided into three classes: 1. The general effects of sound, as determined by *Quality*, *Intensity*, and *Volume* or *Quantity*. By *quality* is meant the character of sounds, as agreeable or disagreeable in themselves, like sweet and bitter in taste. The pleasing effects of a pure sound are expressed by the terms sweet, mellow, rich. *Intensity* or loudness is of the nature of pungency, as already explained in the other senses, agreeable within limits, painful beyond. *Volume* means the sound coming from a sounding mass of great surface or extent—the waves of the sea, the discharge of thunder, the shouts of a multitude. 2. *Musical Sounds.* The fundamental property of sound in relation to music is *pitch*. Sounds agreeing in pitch, or formed of an equal number of vibrations, are said to be of the same musical note; and a series of different pitches, or notes, drawn up with definite intervals, are the notes of the musical scale. The *waxing* and *waning* of sound is one of the effects introduced into musical execution, owing to the power it has to excite a very strong and pleasurable emotion. *Complexity* gives occasion to the two effects of *discord* and *harmony*—the one painful, and the other, acutely pleasurable. *Clearness* may attach to sound as to any other expression. 3. *Sounds that serve in the perception of the outer world.* The discrimination between sounds as coming from different materials, is an important property of the ear, rendering it an instrument of useful knowledge. The ring of a shilling and a sovereign, or the voices of two different persons, are clearly distinguished. *Direction* is purely acquired, and the concurrence of the two ears is a powerful aid in indicating it. So is the *distance* of sounds. The *articulate form* relates to the effect produced by the sounds issuing from the human voice, as modified by the configuration of the mouth in the act of uttering them.

Sight.

A great many difficult questions are involved in the processes of vision. The adaptation of the eye to sight at different distances, the theory of single vision with two eyes—elucidated by Wheatstone, the inventor of the stereoscope—the seeing objects erect by means of an inverted image on the eye, have been long discussed, and are now tolerably well understood.

The Sensations of sight are in part optical purely, and in part a combination of the optical with the muscular.

Mere *light*, as in the diffused solar radiance, is one of the most powerful among our simple sensations. In clear, strong sunshine, freshly encountered, there is a massive influence of pleasurable elation, more endurable than most other pleasures of the same strength. *Colour* is an effect distinct from mere light and shade, and would seem to give a more pungent stimulus to the eye, which would render it less soft and endurable, but for the opportunity presented of making up harmonies, from which a new pleasure takes its rise. *Lustre* is caused by colour seen through a transparent film or covering, and produces a fresh, rich, luxurious feeling, lying at the foundation of our delight in many objects of nature and works of art.

The complex sensations of sight are those that involve the movements of the eyeball with the impressions of light. *Motion*, as appreciated by the eye, is a compound of light and movement; the eye must be moved to follow the object, and the resulting sensation has therefore a muscular element. Hence all the feelings due to the operation of muscles, and all that discrimination of differences of range and pace necessary to external perceptions, are generated in the processes of seeing. *Distance* is recognised through the changing adjustment of the eye, but we must have experience in order to know that one adjustment means near, and another far. *Form* is perceived entirely by the muscular portion of the eye; inasmuch as outline can only be taken in by carrying the vision successively along the track marked out. A round form is impressed by one set of movements, a square form by a different set. *Apparent magnitude* is also determined by the muscular sweep of the eye. *Solidity* results from taking in varying distance along with the visual expanse. To recognise surface, or two dimensions, the movement of the eye right and left, up and down, might suffice, if the object is not placed slanting, but a third dimension always implies varying distance. A block of stone is a compound of form, visual expanse, and unequal distance from the eye.

Thus the eye repeats all those acquirements made through combined Touch and Muscularity, and from the greater persistence of impressions of vision, retains them with more vividness and tenacity. This renders sight the intellectual sense by pre-eminence. For the purposes of discrimination and of identification of natural things, and also for the storing of the mind with knowledge and thought, the sensations of objects of sight are available beyond any other class.

THE APPETITES.

The appetites are a select class of our sensations and feelings, defined as *the cravings produced by the recurring wants and necessities of our bodily or organic life.* The taking in of nourishment, the ejection of what is formed to be thrown out, the supply of air, the alternation of exercise and rest, are forced upon us by strong uneasy sensation. The property of periodic recurrence, which is the main distinction of an appetite, is in no case more strikingly exemplified than in *Sleep.* After a

certain period of waking activity, there supervenes an intense and massive sensation, of the nature of a craving for repose. The overpowering influence of the state of drowsiness, is best seen in children, there being scarcely anything that will effectually appease the mental disturbance caused by it. The necessity of *alternating Exercise with Repose*, through the entire range of our active organs, brings on the like periodic cravings and deep-seated uneasiness. The fresh condition of the muscles is of itself a sufficient stimulus to exercise; without our willing it, action commences when the body is refreshed and invigorated. If the outburst is resisted, a feeling of distress is the result, being one of the conscious states of the muscular system. On the other hand, after exercise comes an equally powerful impulse to rest. The very same alternative applies to the senses and the brain, implying all the higher faculties of our nature. *Thirst* and *Hunger* are of a still more imperative urgency. Not only the fact, which we come to be aware of as rational beings, that life will soon cease if we do not keep up the supply of food and drink, but the sensations of the alimentary canal, after a long fast, are of a nature to stimulate all the energy of our voluntary powers for our deliverance from such misery. The appetite of *Sex* is the impulse to procreate and continue the species. It grows out of certain products (containing the procreative germs), which are periodically formed within the system, producing a feeling of oppression until they are either discharged or absorbed, there being a certain intense pleasure in bringing together the male and female constituents for the ends of reproduction. The *routine* of life leads to a craving very much of the character of those natural appetites. We are said also to have *artificial* cravings, through our habituating ourselves to indulgences which the system comes at last to be dependent on—as for alcohol, tobacco, tea, coffee, &c. All the appetites are liable to be diseased and perverted, so as to give false indications; and hence the need of experience and science, and a higher exercise of will for the regulation of our life.

THE INSTINCTS.

Instinct is defined by being opposed to acquisition, education, or experience. We might express it as the *untaught* ability to perform actions of all kinds, and more especially such as are necessary or useful to the animal. In it, a living being possesses at the moment of birth powers of acting of the same nature as those subsequently conferred by experience and education. When a newly dropped calf stands up, walks, and sucks the udder of the cow, we call the actions instinctive.

In all the three regions of mind, Emotion, Volition, and Intellect, there is, of necessity, a certain primordial structure, the foundation of all that a human being ever becomes. These will fall to be discussed under their respective divisions. At present, it is convenient to notice certain arrangements that do not come wholly within the sphere of consciousness, but still are indispensable preliminaries to the operations of the mind.

The *Reflex Actions*.—These are certain active functions, sustained by nervous power, but neither conscious nor voluntary. They are also styled automatic. They are: 1. Those connected with Digestion—namely, Deglutition, and the propulsion of the food along the entire length of the alimentary canal. This is operated by muscles, under the stimulus of nerve-centres; but there is no feeling attending it, neither can we control it by our will. 2. Those connected with Respiration, including the movements of the lungs in Respiration, Coughing, and Sneezing. 3. The Winking of the Eyes. 4. The permanent contraction of the Muscles. While some of these are devoid of consciousness and will, some are conscious, but still involuntary, as coughing and sneezing.

Of the Primitive Combined Movements.—There are certain cases of concurring or associated movements, wherein the associating link must be sought in the original conformation of the nerves and nerve-centres. The movements of the two eyes are an example; it is by no process of education that the eyes always go together. Again, there are instances of regular sequences of movement, as in the successive strokes of the heart's action, the alternating movements of breathing, the contractions of the pharynx, gullet, and intestines for propelling the food in its course through the system. There is a pre-established connection between the consecutive acts in these various functions, such that when one movement is completed, this brings on the next, and so on.

The *locomotive rhythm* involves arrangements for combined movements, and there is good reason for believing those to be in great measure instinctive. In the inferior quadrupeds, there can be no doubt on the matter; seeing that some of them can walk in the first hour of birth. The instinctive tendency is much less developed in man, but still exists.

The *associated* or simultaneous movements are best represented by the two eyes; but in other parts there is a disposition to simultaneous action of the corresponding parts of the two sides of the body.

There is a primitive tendency to *harmony of state* throughout the muscular system. Movements in the legs are very apt to engender movements in the arms; the fixing of the gaze arrests the whole body. As regards the pace of movement, the instinct is very decided. Quick movements in one part inflame all other parts, unless especially resisted.

The expression of Emotion brings to light a whole class of primitive movements, which we shall advert to in connection with that subject. There is also in Volition certain tendencies of an instinctive kind from which our voluntary power takes its commencement. The subject of Instinct in the lower animals cannot be entered on in this short treatise.

THE INTELLECT.

This is the thinking portion of the mind. The various faculties known under such names as Memory, Reason, Abstraction, Judgment, Imagination, &c. are modes or varieties of Intellect.

Intellect may work in different degrees of combination with the remaining functions of the mind. Science is the best example of its pure manifestation. When blended with Emotion, the most interesting product is Fine Art; as the handmaid of Volition, directed to practical ends, it yields

the higher combinations of Industry and Business.

The persistence and recovery, by purely mental influence, of the various feelings and sensations, being the most essential peculiarity of the thinking portion of the mind, the exposition necessarily turns upon the laws that regulate that persistence and recoverability. These are termed Laws of Mental Association, Suggestion, or Reproduction; and the first explicit statement of any of them is due to Aristotle. We shall treat them as four in number—two being simple and fundamental, and two complex.

LAW OF CONTIGUITY.

This associating principle is the basis of Memory, Habit, and the Acquired powers in general. We might also name it the law of Adhesion, Mental Adhesiveness, or Acquisition. The statement of it is as follows:

Actions, Sensations, and States of Feeling, occurring together, or in close succession, tend to grow together, or cohere in such a way that when any one of them is afterwards presented to the mind, the others are apt to be brought up in idea.

In presenting a series of examples of the working of this law, we commence with Actions, or muscular activity, including movements, attitudes, and efforts of resistance. We have a certain stock of movements to begin with, and these are rendered easy by repetition, and linked together into successions, which come at last to be so firmly connected that the first of the series infallibly brings on all the rest. The power of walking is based upon an original tendency to alternate the limbs; but there must be incorporated with this a number of actions for maintaining the balance, especially in the human subject, and this incorporation has to be groped upon by trials, and finally effected by the adhesiveness of system. We require, along with the movements of the limbs, to execute coinciding movements of the head, arms, and trunk, in order that the body may never depart from a balanced posture; which remoter movements become at last so fused with the main action as to be inseparable from it. This is an example of the agglutination of coinciding acts. The fixing of successive acts is exemplified in the child learning to feed itself, and is repeated in the innumerable combinations of handicraft processes of every description.

The Feelings of Movement may likewise be associated into an ideal train, through the operation of the same plastic property. Whatever mechanical action we can execute, we can think of, or go over the steps mentally, without the actual performance; and this is the idea of the act. Thus, in reading to one's self, the vocal pronunciation is suppressed to something even less than a whisper, a mere ideal or mental operation; but the steps of this come at last to cohere, the same as what has been repeatedly spoken aloud.

The Sensations of the Senses cohere into aggregate or complex wholes by contiguous association. But in the first place there is an effect produced upon single sensations by repetition—namely, that their ideal persistence comes to be rendered more perfect. Thus, having smelt a rose a thousand times, we are more able to retain the idea of the smell after the original is gone. When two or more sensations, whether of the same sense or of different senses, have been often experienced together, a mental aggregate is formed such that the presence of one can bring up all the rest. A blind man discriminates objects, and knows his whereabouts by Touch; and in his mind numerous touches are joined together in successions; and when he encounters the first of a series, all the rest are recalled to his mind by anticipation. Seizing the handle of a certain door, he knows what will be the next touch that he is to encounter, and so on. Successions of sounds make great part of our education in language. The aggregation of sensations of sight is the groundwork of our recollection of the whole outer world as revealed to the eye.

The association of Movements with sensations includes the acting under direction, guidance, or control. We connect language or signals with our actions, and fall into the movement the moment that the ear or eye is touched with the indicating impression. Any taste, smell, touch, sound, or sight may have an action associated with it, which shall succeed with certainty to the occurrence of the sensation. The sensations of one sense may be linked with those of any other. The sight of objects is connected in the mind with their touch, as rough or smooth, hot or cold, and with their sound on being struck. The appearance of every one of our acquaintances is suggested by the sound of their voice. The connecting of names with things is the mental union of sounds with appearances, &c.

It is by the same mental process that we Localise our own Sensations, and form a conception of our corporeal outline. Originally, the child can know no difference between a prick on the leg and one on the arm, or between the exertion of the two hands; but the use of the other senses shews that there is a difference, and we connect the special pinch or movement with our sight of the locality affected.

Our various Emotions come into alliance with objects as pictured by the senses, and these have, by this means, the power of recalling past feelings whose real occasion does not exist. The sight of food will provoke hunger, which would otherwise be unfelt. Love is associated with things that are not its proper stimulant, but which have been often present to the mind in moments of warm emotion; as with the objects and scenes of one's early years. In like manner, we acquire artificial hatreds and terrors. Things that are the instruments of pleasure come to inspire all the attachment we feel towards the end, as in the remarkable case of the love of money.

The Objects of Nature, as realised by the mind, are aggregates of sensible qualities and feelings joined by the force of contiguity. An orange has for its idea a compound of taste, smell, touch, sight; and the frequent experience of all these effects in conjunction, binds together the several impressions into one enduring whole, which we call our knowledge of the thing. If the distinct sensations could not be joined in this way, we should never have any recognition of things as possessing many properties, nor could we, from the sight alone, or smell alone, realise all the others. Everything that comes within the sphere

of our knowledge has been constituted into an idea, image, recollection, or item of knowledge, by this adhesive operation taking place between the concurring impressions.

The things about us that maintain fixed places and relations, become connected in idea as they are in reality, and the mind thus takes on a phantasmagoric representation of our habitual environment. The house we live in, with its furniture and fittings, the street, town, or rural scene that we encounter daily, by their incessant iteration, cohere into abiding recollections, and any one part easily brings all the rest into view. These familiar haunts exemplify the highest degree of pictorial adhesion that we can ever attain to, being impressed by countless repetitions and strong natural interest. We likewise associate a number of human beings with their abodes, dresses, avocations, and all other constant accompaniments.

The Successions of nature make a capital part of our knowledge, and are associated in the mind through their frequent recurrence. Some successions run in a cycle, as the seasons; others go through a process of evolution or development, as the history of a living being; a third class, of great interest, includes Cause and Effect. In proportion as we repeat the observation of those various sequences, they become impressed on our recollection, and we are enabled from the appearance of one of the steps to anticipate what is to follow.

All our mental acquisitions whatsoever, whether mechanical or intellectual, Languages, Sciences, professional aptitude of every kind, proceed upon this cohesive force of the mind, and are more or less developed according to the degree or strength of it in the individual mind. There is a natural force of adhesiveness, specific to each constitution, and distinguishing one person from another. Next to original endowment, the grand requisite is repetition, or continuance of the impressions. It is possible to make up for natural weakness by iteration, as in the case of children who are slow at their lessons. An important favouring circumstance is the interest felt in the subject. By this, the attention is kept directed upon the exercise, and the nervous energy is thus concentrated, so as to build up the requisite adhesion with great rapidity. Distraction or pre-occupation effectually checks our progress in any attempt; the motions may be made, but for want of a strong nervous current, the coherence is feeble.

LAW OF SIMILARITY.

This law is stated thus:

PRESENT *Actions, Sensations, Thoughts, or Emotions, tend to revive their* LIKE *among* PREVIOUS *Impressions.*

Contiguity joins together things that are naturally connected, or that are, by any circumstance, presented to the mind at the same time, as when we associate heat with light, or a falling body with a concussion. But in addition to this link of reproductive connection, we find that one thing will, by virtue of similarity, recall another separated from it in time; as when on visiting a place we are reminded of our previous visits to the same neighbourhood.

Many of the most important operations of the human intellect imply the operation of this principle of like recalling like through remoteness of time and place, and amid alteration of circumstances and accompaniments. Not only must an impression of to-day bring up the same of yesterday, and add its confirming force to that in the process of acquisition, but we must be able to recover likeness imbedded in unlikeness. The similarity in things that are really alike may be clouded to the mind by two causes—Faintness, and Diversity in the accompaniments. There are cases where a new impression is too feeble to strike into the old-established track of the same impression and make it alive again, as when we are unable to identify the taste of a very weak solution, or to make out an object in twilight dimness. The most numerous and interesting cases come under the other head of Diversity, or mingled likeness and unlikeness—as when we meet an old acquaintance in a new dress or in an unexpected place, or trace similarity of institutions in nations widely removed.

In the numerous and various trains of articulate action constituting our education in Language, there are many instances of likeness recurring in the midst of unlikeness, leading to the revival of the past by the present. We are constantly liable to be reminded of past sayings of our own and of other people by hitting on catch-words or identical phrases, at a time when perhaps our thoughts are running in some quite different channel. The single word 'frenzy,' uttered with emphasis, will recall, in a mind previously impressed with the passage, 'The poet's eye in a fine frenzy rolling;' the principal epithet being enough to reinstate the entire connected train. By the suggestion of common words, we can thus leap from one passage to another, by remote fetches, through an endless succession of recollections. The character of the mind will determine the prevailing character of the revived sayings: in one, they will be poetical and ornate; in another, prose melody will have the preference; in a third, epigram and wit; in a fourth, matters of information and science.

In the Sensations, likeness in diversity is quite a usual case. The same state of organic discomfort may arise in totally different circumstances, and yet the mind, through the similarity of sensation, pass from the one present to all the previous experiences. An identical taste is discovered through a wide range of substances different in other respects, as in the case of sugary sweetness, or the vinous flavour. By recognising the same sensation in many different bodies, we form these into a class, and describe them by a common name; this is the process termed 'generalisation,' and it proceeds entirely on the discovery of likeness in the midst of difference. So in smell, we discern a common effect, such as 'fragrance,' or 'pungency,' through many connections, and the things thus discovered to agree are classed together, and described as like, notwithstanding the points of unlikeness. The ear discerns sameness of accent in different voices, or the composition of a particular master through various pieces of music. We can identify colours in spite of difference of shade, and so be struck with a common form in many varieties of colour, size, and situation. Common features are discovered in landscapes which are far from being identical throughout.

In those aggregate notions above referred to, where one object strikes several senses, besides having associated properties not always present to the view, there is great room for identity in the midst of difference. An orange is identified with other round bodies having all else different; with soft bodies, with sweet bodies, with things that putrefy, &c. In all these identities, which form our popular classifications, we must encounter a multitude of points of dissimilarity. But the discording elements have a tendency to prevent the likeness from being seized; they obstruct the revival of the past by the force of the present, and then it is that we note the superiority of some intellects to others in the endowment of recalling similars surrounded with diverse accompaniments.

The process of Reasoning demands the identifying operation at every stage. Whether it be to constitute a general principle, by what is called Induction, as when we assemble the instances of rivers depositing silt, and form a general proposition, 'all rivers leave mud-deposits;' or to apply a principle to a new case, which is Deduction, as when we say of some newly discovered river, that it is sure to contain bars, deltas, or other alluvial deposits—we need the help of the reviving force of similarity. The instances that are to form the inductive generalisation have been encountered at different periods, and lie scattered over our mental history; and some power is requisite to resuscitate the whole of them into one array, for the purpose of comparing them to discover the points of agreement or concurrence. So, in deduction, we must have the same kind of attraction of like for like when we recover from our stock of general principles the one suitable to the case in hand. In reasoning from analogy, the application of the same associating force is still more apparent.

The identification of lightning with the spark of an electrical machine, is another example of the same uncommon force of intellectual perception.

In the able administration of private business and public affairs, we shall be able to detect the workings of the identifying intellect. When a present emergency is exactly like a previous one, it recalls that one without difficulty, and is treated as that was treated; when it corresponds exactly to no previous one, a parallel must be sought from some remote quarter where the common-place mind would never bring about a stroke of recovery. When the difficulty of carrying a pipe of water across the bottom of the Clyde was presented to James Watt, he recalled to his view the jointed back of the lobster as a structure resembling the one sought. Such fetches of identification among things so remote from one another, and so different in everything else, exemplify what is termed 'genius,' 'originality,' 'inventiveness,' which attributes turn in a very great degree upon the power we are now considering.

In Literature, corresponding examples might be produced in the greatest abundance. All the similes, metaphors, analogies, illustrative comparisons, which give both clearness and force to composition, are struck out by the might of similarity. The greatest genius is he that can bring together from great remoteness these similitudes. Shakspeare has surpassed all poets in this respect, and the prose of Lord Bacon is full of the same class of identifications. In the other Fine Arts, the same power comes into play to give originality to the artist's creations.

While contiguity leads to routine, and to the arranging of things as they happen to be in nature by mere juxtaposition; similarity breaks through juxtaposition, and brings together like objects from all quarters. It is by far the grandest manifestation of the human mind; it enables us to rise to the unity, simplicity, and comprehensiveness of plan that regulates the complicacy of the world's arrangements and movements, and lessens to an unlimited degree the toil attendant on man's situation in the universe.

COMPOUND ASSOCIATION.

Cases occur wherein a plurality of bonds of connection concur in reviving some previous thought or mental state. Associations that are separately too weak to operate the revival of a past idea may succeed by acting together; and there is thus opened up to our view a means of aiding our recollection or invention when the one thread in hand is too feeble to effect a desired recall.

The combinations may be made up of contiguities alone, of similarities alone, or of a mixture of the two. We could also bring under this head the suggesting power of a present emotion or volition; for it is never an unimportant circumstance that a desired recollection gratifies a favourite taste, or is strongly willed for some end.

The general law is as follows:

Past Actions, Sensations, Thoughts, or Emotions are recalled more easily when associated either through contiguity or similarity, with more than one present object or impression.

We may have a combination of contiguities under many circumstances. When we have mislaid anything, and cannot remember where we put it, the link of connection between the object and the place is shewn to be too feeble; whereupon we run over other circumstances till some second associating bond can be hit upon. We think of what we were doing at the time, and of all other connected things, in order that the addition of these may so corroborate the weakness of the main association as to make up the full power of revival. The recollection of names has to be often eked out in this way. When we have forgotten the name of a person or an object, we are under the necessity of referring back to the situation and circumstances where we last heard it, to see if any other bond of connection will spring up. Very often we are unable at the time to recover the lost sound by any means; but afterwards an auxiliary circumstance crosses the view, and the recollection strikes us of its own accord.

The case of mixed contiguity and similarity is a common one. If any one in describing a storm bring in the phrase 'a war of elements,' the metaphor has been brought to mind partly by similitude, but partly also by contiguity, seeing that the comparison has already been used in conjunction with a storm. The person that first used the phrase came upon it by similarity; he that used it next, had contiguity to assist him; and after frequent usage, this last bond might come to be so well confirmed, that the attraction of similarity is at last superseded. In this way, many things that were originally strokes of genius, end in being

efforts of mere adhesive recollection; while, for a time previous to this final consummation, a mixed effort of the two suggesting forces is displayed. Hence Dr Johnson's remark on the Scotch poet Ogilvie, that his poem contained what was once imagination, but in him had come to be memory.

The aiding of recollection or revival by a plurality of bonds implies also the opposite effect, or what may be termed Obstructive Association. We are often prevented from remembering a thing by being possessed of some different thing that will not let what we want appear. This is exemplified on a large scale in the characteristics of individual minds. When there are two opposite modes of viewing the same class of objects, as, for example, the poetical and the practical points of view, an intellect strongly occupied with the one is by that very circumstance prevented from easily entertaining the other.

The associating principle of Contrast or Contrariety, enumerated by Aristotle, along with Similarity and Co-adjacency, as a simple law of mental reproduction, is reducible to Contiguity aided by favouring circumstances. All the commoner contrasts have become so habitually coupled in phraseology, that it is only an effort of verbal recollection for the most part to pass from the one to the other; as in such things as black and white, high and low, up and down, old and young, life and death. It is, moreover, a tendency of the mind to pass from one strongly marked situation to a contrasting one, as when surveying a state of glittering prosperity, we are led to think of the downfall that so often follows high fortunes.

Constructive Association.

By means of association, the mind has the power to form combinations or aggregates different from any that have been presented to it in the course of experience.

In the exposition of the previous laws, we have had in view the literal resuscitation, revival, or re-instatement, of former sensations, images, emotions, and trains of thought. No special reference has been made to the operations known by such names as Imagination, Creation, Constructiveness, Origination; under which we are supposed to put together new forms, or to construct images, conceptions, pictures, and modes of working such as we have never before had any experience of. No doubt, the force of similarity, by bringing an idea into a new connection, leads to a new and instructive combination of ideas, as when Franklin identified the thunder-storm with a discharge of electricity. But there are discoveries different from this, seeming to be nothing short of absolute creations, as, for example, the whole science of Mathematics. So a Gothic cathedral, or the *Paradise Lost*, is far from a repetition of experienced objects, even with all the power of extension that the highest reach of the identifying faculty can impart.

To take the case of constructing the pictorial images of sight. Light and shade, colour, size, or dimensions, shape, distance, position, are the constituents that concur in the complex perceptions of sight; and it is possible to vary any one picture by putting out and taking in elements at will. I see or remember a line of houses: I can imagine it prolonged to double or triple the length; or I can transform the whole line by the addition of a story to the height. Or to take Hobbes's example of constructiveness: I have the idea of a mountain and the idea of gold, and by superimposing the one idea upon the other, I can evoke the image of a mountain of gold. The facility of fusing two different notions into a third, depends on the perfect and easy command that the mind has of the separate ideas, owing to their having a good hold of the memory or conception. The combination takes place of its own accord, if the elements are once properly brought together, and kept in contact for a sufficient length of time. It is one of the attributes of the Will to be able to hold together such conceptions as will form a whole, and when the elements are sufficiently vivid to keep steadily in the view for a little time, the combination emerges spontaneously.

The conditions of constructiveness, therefore, are, first, a volition or determination to form some new product; and, secondly, the presence in the mind of the elements necessary for the purpose. The main difficulty usually is the absence of one or more of these constituting elements, which leads to devices for recalling them to view by the help of the associating forces. A mechanical inventor like James Watt has usually a vast deal of groping and trial before he get the parts that will fit together in a machine; the scientific man has often to wait long for the fitting suggestions that will construct a great constructive generalisation, such as was the Law of Refraction, discovered by Snell. The result depends partly on the resources of the mind from its past experience and education, and partly on the energy of the forces of intellectual recovery already described.

Imagination properly means such constructions as those of the Fine Arts, where some emotion rules the mind in forming the creation. Any one carried away by feeling, as by hatred and revenge, is apt to construct harmonising pictures of the object, the suggesting element being the emotion. This is the difference, frequently overlooked, between artistic Imagination and Originality or invention in science and practice. The artist has in his view before all other things to produce a certain effect of the beautiful, grand, picturesque, &c.; and the images that rise up to his view must have this peculiarity, otherwise he has to reject them. He may not despise or set aside truth, or practical utility; but these alone would not constitute what is demanded from his art. (For the full illustration of the Laws of Association, see Bain on the *Senses and the Intellect*.)

THE EMOTIONS.

The Sensations have been already passed in review, thus anticipating one large and well-marked class of our emotions. In completing the detail in this division, we have also to advert more particularly to the properties of Emotion, Feeling or Consciousness, considered as one of three departments of the mind.

OF EMOTION IN GENERAL.

Emotion, or consciousness, is a fact distinct and peculiar; we cannot resolve it into any other more general fact or property. Every being that

has a mind has experience of it, as a part of the mental nature. Everything we term pleasure or pain comes under this head.

1. It being a well-known circumstance that our feelings, when at all strong, manifest themselves in outward demonstrations and physical effects, which we sometimes call their expression, and at other times speak of as 'excitement,' 'being moved,' &c. it is a proper subject of inquiry to ascertain precisely what is the connection of our various states of feeling with the bodily members and processes.

On examination, it would appear to be a fundamental proposition respecting emotion generally, that the inward state is associated with a diffusive action over the system, through the medium of the nerves and brain. In other words, the physical fact that accompanies and supports the mental fact, without making or constituting that fact, is an agitation of all those bodily members more immediately allied with the brain by nervous communications. A sharp pain, as the prick of an instrument, or the stroke of a whip, brings out this diffusive action in the most prominent form. Under such an infliction, an animal or a human being is moved and convulsed from head to foot; and these movements are produced invariably along with the conscious state. If they fail to appear in any instance, there is either some torpor of the system, or an extraordinary effort of suppression by the will. The organs first affected under excitement are the moving members. Some of these are more readily agitated than others; for example, the features of the face and the voice; for which reason these constitute the principal medium of the expression of feeling. An emotion that may not have sufficient strength to make us jump, fling out the arms, or erect the body, is yet able to produce a smile or a frown, a cry or a groan. But besides the agitation of the muscular framework, an important series of effects occurs in the organic functions of the body, the respiration, circulation, digestion, &c. One of the secretions, the lachrymal, is specifically stimulated under emotion, as much so as the movements of the features.

According to this view, every variety of consciousness ought to have a special form of diffusive manifestation. It is not every state, however, that carries this diffusive action far enough to be ostensible as a characteristic outward display. Still the broad differences among our feelings are made apparent in this way. Take, for instance, the great and fundamental distinction of pleasure and pain. We find, if we refer to the more expressive parts of the frame, the features, that there are certain muscles moved under the one state, and a different class moved under the other. In the gay and pleasing emotions, the face is opened out laterally by the action of the muscles that draw the parts away from the middle line. The principal muscles engaged in this action are those named by anatomists the 'buccinator' and 'zygomatic' for the mouth, and the 'occipito-frontalis' for the eyebrows. In painful states, the features are drawn together, or towards the middle line, by the action of the corrugator of the eyebrows, and the orbicular muscle surrounding the mouth. The effect on the mouth is still further carried out by two muscles that are moved under painful feelings, and not otherwise, the one depressing the angle of the mouth, and the other elevating the upper lip. Another exceedingly characteristic muscle, also concerned in modes of pain, elevates both the wing of the nose and the upper lip; we may note this action under an ill smell or any sort of disgust. Very often it is the relaxation of a set of muscles, more than their excitement, that gives the expression; of this, smiling and laughter furnish the most opposite examples. The relaxation of the muscular ring of the mouth allows the retracting muscles to preponderate, without any unusual exertion being thrown into those muscles. In great pain, a violent tension of the muscles generally is more characteristic than the special movements that are prompted. The more depressing emotions, as Terror and Grief, tell upon the system by depriving the members of their wonted energy, and by weakening the organic functions through the same loss of nervous power.

2. Emotion is the happiness or misery of the sentient being. The inward life of all creatures endowed with mind is made up of successive modes or varieties of joy and suffering, intermingled with actions and thoughts which in themselves have often little or no consciousness. In perfect sleep, there is a suspension of all the manifestations of mind. In the waking state, the three great elements of mind may exist in every variety of mixture and degree. The opposite of emotion is apathy or indifference.

The susceptibility to pleasure is a property of the mental system, and there are specific ways of touching the chords of delight. There is a great agreement as to the influences that can arouse the pleasurable diffusion; healthy exercise, food, sweet tastes and odours, light, &c. are universal agents in giving enjoyment. The system of each individual may be made to vibrate to many various modes and degrees of delight. In some constitutions, pleasurable emotion flows almost of its own accord; healthy sustenance and the most ordinary stimulants being all that is wanted. These are minds adapted for pleasure and for simplicity of life. The freshness of early years approaches to this state of things; and it is exemplified in some of the races of mankind inhabiting genial climates.

3. Emotion, by acting on the will, determines the conduct. Our voluntary activity has reference to our various emotional sensibilities. The avoidance of pain, present or imminent, or the sustaining or procuring of states of pleasure, with the habits of acting that have grown out of these impulses, constitute the sum and substance of human exertion. The habitual conduct comes in as a sure criterion of the prevailing modes of feeling. Every emotion has this property among others, that it determines a certain measure of active pursuit. A man works for his sustenance, his tastes, the objects of his affection, or whatever he feels with sufficient force to move his active endeavours.

4. The properties of Emotion in general are not exhausted if we leave out the various important relations to the Intellect. All states of feeling have a certain tendency to persist when the original stimulus is withdrawn, and this persisting form constitutes the idea of the state, which answers many of the ends of the full impression. Thus it is that a recollected feeling will stimulate the will, as when a man labours to appease the

hunger of the morrow. The state of desire starts from a recollected feeling (or from an imaginary state constructed out of recollections); and those that have little power of persisting as ideas after the fact, fail to influence the conduct or voluntary activity. One may enjoy a musical performance while hearing it, but from the impression not remaining in any force, the desire for the repetition of the pleasure is but feeble.

The Emotions have an important influence on the operations of the intellect itself in its own sphere, by determining the attention to one class of things in preference to others, and thereby giving a turn to our acquisitions and to our prevailing thoughts and recollections. Any object that rouses a strong feeling becomes impressed on the mind through that circumstance; moreover, our trains of revived thought are favoured by the prevailing tone of emotion. When we are under a fit of anger towards some one, all that occurs to our view respecting that person is principally of a disparaging kind.

This last remark bears upon an exceedingly important attribute of Emotion—namely, the power of swaying Belief, or shaping our convictions. This is partly founded on the tendency of our feelings to rule our conduct, and partly on the further tendency now mentioned to dictate the things that we shall attend to, and the thoughts that shall come forward to the mind. When we are very much in love with some practice, we follow it out at all hazards, not only making light of the opposing considerations when presented to our view, but becoming blind to their very existence; such is the power of a strong feeling to paralyse the forces of association in the direction whence opposition to it would be likely to spring up. The mind of a dreamer is habitually barred up to the corresponding realities of life.

THE SPECIAL EMOTIONS.

Our limits compel us to indicate very briefly the principal of these.

Freedom and Restraint.

There is a certain freedom of the play of every emotion that constitutes, as it were, the fair and proper development due to it, and representing the average character of the state. In describing the various species of emotions, we are obliged to assume that the course of their diffusion is on the one hand free, or unobstructed; and on the other, devoid of any excessive vehemence of manifestation. But it is not improper at this early stage to advert to the cases of defect or excess in diffusive freedom, and to the modes of feeling engendered in consequence.

We shall commence with the case of checked outbursts. It often occurs to us to have the expression of our feelings forcibly restrained by some powerful incentive bearing upon the will, and the resulting state is usually a very painful one. In early life especially, great suffering is often inflicted by this kind of compulsion. The nature of the pain thus arising can be tolerably well described, when we generalise it to the whole extent of its occurrence. For, it is a state common to the outburst stimulated by emotion, to the gust of spontaneous activity, and to voluntary impulses in general. The child restrained from laughter or tears under strong excitement, from play and sport when the organs are 'fresh,' and from the pursuit of some desired object, feels a species of pain common to all the three situations. A rush of nervous power has been made to course towards the active members, while from another quarter a second rush still more powerful has gone towards the same parts. A well-marked kind of painful feeling is begotten by the encounter; while in human life the occasion is repeated times without number.

The terms applicable to the delineation of this mental condition are such as the following: An acute shock of pain is felt all through the system. We are made the arena of a severe conflict, and seem to be torn asunder by the opposing forces. On any occasion when the powers at work are both great and nearly balanced, the state is one of poignant distress, rising to agony. For the moment, the suffering is insupportably acute, but as the weaker force is made to give way, the pain diminishes, and the struggle is soon over. Notwithstanding the bitterness of the actual contest, there is this in common to it with acute physical pains, generally that little shadow or gloom remains behind, so that the whole evil is summed up within the time that the conflict lasted.

To allude next to the opposite case of unusual freedom and scope being given to the outgoings of the emotional wave. It is almost needless to say how grateful and exhilarating is the situation of free and full abandonment to all the impulses that course through the system. This, indeed, is the only situation where perfect enjoyment is at all possible, inasmuch as every variety of restraint brings in the element of pain. The kind of emotion that possesses the mind may have every possible variety of character, but the one circumstance of a liberal vent being accorded to it, gives a buoyant and animated tone to the consciousness. This is very decisively proved by the fact, that in painful emotions an unrestrained expression affords a large measure of relief. The pleasurable influence of the state of uncontrolled diffusion is the counterpart of the pain of restraint, and is for the time being a strong and massive exhilaration.

Unrestrained impulses in general, as signified by the stirring name of liberty, have always taken a vigorous hold of the human imagination. It may perhaps be a sufficient account of this fact, that the condition of restraint, in some shape or other, is so constantly present as to keep up a state of longing for unbounded freedom.

Wonder.

This is an effect producible by all species of external objects through something unusual in the degree or manner of their appearance. In the early gaze of infancy upon the outer world, everything would seem to have that influence which, in after-life, arises only from what is novel, rare, or surpassing. New scenes, new events, new acquisitions in knowledge, new discoveries, impart a racy stimulus to the mind, which constitutes the state of wonder. A very marked external expression accompanies this state. The feeling itself may be described as a pleasurable excitement, strong and coarse, rather than delicate

and refined. In rude ages, it is very much drawn upon as a source of excitement, and at all times it enters as an element of human pleasure. The wonder-worker, conjurer, or showman, is found in all communities. The literature of amusement deals largely in the marvellous. In matters of truth and falsehood, wonder is one of the perverting emotions.

Tender Emotion.

This is the feeling lying at the root of the warm affections and the benevolent sentiments of our nature. Generally speaking, living beings are the objects of it, but inanimate things may also call it forth.

The sensations that incline to tenderness are, first, the gentle or soft stimulants, such as soft touches, gentle sounds, slow movements, temperate warmth, mild sunshine. In the next place, very intense pleasures in general are apt to awaken the excitement. Under the agitation of great joy, outbursts of tenderness frequently occur. We may observe in any great rejoicing the displays of profuse benevolence and affection. A third well-known stimulant of this state is the very opposite of the foregoing—namely, pain. This is the paradox of our constitution. The explanation is, that under pain there is a violent diffused stimulus over all the organs concerned in the expression of feeling, affecting both the movements and the secretions; and the new excitement reflected from all these parts is found to mitigate the original pain. Certain special sensations operate strongly in touching the tender chords. The high and mellow note occurring in the wail of grief, and the transparent film of lustrous objects, are notable examples. Anything delicate, slender, or fragile has a similar power.

The expression of tenderness is characteristic. The lachrymal secretion and the vocal wail co-operate in the extreme outburst. In the milder modes, the features express a tranquil pleasure.

The feeling is essentially pleasurable, and taken in all its developments, makes up a considerable fraction of the sum of human happiness. Being allied to moods of inaction and repose, it comes in happily when the system is unfit for violent excitements. The possibility of sustaining it over a very long time, and in the deepest prostration of the system, is perhaps more remarkable than the intensity of it at any one moment, although there are occasions when it is worked up to the pitch of the acutest delight.

In detailing the various species of this feeling, we ought not to omit the tender associations formed in our minds with many inanimate things, as with one's birthplace, dwelling, or other object that has long been mixed up with one's pleasures and cares. As regards living beings, the Family is the foremost sphere of the emotion. Friendship, Compassion, Protection, Kindness, and Benevolent sentiment in general, are well-known varieties, having regard to the world generally. The peculiar pain inflicted on the susceptibility is termed Sorrow.

The emotions of Admiration and Esteem are social feelings somewhat akin to tenderness, involving also a tincture of the wonderful.

Anger.

This is the foundation of the malevolent aspect of our nature, as the foregoing is of benevolence. Anger is prompted by some mode of pain inflicted upon us, and more especially acute, sudden, or unexpected pains. Intentional injury is what rouses it to the most extreme degree. It is a very disturbing passion to the physical system, although the precise nature of the derangement cannot be defined. The character of the feeling itself is marked by this peculiar feature—namely, the infliction of harm upon the author of the pain that provokes it. The irritation of the frame under resentment can be soothed in one of two ways—the voluntary self-humiliation of the wrong-doer, or a compulsory humiliation inflicted upon him. It is a fact of our constitution not resolvable into anything more general, that the mind suffering from a shock of injury caused by another person, can be more or less satisfied, appeased, or even delighted by some act of retaliation or retribution causing that person to suffer. Besides this principal character of the passion of anger, we remark in it a remarkable tendency to stimulate the active energies, as we see in every species of combat between opposing powers.

Among the recognised species of irascible feeling we include Deliberate, as distinguished from Sudden anger, Revenge, Hatred, Malice, and Legal or Punitive Resentment. One form is dignified by the title 'righteous indignation;' and there is a poetic species termed 'noble rage.' The pleasure of Malevolence has been sometimes called in question, and it has been contended that vindictiveness and revenge give nothing but pain to the individual actuated by them. This, however, is not in accordance with the actual experience of life. No person would pursue the suggestions of anger, if the consequences were not in some way calculated to appease and gratify the mind lacerated by injury.

Fear.

This emotion may be described as a tremulous excitement originating in pain, apprehension, uncertainty, or strangeness; causing a feeling of intense misery, while wasting the energies and subduing the spirit. Terror and Dread are other names for the general passion. Anxiety, Suspicion, Panic, Awe, Horror, and Despair are among the species.

The physical characters of this state are strongly marked, and in some degree definable. The course of the nervous currents is diverted from some channels, and thrown with excessive violence into others. The functions of organic life, digestion, circulation, and the various secretions, are weakened, while the expression of the features, the acuteness of the senses, and the activity of the intellect, are unduly quickened. The feeling itself is an extremely virulent kind of misery. This is not the only evil produced. The active energies are stimulated in undue proportion, so as to weaken the general tone of the mind; hence the subduing efficacy of the passion. Pain alone has very little influence compared with that arising out of the perturbation of fear. The aptitude for resisting this tremulous convulsion of the mental and bodily system is what we mean by Courage.

The religious emotion is well characterised as made up of 'Wonder, Love, and Awe.' The grovelling superstitions that have enslaved mankind have had the element of Fear in high predominance.

Self-esteem.

The object of this feeling is some quality or excellence beheld in one's self such as would draw forth love or esteem towards a fellow-being having the like properties. Seemingly, this feeling is an aspect of the tender emotion, directed upon one's own self instead of some other person. It is an exceedingly agreeable state of feeling, and, like tender affection, can be sustained for long tracts of time without satiety or exhaustion. Vanity, Conceit, Pride, are distinguishable varieties of the feeling.

The Love of Approbation is an extension of the pleasure of our own esteem by the addition that the sympathy of others causes to all our feelings. Praise, Admiration, Flattery, Adulation, Applause, Reputation, Fame, signify the different modes of heightening a man's pleasurable sentiments towards himself, through the echo of his fellow-beings.

Sentiment of Power.

The activity of our nature is the source of various emotions, in addition to the immediate ends that we gain by it. The feeling of Power is an example. A man tills his fields for the sake of maintaining himself and his dependents; but if it so happen that his crops far exceed his neighbour's, he enjoys a new pleasure from the comparison. This sentiment is gratified by everything that gives a man more than usual sway or control over nature or living beings. Superior bodily strength, every kind of professional dexterity and skill, the command of machinery, wealth which enables us to buy services, intellectual attainments, rank and position in the community, enhance this sense of personal agency; hence they are favourite objects of ambitious aspiration.

'In general it may be observed, that, wherever we are led to consider ourselves as the authors of any effect, we feel a sensible pride or exultation in the consciousness of *power*, and the pleasure is in general proportioned to the greatness of the effect compared with the smallness of our exertion.

'What is commonly called the pleasure of activity, is in truth the pleasure of *power*. Mere exercise which produces no sensible effect, is attended with no enjoyment, or a very slight one. The enjoyment, such as it is, is only corporeal.

'The infant, while still on the breast, delights in exerting its little strength on every object it meets with, and is mortified when any accident convinces it of its own imbecility. The pastimes of the boy are, almost without exception, such as to suggest to him the idea of his power. When he throws a stone, or shoots an arrow, he is pleased with being able to produce an effect at a distance from himself; and while he measures with his eye the amplitude or range of his missile weapon, contemplates with satisfaction the extent to which his power has reached. It is on a similar principle that he loves to bring his strength into comparison with that of his fellows, and to enjoy the consciousness of superior prowess. Nor need we search in the *malevolent* dispositions of our nature for any other motive to the apparent acts of cruelty which he sometimes exercises over the inferior animals—the sufferings of the animal, in such cases, either entirely escaping his notice, or being overlooked in that state of pleasurable triumph which the wanton abuse of *power* communicates to a weak and unreflecting judgment. The active sports of the youth captivate his fancy by suggesting similar ideas—of strength of body, of force of mind, of contempt of hardship and danger.

'As we advance in years, and as our animal powers lose their activity and vigour, we gradually aim at extending our influence over others by the superiority of fortune and station, or by the still more flattering superiority of intellectual endowments, by the force of our understanding, by the extent of our information, by the arts of persuasion, or the accomplishments of address. What but the idea of power pleases the orator in managing the reins of an assembled multitude, when he silences the reason of others by superior ingenuity, bends to his purpose their desires and passions, and, without the aid of force, or the splendour of rank, becomes the arbiter of the fate of nations!

'To the same principle we may trace, in part, the pleasure arising from the discovery of general theorems in the sciences. Every such discovery puts us in possession of innumerable particular truths or particular facts, and gives us a ready command of a great stock of knowledge, of which we could not, with equal ease, avail ourselves before. It increases, in a word, our *intellectual power* in a way very analogous to that in which a machine or engine increases the mechanical power of the human body.

'The idea of power is, *partly* at least, the foundation of our attachment to *property*. It is not enough for us to have the *use* of an object. We desire to have it completely at our own disposal, without being responsible to any person whatsoever, for the purposes to which we may choose to turn it. "There is an unspeakable pleasure," says Addison, "in calling anything one's own. A freehold, though it be but in ice and snow, will make the owner pleased in the possession, and stout in the defence of it."

'*Avarice* is a particular modification of the *desire of power*, arising from the various functions of money in a commercial country. Its influence as an active principle is greatly strengthened by habit and association, insomuch that the original desire of power is frequently lost in the acquired propensities to which it gives birth; the possession of money becoming, in process of time, an ultimate object of pursuit, and continuing to stimulate the activity of the mind after it has lost a relish for every other species of exertion.' *

Emotion of Pursuit and Plot-interest.

This is another example of an emotion incidental to our active exertions for gaining our various ends. Not only have we a pleasure in obtaining the thing laboured for, but there is a

* Dugald Stewart *On the Active Powers*, Book I. chap. ii. sect. 4.

peculiar excitement felt while we are on the way, which swells into a very important element of human interest. The gradual nearing of anything that we are in pursuit of, puts our attention on the stretch, and suspends the regards to everything else until the termination is reached. The state of suspense is still more strongly manifested when uncertainty attends the occasion. All our occupations are rendered more interesting from this cause; and many of our amusements, such as field-sports, games, contests, stirring narratives, are largely based on this circumstance.

Emotions of Intellect.

As our active powers generate sentiments peculiar to themselves, so the exercise of our intellectual powers yields varieties of pain and pleasure of a distinct kind. The flash of a new discovery of identification gives a shock of pleasurable surprise, and by simplifying the objects of our consideration, has further the cheering effect of lightening our intellectual labour. The characteristic pain of the Intellect is the pain of inconsistency, which is felt more and more as this region of our nature is highly developed, and makes us dislike unveracity or falsehood.

Emotions of Fine Art.

This is a wide and various group of feelings, principally characterised by being of an unexclusive nature, or such as can be enjoyed without being consumed. Sensual pleasures, wealth and power, please only their possessor: the sunshine, the landscape, a beautiful human form, or a fine poem, can be enjoyed by any number of persons, and derive an elevation of character from the circumstance.

The sensations of the two higher senses, Hearing and Sight, and the simple emotions above recited, enter into fine-art compositions; while there are a few additional sources of interest which we can do little more than name.

Harmony in sounds, in colours, in movements, in forms, and in operations generally, is a peculiar source of Artistic charm. In the peculiar case of *pressure* and *support*, lies the main beauty of Architecture, and much of the gracefulness of living forms. *Symmetry* concurs in the same way. *Fitness* is the beauty of utility. The *Sublime* grows out of manifested power on a great scale. The term *Beauty* is not applicable to any one quality in particular, but to a successful effect of Art from any cause. (See Dugald Stewart's *Essays on the Sublime and Beautiful.*)

The *Ludicrous* grows out of incongruity in the matter of dignity and meanness. It is a rebound from the grave and serious aspect of things to the mean, vulgar, or common, and is the sudden letting down of the system from the effort or tension which serious objects entail, to the *abandon* of ease and looseness. A burst of hilarity is apt to come along with this relief, especially if in any way sudden or unexpected.

The Moral Sense.

This is the sentiment under which we perform our various duties. The origin and character of the feeling is the disputed question of Morals.

The feelings that over-ride our selfishness, and dispose us to act fairly and beneficently to others, are principally the Tender Emotion, which makes our fellows the objects of affection, and Sympathy, or the disposition to make the pains and pleasures of other sentient beings our own, and work for them as for ourselves.

The peculiar character of the Moral Sentiment is a certain sense of authority belonging to what is prescribed as duty, and much difference of opinion prevails as to the mode in which this is generated. Some call it an instinct, others attempt to explain it. One view that may be taken is the following: We are educated under a system of government, first parental, and afterwards social, legal, and political. This gives us our first notions of authority, and of punishment or sanctions, and is with most minds the principal basis of the idea all through life. But we may, in the exercise of our own private judgment, and on considerations purely personal to ourselves, assimilate certain points not commanded with others that are so, and thus transfer the notion of authority to these adopted points. Thus, the law forbids stealing; a high-minded person considers that the inward inclination to appropriate other men's goods is really of the same nature as the act, and in consequence feels an authoritative sentiment urging him to go beyond the law. The original type of authority is still the external; but when moulded into this ideal form, it becomes Conscience, or the sentiment of moral disapprobation felt by the mind itself.

THE WILL, OR VOLITION.

These names express the whole compass of human action in so far as that is governed by ends, purposes, or motives operating on the mind of the individual. The ends of voluntary action are identical with our various emotions, or more strictly with our pains and pleasures. Every species of pain is a motive to acts of avoidance; and every pleasure prompts the will for its increase or continuance. We have, on the one hand, the sentient or susceptible part of the constitution; and on the other, an active machinery lending itself to the suppression of the painful, and the promotion of the agreeable sensations and emotions. It is this active machinery that has to be considered under the present head; and we have to examine the foundations of that connection established between it and our various susceptibilities, leading to the effects now mentioned. It is one thing for an animal to feel hunger and cold, and quite another thing to go through a variety of active operations for procuring food and shelter. The explanation of this link that unites our feelings to our activities is perhaps the most difficult part of mental philosophy. We shall here indicate shortly the precise state of the problem.

Dr Reid has no hesitation in classing the voluntary command of our organs, that is, the sequence of feeling and action implied in all acts of will, among instincts. (See his chapter on Instincts, *Essays on the Active Powers.*) The power of lifting a morsel of food to the mouth is, according to him, an instinctive or pre-established conjunction of the wish and the deed; that is to say, the emotional state of hunger, coupled with the sight

of a piece of bread, is associated through a primitive link of the mental constitution with the several movements of the hand, arm, and mouth, concerned in the act of eating.

This assertion of Dr Reid's may be simply met by appealing to the facts. It is not true that human beings possess at birth any voluntary command of their limbs whatsoever. A babe of two months old cannot use its hands in obedience to its desires. The infant can grasp nothing, hold nothing, can scarcely fix its eyes on anything. Dr Reid might just as easily assert that the movements of a ballet-dancer are instinctive, or that we are born with an already established link of causation in our minds between the wish to paint a landscape and the movements of the painter's arm. If the more perfect command of our voluntary movements implied in every art be an acquisition, so is the less perfect command of these movements that grows upon a child, during the first year of life. At the moment of birth, voluntary action is all but a nonentity.

There is therefore some process of acquirement in the establishing of those links of feeling and action implied in volition; but the acquisition must itself repose upon some fundamental property of our nature that may properly be styled an instinct. There certainly does exist in the depths of our constitution a power whereby our pains and pleasures impel to action of some kind or other; not simply that diffused excitement termed the expression of a feeling, but actions bearing upon the feeling itself are stimulated. But the difficulty is to get the right action brought into play, and in order to the solution of this, it is necessary to assume the following positions:

First, that there is a spontaneous tendency for the various movements called voluntary to begin without reference to any purpose or end, being prompted simply by the discharge of power from the brain. The activity of young animals implies that there is, after refreshment and repose, a gush of active power flowing towards the moving members, and leading to an exuberance of incontinent play of the energies; and various other facts might be cited to shew that action precedes feeling in the order of our development.* A great number of movements are stimulated in the course of this spontaneity that have originally no meaning, but evidently are capable of being brought under control by the aid of some other influence or property.

Secondly, there would seem to be a power of sustaining an action once begun, if that action is found to alleviate a pain or enhance a pleasure. If, therefore, at the moment of some acute pain, there should accidentally occur a spontaneous movement that gives relief, there grows out of this circumstance a prompting to continue that movement; while, on the contrary, a movement aggravating the pain would be checked by a prompting of the opposite kind. An infant lying in bed has the painful sensation of chillness. In the course of a variety of spontaneous movements of arms, legs, and body, there occurs an action that brings the child in contact with the nurse lying beside it; instantly warmth is felt; and this alleviation of the painful feeling becomes immediately the stimulus to sustain the movement going on at that moment. That movement, when discovered, is kept up in preference to the others occurring in the course of the random spontaneity. All through life this prompting is at work, both to remove suffering and heighten pleasure. No express effort on our part is required to arrest a movement causing us pain; the withdrawal is instantaneous, instinctive.

What is wanted to complete the mechanism of voluntary control as shewn in the maturity of the power, is the growth of a number of associations between the various pains and pleasures, and the movements that are found directly or indirectly to tell upon them. It would require many pages to develop this process intelligibly; we must be content with indicating the foundations on which the whole structure of our volitional endowments would seem to repose.

The voluntary command of the organs implies, then, the following things: 1*st*, The power above mentioned of continuing or abating a present movement in obedience to a present feeling, as when the child sucks while the appetite is gratified, and ceases when satiety comes on. This is a primary fact of the human constitution, existing from the commencement of sentient life, and not communicable by any known method. So far, therefore, Volition is an Instinct. 2*d*, The power of *beginning* a movement in order to heighten or abate a present feeling, as when the child directs its head and mouth to seize the nipple, and begins sucking. There may be a few instances of instinctive movements of this kind, but in general they are acquired, being determined by means of association. The coincidence of the movement and the feeling must be first accidental; the movement springing up of its own accord, and finding itself able to control the feeling, the two become after a time so firmly connected that the one suggests the other. Thus the movement of the eyes and head is at first spontaneous, but the agreeable feelings of light brought on by these movements prompt their continuance, and the pleasure gets to be associated with these movements; whereupon, when this feeling is present to the mind as a wish, it prompts the requisite exertions. Thus it is that a child learns to search out a light in a room in order to enjoy the maximum of the illumination; it learns to turn its view to the fire or the window, or some face that it has begun to recognise agreeably. Volition means, 3*d*, the performance of some intermediate actions in order to gratify the sense; as when things are seized with the hand in order to be carried to the mouth, and when animals, recognising their food at a distance, set themselves to move forward to lay hold of it. These intermediate actions are most manifestly the result of experience, in the human subject at least. The power of locomotion has first to be developed, and being put in exercise, the exertion becomes associated with its various consequences, and among others, that of bringing the individual within reach of the objects of its desires. 4*th*, The voluntary command of the organs means the power of Imitation, or of performing actions in consequence of seeing them performed. Here a link has to be established between a certain appearance to the eye and the movement of corresponding organs in the individual's self; or in the case of vocal imitation, a sound is the

* Bain on the *Senses and the Intellect*, p. 73.

antecedent of an utterance, each sound heard being associated with a distinct movement of the chest and larynx, under the proper attitudes of the mouth. It is not uncommonly supposed that imitation, both of actions and sounds, is instinctive; but we believe the supposition is incorrect. *5th*, Under volition we understand the power of moving our organs merely on the wish to see them moved; as when I look at my hand, and will to raise it. Here a connection is formed between the sensible appearance, and its being moved. Lastly, we can make a movement on being directed to do so by naming the part—up head, down hands, &c. This is a further association, formed between certain names or sounds, and a particular class of movements. All these various actions are employed in the most elementary efforts of the will to control the body. Others could be named that transcend their range of influence—as, for example, the control of the passions and the command of the thoughts.

Desire.

This is a form or aspect of the will. There is implied in it some pleasure already experienced and remembered; and the imperfect idea or recollection stimulates us to labour for the full reality. Having enjoyed a piece of music, there remains a certain feeling of delight in the retrospect, accompanied with a sense of this being much short of the actual experience, and this prompts our energies to secure the repetition of the performance. In most cases of desire, there is no means of immediate gratification; hence, the state is a kind of suspended volition, there being the urgency of the craving, while the active organs are restrained from operating. Desire is thus a modified volition; and because many of our acts of will are preceded by the state of suspended action under a real craving, we are apt to suppose that it is in the nature of the will to have in all cases an antecedent desire. But where action is possible at once, as in drawing up to the fire to get warmth, or in retracting the hand from a painful scald, we have a pure volition, with nothing intermediate between the pleasure or pain and the action corresponding.

Every pleasure that can be retained as a recollection may be an object of desire. Everything that pleases us in life is desired by us, provided some trace of the gratification abides in the mind. On the other hand, the remembered pleasure may be so vivid and satisfactory as to satisfy the mind, and then the recurrence to the reality is superfluous. This is not a very common case, although examples of it are sometimes to be met with. There are cases of overpowering strength of actual sensation, where the recollection is preferable to the original; as when a susceptible mind has undergone a protracted time of gaiety. It is between those two extremes—the entire forgetfulness of a pleasure once passed, and the retentiveness approaching the full reality—that the state of desire is manifested.

The approaching fruition of a thing craved for, which we call Hope, is a grateful condition of mind; while the opposite state is one of the common miseries of human life.

Belief.

The import of Belief cannot be correctly stated without reference to some action near or remote. No mere intellectual association amounts to what is included in this state. When we are said to believe an affirmation, as that bread is nourishing, we mean that we are prepared to proceed upon it in practice, or to take the bread when we want the nourishment. It is true that we believe many things that are never brought to a practical test, and some that never can be brought to such a test; but then, what is implied is, that we take the same attitude of mind regarding those things as we do with such as we are accustomed to act upon. Thus, we can never perform any action having reference to our belief of the historic reality of Julius Cæsar; still, having gone through a course of sifting evidence in regard to this fact, exactly the same as for any fact of our own time that we are prepared to act upon, we regard the existence of Cæsar as a matter of belief. We may credit things without sufficient evidence, but if we are disposed to act up to what we credit, we are under a genuine belief. So strong is the connection between acting and believing, that when the one arises of its own accord, the other is apt to be produced. The mind, animated with a rush of energy, can with difficulty be made to believe in any harm to accrue from giving full vent to its impulses.

Liberty and Necessity.

A controversy has raged for many centuries on the question whether the human will is free. Undoubtedly there is a great distinction between acting from external compulsion and acting from one's own inward feelings. But some have gone so far as to suppose that human liberty is infringed upon by any supposition implying that we do act uniformly as our feelings instigate. A little reflection ought to convince us that this is absurd. Because we are constantly prompted to eat when we are hungry, to repose when fatigued, to follow our tastes whenever we have an opportunity, to do good to those we love, to keep out of the way of certain mischief—it does not follow that we are under any degrading compulsion or slavish necessity. The misfortune would be if we were constituted otherwise. It is a fact that in proportion as we know a person, we can calculate and predict his actions. We know that one man is rigorously and uniformly just; that another is courageous; that a third loves sport; and a fourth is fond of admiration; and on our knowledge of those points, we can proceed with all the certainty that belongs to the sequences of human nature, which are apt to be varied through the number of susceptibilities that come into play. No greater freedom can belong to any being than for the active impulses to follow the dictates of feeling, or of pain and pleasure. Any deviation from this would be insanity, and not liberty. When a man, to shew his moral freedom, resists the prompting of a natural impulse or desire, he merely follows a new prompting—namely, pride, or the sentiment of power.

LOGIC.

OBJECTS OF LOGIC.

THE objects of Logic, as of Grammar and Rhetoric, are partly theoretical and partly practical; partly to give you general ideas concerning the nature of names; assertions, the foundations of reasoned truth, and the various departments of thought and inquiry; partly to warn you against the fallacious tendencies of the human mind, and to teach you the conditions that must be observed in all departments of thought and inquiry before you can attain to true conclusions. Men may reason correctly without knowing Logic, as they may write correctly without knowing Grammar, or convince an assembly without knowing Rhetoric: these things are done every day without a conscious knowledge of any rules whatsoever; but Logic teaches you the ultimate nature of what you are reasoning about, of the instrument that you employ, and of the grounds whereon you rest when your reasonings are sound. And this knowledge is both interesting and profitable. It may not guide you to great discoveries; it may not preserve you from all errors of reasoning; it will not eradicate all the fallacious tendencies of your mind, but it will help.

The science of Logic has had two great starts in history, both originating in practical necessities. The first was given by Aristotle, the second by John Stuart Mill. The Deductive Logic of Aristotle was suited to the wants of the Athenian people in their Public Assembly and Courts of Law. An audience met to hear a question argued and to form an opinion, have to be guarded against specious inferences from their accepted beliefs; it is good for them to know the correct forms for the application of general principles to particular cases, and the ways in which these forms most readily become obscured so as to cheat them into erroneous conclusions. This, in the main, was the practical side of Aristotle's logic. In like manner, the Inductive Logic of Mill was suited to the interest in modern research. Mill did not invent the canons of valid induction or the conditions of valid hypothesis: these had been acted upon more or less vaguely by reasoners in all times, and had even been formulated by men of science; but Mill was the first to conceive the idea of including them within the domain of Logic, and referring them to the fundamental principles of reasoning. Agreeably to their origin, the practical value of Deductive Logic is to help in securing consistency; of Inductive, to help in securing truth.*

NAMES, CLASSES, AND PROPOSITIONS.

Both Deductive and Inductive Logic profess to exhibit the ultimate grounds of Belief; and all communications between men of matter for belief or disbelief are made through the instrumentality of language, and in the form of what we call in common speech *Assertions*, in Grammar, *Sentences*, and in Logic, *Propositions*.

A matter of belief is something that we can act upon; something that will enable us to do one thing for the sake of attaining some other thing. When we say 'bread is nourishing,' we do more than announce an object, 'bread,' and a property, 'nourishing:' we tie these two things together with a bond of union which rouses the activity of the human mind, and causes it to set to work in some given course. Belief is the state preliminary to action, or the state disposing to action when some given emergency arises; and assertions or propositions are the subject-matter of this faith or belief.

An assertion requires, in the first place, that there should be two things mentioned; it is not possible so to mention a single object as that it shall be a matter of belief or disbelief. Thus, 'fire burns,' 'gold is yellow,' 'bread is nourishing,' 'the sun is the centre of the planetary motions'—each contains at least two things or notions coupled together. Fire is one thing, burning is a different thing, if there be any meaning or anything to believe in the assertion. But the mention of two things is not enough; the two names of 'gold,' 'yellow colour,' do not make an assertion of themselves; the asserting power is conferred by the verb 'is;' and we shall find that every assertion requires a verb, or that the verb is the part of speech which completes the force of an assertion, or has the power of causing belief or disbelief in the human mind.

As an assertion, therefore, requires the mention of two things, 'every proposition must contain two terms. Of these two terms, the one that is spoken of is called the *subject;* what is said of it, the *predicate;* and these two are called the *terms* (or extremes), because, logically, the Subject is placed *first*, and the Predicate *last;* and in the middle the *copula*, which indicates the act of judgment, as by it the Predicate is affirmed or denied of the Subject.'—*Whately.* Thus, in the above instance, 'gold,' the thing spoken of, is the subject; 'yellow,' the predicate; and 'is,' the copula. The verb 'to be' is the most universal copula, and every other mode of affirmation or denial might be reduced to it.

The Different Kinds of Names.

The terms of a proposition, its subject and its predicate, must be names; hence, every proposition must contain at least two names, and it becomes necessary for the logician to consider the nature of names so far as that may affect logic. Other sciences and arts that have to deal with names—Philology, Grammar, Rhetoric—divide names into classes, to suit their particular purposes—Aryan and Semitic; nouns, adjectives, verbs; plain and figurative, stirring and pathetic:

* The present paper follows the arrangement and treatment of the subject in Professor Bain's *Logic*, to which the reader is referred for fuller information.

and Logic also makes a division of names to suit its purposes. Two distinctions among names are of value to the logician: the distinction between *General* and *Singular* names, and the distinction between *Positive* and *Negative* names.

'A Singular or Individual Name is a name applicable to one thing. A General Name is applicable to a number of things, in virtue of their being similar, or having something in common.'—*Bain.* Individual or Proper names serve merely the purpose of marking out some one thing from among the multitude of things at large, exactly as could be done by pointing to it with the finger, or in any way indicating it to another person. Such names as England, Nile, Mont Blanc, Niagara, Napoleon, give no information about the things that they denote: they imply no properties or attributes, and may be names of dogs, cats, or prize oxen. Now, Logic having to do with assertions about the properties of things, has little concern with these Singular names, except when it has to keep you consistent in your affirmations regarding whatever they are applied to. The names of interest in Logic are General names—country, river, mountain, waterfall, man—each of which is applied to many different things, in different ages and regions, to indicate what they have in common. General names are said to have a meaning, or *connotation:* they imply the possession of certain attributes common to all the individuals that they are applied to.

Next for the distinction between Positive and Negative names. This is more subtle, and cannot here be fully explained. When you make an assertion about a subject, you must always by implication deny something: when you say that a bar of iron is hot, you virtually deny that it is cold. Such names as hot—cold, wet—dry, fresh—weary, are called positive and negative names: the one is negative to the other's positive, and positive to the other's negative. If we were to enter fully into this distinction, we should have to shew that nothing is known except by reference to an opposite—a principle called the Relativity of Knowledge; but it is enough for our present purposes to say that in logical operations it is often useful to regard all the things denoted by a general name—man, good—as standing by themselves against all the things that are *not*-man, *not*-good, all the things that the general name can *not* be applied to.

Classes, Notions, or Concepts.

Both of the above divisions of names proceed upon the arrangement of things in Classes. Things are arranged in classes, as already indicated, on the ground of possessing a common property or properties, a point or points of likeness: round things form a class on the ground of their roundness; churches, on the ground of their being public buildings used for religious worship. When the points of agreement in a class are thought of in the abstract, they are said to form a Notion or Concept: being a building, being public, and being used for religious worship, form the concept or notion of a church. The general name is said to *denote* the class, and to *connote* the notion or points of community among the individuals composing the class.

The greater the number of points of community, the smaller the class, and inversely. 'Men' is a smaller class than 'animals,' and the individuals of the class have more in common. Classes are divided into *Higher* and *Lower* according to their extent. A higher class is called a *Genus* with reference to its lower classes, which are said to be *Species* under it. Animal is a genus, under which man, bird, fish are species. The points wherein one species differs from all other species under the same genus are called its *Differentia.*

Assertions, or Propositions.

When an assertion is made concerning a whole class, it is said to be a *Total* or *Universal* Proposition; when it is made concerning a portion of a class, it is said to be a *Partial* or *Particular* Proposition. This is said to be a distinction in the *Quantity* of Propositions. The logical forms are: *All* A is B, and *Some* A is B. In common speech, the quantity is often left indefinite, and one of the reasoner's first considerations should be directed to the real quantity intended. Do 'Honesty is the best policy,' and 'Haste makes waste,' belong to the form All A is B, or to the form Some A is B? Are the assertions universal or partial? Do they apply to *all* honest actions, to *all* hasty actions, or to *some?*

Propositions are also divided into *Affirmative* and *Negative,* which is said to be a distinction according to *Quality.* The above forms are Affirmative. The Negative forms are: No A is B (*Universal*), and Some A is not B (*Particular*). The Negative Universal is the complete and uncompromising contradiction of the Affirmative Universal; the Particular Negative is a mild limitation. All Propositions are either Universal Affirmatives, or Particular Affirmatives, or Universal Negatives, or Particular Negatives.

When you affirm anything, you always by implication deny something else, and it is important to know what the various forms commit you to; in other words, what terms are convertible. This gives rise to the logical department called the *Conversion of Propositions.* Affirmative Particular propositions are simply convertible: if you admit that Some A is B, you are bound in consistency to admit that Some B is A: if some hasty actions are wasteful, then some wasteful actions are hasty. A Negative Particular—Some A is not B—commits you to nothing positive beyond itself. Some B, or No B, or All B, may be A, for anything that it implies. A Universal Negative is simply convertible: if No A is B, then No B can be A—the two classes are mutually exclusive. A Universal Affirmative—All A is B—obliges you to admit that Some B is A: but you should be on your guard against admitting that All B is A.

The conversion of a Universal Affirmative is practically the most important of these cases. It is a very common fallacy to treat the terms of a universal affirmation as if they were simply convertible. To take a familiar example: the proverb, 'Ill-doers are ill-dreaders,' is often applied as if all ill-dreaders were ill-doers; and the proposition that all Protestants exercise the right of private judgment, as if every one that exercises the right of private judgment were a Protestant. (Bain, i. 114.)

DEFINITION.

In Bain's *Logic*, which endeavours to render definition more precise, by expounding its fundamental canons, this subject is taken up after Deduction and Induction; but in our slight sketch, all that we have space for will come in more appropriately here. Logic having to deal with general propositions—that is, with propositions or affirmations concerning classes—it is obviously of the highest importance that those classes should be exactly defined. Now, the definition of a class consists in stating all the properties common to the individuals of the class. You define the class by defining its notion or concept. You cannot draw a ring round all the individuals composing a class, but you draw up a precise statement of a common property or properties, and make no attempt to mark out the boundaries of the class, further than saying that it consists of all individuals possessing the defined property—or, in other words, all individuals coming under the notion.

It will not do, however, to fix on notions arbitrarily out of your mind, and classify the concrete universe accordingly. You ultimately subject the concrete particulars to the abstract notion, but you must take the notion in the first instance from the particulars. Notions consist merely of the points of resemblance among the members of classes, and classes are formed in science upon a strict principle, which is this: 'Of the various groupings of resembling things, preference is given to such as have in common the most numerous and the most important attributes.' This is the golden rule of classifying. Of course, your impression of the importance of attributes may vary with your purposes; but in all cases, in any classification professing to be philosophic, you must bear in mind that it is necessary to have some substantial reason for forming a class, other than mere fancy to put together all individuals having a certain point of resemblance; also, that the points of resemblance shall be as numerous as possible, so that to name a thing as belonging to a class shall give as much information about it as possible.

It being premised that you have some justification for forming a class, the first canon is: *Assemble for Comparison the Particulars coming under the Notion to be defined.* You cannot, of course, assemble all the individual instances, but you must assemble 'representative instances sufficient to embrace the extreme varieties' (Bain, ii. 156). If you wish to define a 'solid,' you must bring together, mentally or materially, a large number of representative solids—metals, rocks, woods, bones—and compare them, to find out in what they all agree. Having found that they all agree in resisting pressure, applied to change their form, you take this resistance as the notion of the class, and define solids by saying: 'Solids are bodies that resist force applied to change their form.'

The second canon proceeds upon the principle of Relativity—that every real notion must have an opposite also real. It is: *Assemble for Comparison the Particulars of the Opposed or contrasting Notion.* It gives greater precision to a notion to define its opposite. In defining the opposite, you proceed upon the same plan as in defining the positive notion: assemble representative particulars, and see where they agree. When you wish to give precision to your definition of Solids by defining also Liquids and Gases, you assemble representative instances, and find that 'Liquids and Gases yield to the slightest pressure, and have no fixed form, except as given by solid inclosures.'

Between two such opposed notions as Solid and Liquid, there is often a doubtful margin of particulars that do not belong decidedly to either class. It is difficult to say whether a jelly is a solid or a liquid: it does not lose its form so readily as a liquid, nor does it stand out against pressure like an unquestionable solid. Such cases warn us not to attempt to draw too short a line of distinction: a margin should be left for doubtful cases.

DEDUCTION.

The first thing that you naturally do, when you wish either to take stock of what you know and believe, or to discuss the positions of an opponent in debate, is to turn each separate proposition round and round on every side, to see what it all implies. Your next step should be, to consider what may be legitimately inferred or deduced from propositions that you admit to be true. If you followed our account of the nature of classes, it may have occurred to you, that every assertion made concerning a class must be true of every individual contained in that class, because those individuals, in so far as they are members of the class, are all alike: an assertion about a class is true of every individual possessing the common properties of the class. 'Despots are bad rulers,' is a proposition true of every individual possessing the attributes of a despot. When, therefore, you admit that despots are bad rulers, you are bound in consistency to admit the proposition concerning every individual that can be shewn to possess the common attributes of the class. This principle is the foundation of Deductive reasoning: and the Syllogism, as a safeguard against fallacious Deduction, consists in placing deductive inferences in a form convenient for the application of the principle.

Two propositions, besides the conclusion, are involved in every legitimate deduction. At the basis of all is your general proposition concerning a class of things, into which form all such general propositions as 'Haste makes waste,' 'Honesty is the best policy,' may be reduced. Then, before you can proceed to the proposition to be inferred from this—that such and such an action is wasteful, or good policy, you must have an applying proposition to make out that the action belongs to the class concerning which the general allegation is made: that it belongs to the class of hasty actions, or of honest actions. These two propositions are called the *Premises* of the deduction. When they are formally stated, and followed by the conclusion, thus—

All hasty actions are wasteful;
This is a hasty action;
Therefore, this is a wasteful action—

the whole is called a SYLLOGISM, which, from its etymology, means a joining together of propositions.

The great practical advantage of the syllogism consists in its putting a deduction into a form in

which its validity or invalidity is at once conspicuous. Both premises are presumed to be true; the syllogism has only to exhibit whether the conclusion is contained in them. As a practical machinery, the syllogism is only a safeguard against inconsistency. As such, it is not without its value. Suppose an orator declaiming about the evils of mob-rule as an argument against an extension of the suffrage, you may be unable to question the truth of the ground proposition that mob-rule is an evil thing; but before you are led away to act upon the conclusion of the orator, you must consider whether you believe the applying proposition—that the new electorate would be a mob.

In elaborating the forms and canons of the syllogism, logicians have found it useful to divide each proposition into its two terms, its subject and predicate. As a matter of practice, the best rule that can be given you is, to reduce every deduction to three propositions: an assertion concerning a class; an assertion that something (an individual or another class) belongs to that class; and finally, as a legitimate conclusion, an assertion concerning this something of what the first proposition asserted concerning that class. When you have reduced the deduction to this form, you will then be able to decide by the light of your own understanding whether you accept the truth of the premises; and if so, whether they warrant the conclusion. A conclusion is often presented to you as if founded upon one proposition only: thus, 'This man is a rogue; he is not to be trusted.' But you will bear in mind that there must be two guaranteeing propositions; that in all such cases, one of them must be supposed or taken for granted; and you will exert yourself to discover the lurking premise, so as to state the syllogism in full form. The omitted premise in the above case is: 'No rogue is to be trusted:' a general proposition concerning a class.

But though this arrangement is practically sufficient, and is founded directly on the fundamental principle of the syllogism, the forms worked out by Aristotle and other logicians are an interesting study. As we have just said, they divide each proposition into two terms. Altogether there must be three, and only three, terms in a syllogism, each being repeated twice in the course of the three propositions. You have the predicate of the leading assertion, the assertion in which you are interested, the conclusion: *that* is called the *Major* term. Then you have the subject of this assertion, which is called the *Minor* term. And most important of all, you have the *Middle* term: the class involved in the two premises, concerning which the predicate of the conclusion can be asserted, and to which the subject of the conclusion can be asserted to belong. In the syllogism—'No rogue is to be trusted; this man is a rogue; therefore, this man is not to be trusted'—'trustworthy person' is the major term, 'this man' is the minor term, and 'rogue' is the middle term.

The normal form of the syllogism, when it is arranged according to its fundamental proposition, presents the middle term or connecting class as the subject of the major or grounding proposition, and the predicate of the minor or applying proposition. But while all valid syllogisms may be reduced to this form, yet when the syllogism is viewed as a conjunction of terms, and all possible valid conjunctions of terms are elaborately set forth—when, in short, the syllogism is treated mathematically, as a combination of abstract symbols—considerable variety of syllogistic forms is introduced. These we shall briefly state.

Syllogisms are divided by some logicians into three *figures*, by others into four, according to the position of the middle term, which may either be the subject in both premises, the predicate in both, or the subject in one, and the predicate in the other. The most common case is that in which the middle term is the subject of the major premise, and the predicate of the minor, as in the above example. This is reckoned as the first figure. When the middle term is the predicate in both premises, the syllogism belongs to the second figure. ('No liar is to be believed; every good man is to be believed; therefore, no good man is a liar.' Here the middle term, 'to be believed,' is the predicate in both premises.) When the middle term is the subject in both, it belongs to the third figure. ('There is some anger which is not blameworthy; every kind of anger is a passion; therefore, some passions are not blameworthy.' The middle term in this case is 'anger,' which is the subject in either premise.) In the fourth figure, the middle term is the subject of the minor premise, and the predicate, of the major. This figure is considered to be merely an awkward form of the first, and of no practical value in reasoning.

Each figure is divided into *moods*, according to what are called the *quantity* and *quality* of the propositions—that is, according as they are universal or particular, affirmative or negative.

The scheme on next page represents all the legitimate moods—that is, all those where the conclusion follows correctly from the premises. A is the minor term; C, the major; B, the middle term.

The invention of the fourth figure is commonly attributed to Galen, but not on the most satisfactory evidence. It has often been rejected by logicians, on the ground that it is but the first inverted by the transposition of the premises. This, however, is not exactly the case, although, on the whole, it ought to be excluded as alike useless and deformed (*Baynes's Translation of the Port Royal Logic*, Note 48).

It can be shewn that syllogisms in any of the above forms are legitimate—in other words, that if the premises are true, the conclusion must be true also; and that no other combinations of universal and particular, affirmative and negative propositions can yield true conclusions.

If, for example, we take the first mood of the first figure—All B is C; all A is B; therefore, all A is C: all animals are mortal; all men are animals; therefore, all men are mortal—the reasoning is seen to be true from the very meaning of language, or is what may be called self-evident. If we say that 'all animals are mortal,' we have already affirmed that every species or class of animals, everything coming under this designation, has the attribute of mortality, men being necessarily included. So that, in fact, the major premise has already affirmed the conclusion, provided only we are sure that the subject of the conclusion (men) belongs to the subject of the major (animal). This assurance is given in the minor (all men are animals), whence the conclusion is made out as a matter of necessity. In

truth, the conclusion may be said to affirm in other words what has been already affirmed in the premises. No new fact is declared: a varied statement is given of what has been already declared. This variation in the mode of stating affirmations has its uses; but it would be a mistake to suppose that in this way we make any advance or bring in any new matter. The

FIRST FIGURE.

All B is C. All A is B. Therefore, All A is C.	No B is C. All A is B. Therefore, No A is C.	All B is C. Some A is B. Therefore, Some A is C.	No B is C. Some A is B. Therefore, Some A is not C.
All animals are mortal. All men are animals. Therefore, All men are mortal.	No animal is a plant. All men are animals. Therefore, No man is a plant.	All men are rational. Some animals are men. Therefore, Some animals are rational.	No negro is white. Some men are negroes. Therefore, Some men are not white.

SECOND FIGURE.

No C is B. All A is B. Therefore, No A is C.	All C is B. No A is B. Therefore, No A is C.	No C is B. Some A is B. Therefore, Some A is not C.	All C is B. Some A is not B. Therefore, Some A is not C.
No brute is rational. All men are rational. Therefore, No man is a brute.	All men are rational. No brute is rational. Therefore, No brute is a man.	No man is a brute. Some animals are brutes. Therefore, Some animals are not men.	All men are rational. Some animals are not rational. Therefore, Some animals are not men.

THIRD FIGURE.

All B is C. All B is A. Therefore, Some A is C.	No B is C. All B is A. Therefore, Some A is not C.	Some B is C. All B is A. Therefore, Some A is C.
All men are rational. All men are animals. Therefore, Some animals are rational.	No men are irrational. All men are animals. Therefore, Some animals are not irrational.	Some animals are rational. All animals are living things. Therefore, Some living things are rational.
All B is C. Some B is A. Therefore, Some A is C.	Some B is not C. All B is A. Therefore, Some A is not C.	No B is C. Some B is A. Therefore, Some A is not C.
All covetous men are unhappy. Some covetous men are rich. Therefore, Some rich men are unhappy.	Some animals are not men. All animals are living things. Therefore, Some living things are not men.	No vice is commendable. Some vices are pleasures. Therefore, Some pleasures are not commendable.

FOURTH FIGURE.

All C is B. All B is A. Therefore, Some A is C.	All C is B. No B is A. Therefore, Some A is not C.	Some C is B. All B is A. Therefore, Some A is C.	No C is B. Some B is A. Therefore, Some A is not C.	No C is B. Some B is A. Therefore, Some A is not C.

certainty and self-evident nature of the syllogism depend on this very circumstance, that the conclusion affirms nothing that has not been affirmed in the premises; if it were otherwise, the reasoning would be bad. We cannot step one jot out of the compass of the two premises, but we may affirm in as many new forms of language as we can contrive, the same facts as these have affirmed. The syllogism is a check upon us when we are in danger of thus transcending the premises, which we are sometimes liable to do, from the complications and involutions of language accompanying the statement of facts.

Passing to the other figures, we might, by examining each syllogism in detail, and turning it over on all sides, satisfy ourselves in the same manner that the conclusion was really contained in the premises. There is, however, another mode of making out the sufficiency of the reasoning in each case—namely, by shewing that all the syllogisms of these figures come under those of the first figure, being in fact proved when they are proved. This is to *reduce* the succeeding figures to the first, or *deduce* them from the first. It is the manner of mathematics to avoid independent appeals to fact as much as possible, and make one truth prove all that can possibly come under it, as we may see in Euclid. So logicians shew that an argument in the second, third, or fourth figures may be thrown into a syllogism of the first figure, and thereby acquire the certainty that we have just seen to belong to the cases of that figure.

This operation is technically termed the *reduction* of syllogisms; and the means employed is termed the *conversion* of one or other, or both, of the premises.

We do not here enter into the processes of reduction: they are more interesting exercises of ingenuity, than operations of practical value. One gains nothing by the application of the machinery of abstract symbols to difficult deductions regarding actual affairs: they are more a source of bewilderment than a help. For practical purposes, the best method is what we have recommended—namely, to throw the grounds of a disputed conclusion into two propositions, and see whether you have got a general proposition concerning a class, and a proposition establishing the identity of the subject of your conclusion with that class. If your conclusion is supported by two such propositions, common reason will instruct you to proceed to it without hesitation.

INDUCTION.

Induction is the term applied to the process of forming and establishing general propositions, principles, laws, truths, or affirmations—that is, propositions which are applicable not to one case only, but to all cases that have a certain definable peculiarity; as when we say, 'gold is heavy,' in which case we affirm that all substances having a certain colour and lustre are also of great weight, or specific gravity.

The first question that occurs respecting these general affirmations is—how and when are we entitled to make such very broad assertions? We have no means of ascertaining the laws and coincidences established in nature, except the observation of what the world presents to us. If we see that the qualities of yellowness and a peculiar lustre are combined with heaviness, we are entitled to assert the fact in as many instances as we have verified by examination. In like manner, if we see that water quenches fire, we may assert that it is so in the cases noticed. But there remains the grand difficulty—namely, why are we entitled to say that these coincidences and successions take place not only in the cases where they have been observed, but also in the cases where they have not been observed, and in all cases whatever? For this is implied in every general proposition.

This question is answered by the observed fact, that nature is uniform. There is a certain class of coincidences or co-existences which are everlasting and unvaried, and need only one observation to tell how they will be in every variety of times and places; and there is a certain class of successions called Successions of Cause and Effect, that are of the like unchanging kind, being the same yesterday, to-day, and for ever. Hence, in these cases, one observation is as good as a million; we are entitled to express or affirm infinitely more than we actually find. It is from nature's repeating herself in endless ways that human labour is shortened to such an extraordinary degree, that a few years of the short life of man suffices for obtaining a very extensive mastery of the vast and varied appearances of the world.

We have asserted that nature is uniform in her coincidences of the properties of kinds, and in her successions of cause and effect. But it may be asked, what proof have we to offer in support of this assertion, which is of such magnitude and importance as to be the foundation of our proof of all other assertions, and the means of enabling us to convert a single case of observation into a universal belief?

There is no other proof to be offered for the uniformity of nature than the unbroken experience of the human race. Every age has found it so; and in the more recent times of human history, it has been tested in every possible variety of ways, and no valid exception has ever been recorded. There was a time when men might entertain doubts on the matter, or when the confirmation was but limited, and the apparent exceptions irreconcilable with the doctrine. But this time has now gone by, and the principle has come to be established upon a basis that seems impossible to be shaken; and all the future generations of men will rest upon it with unswerving confidence. Some have derived the proof of the principle from an instinct in human nature, which leads us to expect this uniformity; but this is to rest upon a most perilous assumption—namely, that the native instincts of men can correctly anticipate the laws of the outer world—an assumption, indeed, that is far from true. The very same instinct which leads us to expect uniformity in nature, also prompts us to believe that all other men are like ourselves; that our experience is the experience of the whole world; and that what is at variance with it must be false. It is the instinct that urges the inhabitants of a tropical climate to denounce as liars and impostors the people who assert that water can become solid like glass. Such an instinct is utterly untrustworthy, until corrected by the observation of the actual world; although valuable as an impulse advancing in the same general direction with the results of our experience.

The laws of Causation, or the successions of events established by nature, and invariably adhered to, make the first and foremost subject of inductive investigation. In this case the great problem given for mankind to solve is—to find the effects of all causes, and the causes of all effects.

The general maxim of the uniformity of nature does not always apply to the outward appearances of things. A south wind brings rain one day and drought another; and in many other cases the law of strict succession fails to hold good. The reason of this is discovered by a very little examination; the superficial phenomena of the world, the things that prominently arrest our attention, are not single trains of causation, but mixtures of many different trains; and the law of uniformity does not necessarily hold good, except in the simple and indivisible sequences of phenomena and events. No doubt if a certain number of causes acting together produce a certain amount of effects, the very same combination will always produce like effects; but it is not easy to make sure that two given combinations are really the same. In order to do so, we must first become acquainted with the simple causes one by one. Induction, therefore, in such a state of things, is essentially a process of analysis, or the separation of the complex threads of causation, with the view to determine the simple threads; and when we have once possessed

ourselves of all these, we are prepared to calculate the effects of any combinations of them. Nature rarely presents us with a cause and its effect standing alone. The usual case is to have a multitude of effects flowing from a multitude of causes. It requires, therefore, the whole analytic force of the mind to be devoted to their reduction to single couples of cause and effect.

The great object of inductive inquiry being to ascertain, among a multitude of connected things, which of them stand to each other in the relation of cause and effect, we have now to consider the methods of observation and experiment suited to this determination. By 'experiment' is meant the process of altering the arrangements presented by nature, and shaping new arrangements of our own to assist us in ascertaining the simple sequences of cause and effect. Thus, if nature presented to our observation a confused and complicated train, and if we contrive to remove a great many of the circumstances, so as to reduce the train to a more simple sequence, we are said to proceed by experiment. If we find or observe a certain locality is exceedingly favourable to health; and if, in our wish to ascertain which of all the peculiarities of the place is the cause of the wholesomeness, we endeavour to put ourselves into situations where each circumstance is excluded in turn, we are said to proceed experimentally. Mr Mill has laid down the different ways of arriving at cause and effect by this experimental procedure, under the title of the 'Four Experimental Methods;' which he names the Methods of Agreement, of Difference, of Residues, and of Concomitant Variations.

'The simplest and most obvious modes of singling out from the circumstances which precede or follow a phenomenon those with which it is really connected as an invariable law, are two in number: one is, by comparing together different instances in which the phenomenon occurs; the other is, by comparing instances in which the phenomenon does occur, with instances in other respects similar, in which it does not. These two methods may respectively be denominated the Method of Agreement, and the Method of Difference.

'In illustrating these methods, it will be necessary to bear in mind the twofold character of inquiries into the laws of phenomena; which may be either inquiries into the cause of a given effect, or into the effects and properties of a given cause.

'For example, let the antecedent be the contact of an alkaline substance and an oil. This combination being tried under several varieties of circumstance resembling each other in nothing else, the results agree in the production of a greasy and detersive or saponaceous substance. It is therefore concluded that the combination of an oil and an alkali causes the production of soap.'

Mr Mill states the method of Agreement in a formal canon as follows: *If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree is the cause (or effect) of the given phenomenon.*

By the method of Difference is meant the process of comparing two sets of circumstances—one containing the effect, and the other not; and where between the two we can see no difference except in one other particular. 'When a man is shot through the heart, it is by this method we know that it was the gunshot that killed him; for he was in the fulness of life immediately before, all circumstances being the same, except the wound.' This method is expressed as follows: *If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance, except one, in common, that one occurring only in the former, the circumstance in which alone the two instances differ is the effect, or cause, or a necessary part of the cause, of the phenomenon.*

The method of residues will be seen to be a carrying out of the same attempt to break up complicated trains, and to fasten down the invariability of sequence upon the true particulars where cause and effect operate. It is stated thus: *Subduct from any phenomenon such part as is known by previous induction to be the effect of certain antecedents, and the residue of the phenomenon is the effect of the remaining antecedents.*

'There remains a class of laws which it is impracticable to ascertain by any of the three methods which I have attempted to characterise—namely, the laws of those permanent causes, or indestructible natural agents, which it is impossible either to exclude or to isolate, which we can neither hinder from being present, nor contrive that they shall be present alone.' Heat is an example of this kind of agents; we can neither divest bodies of their heat, nor exhibit it by itself and apart from all other things; and hence the methods above alluded to would entirely fail in determining what things are connected with it as cause and effect. To meet this difficulty, we have recourse to a method named by Mr Mill the Method of Concomitant Variations—that is, in such a case as Heat, we observe what effects increase as it increases, and diminish as it diminishes. The method is expressed in general terms as follows: *Whatever phenomenon varies in any manner whenever another phenomenon varies in some particular manner, is either a cause or an effect of that phenomenon, or is connected with it through some fact of causation.* We very frequently proceed upon this method of observing the effects of the increased or diminished quantity of things, in order to see what effects they have a tendency to produce, judging rightly that if one event be the cause of another, the two will rise and fall together.

There are two kinds of complications that are beyond the reach of any of these four methods, and require a distinct treatment. The one is termed the case of the Plurality of Causes; the other, the Intermixture of Effects. By a plurality of causes is meant, that it sometimes happens that an effect may arise equally from several causes, creating, as it were, an ambiguity of causation. Thus, a motion may arise from any one of a great number of forces happiness or misery is produced by innumerabe agencies. In such cases, the methods above stated are somewhat nonplussed, inasmuch as it may be possible to exclude one cause, and yet keep in another. A still greater difficulty is presented by the Intermixture of Effects—that is, when an effect is not single, but complex. Thus, the course of a projectile is not a single, but a mixed effect, or two different effects combined into one different

from either." The discovery of the cause or causes under such circumstances, cannot be effected by the Experimental Methods. But this leads us to the consideration of a method different from any of these, which has a vast range of efficacy in scientific research, and becomes more and more powerful as the sciences advance, or as discovery is extended. It is called

The Deductive Method.

The Experimental Methods suppose that we take up a subject that is as yet fresh and unexplored, or where no great general principles have been attained. They are the methods adapted to the commencement of inquiry. But when one or two comprehensive laws have been arrived at, a great deal is to be discovered by following out the application of these laws wherever they are found to operate. Thus, when the law of the perseverance of moving bodies was once discovered, it was made use of to explain many motions that would otherwise have remained inexplicable: such as the rotation of the earth, and the tendency of the planets to maintain their distance from the sun. In like manner, the discovery of the general law of reaction enabled Newton to determine the cause, and even for the first time to ascertain the existence, of the fluctuation of the sun in the centre of the planetary system. By the Deductive Method alone are we able to trace the operation of that class of causes which, by intermixture, are wholly neutralised, and produce no apparent consequences whatever—as in what are called the laws of equilibrium or counterpoise.

There are three different steps in the complete working out of the Deductive Method. The first is Induction, or the determination of the general law by the Experimental Methods. The second is the carrying out of the law to the explanation of all cases where it seems to apply, and especially the tracing out of the action that would result from two or more principles acting in combination. Thus, the Deductive Method applied to trace out the cause of the curved motion of a projectile, would consist in combining together the law of perseverance with the law of accelerated motion under a constantly acting force, and in determining what would be the path that a body would describe under the two actions. The third step, which is Verification, consists in comparing the effect deduced with the effect witnessed, to see if the two exactly agree: this agreement being the proof that the laws supposed are the laws that operate in the case. When Newton arrived, by induction, at the law of universal gravitation, and found that it decreased as the square of the distance increased, he applied this deductively to explain the attachment, or perpetual fall, of the moon to the earth. He calculated what would be the amount of the moon's deflection, supposing gravity were the cause of it; and then compared this calculated amount with the observed amount, and found a perfect coincidence. The same process he applied successively to the planets, and proved that each of them was detained from running off in a straight line through space by its gravitation towards the central sun.

Sometimes a law is assumed to exist for the sake of trying how it would explain appearances, although no such law has been discovered by a regular inductive process. This is what is called making a *hypothesis* or assumption. If, on trial, the assumed law is completely verified by agreeing with the facts, this of itself may be a reason for believing it to be a true law of nature. Thus, for example, Dalton's doctrines of atomic affinity were at first mere suppositions, or hints thrown out for trial and experiment; but it turned out that they had been so successfully conceived, as to stand the test of verification.

The laws thus employed deductively are the most general or comprehensive laws of nature, or the statements of what happens through the entire range of appearances that nature has included under a single cause. At all events, they are the most general laws that man has been able to discover; they, moreover, refer to the smallest and simplest trains or threads of causation, or to the indivisible sequences of events. Thus, the law of gravitation expresses the simplest train of causation that can be conceived; there are the fewest possible circumstances or conditions that can be mixed up in the production of any effect. This remark is necessary, in order to distinguish ultimate laws from derivative laws, where additional circumstances are introduced which make the thread more complex, and the case more limited in its application. Thus the law, that the planets move in ellipses, is a derivative law, involving the operation of two ultimate laws under certain arrangements or collocations; these arrangements are, that the planet should have been projected at a distance from the sun, in a certain direction, and with a certain speed, bearing a proportion to the above-mentioned distance. As only a very few bodies comply with all these conditions and arrangements, the law of elliptic motion is more limited in its application than the more general laws of perseverance and gravitation. When such laws are got at deductively, they are called Derivative Laws; when got at inductively, they are called Empirical Laws. The law of elliptic motion was first proved inductively by Kepler, and afterwards proved deductively by Newton. As given by Kepler, it was therefore only empirical. All inductions of complicated sequences, or trains of causation, are of the empirical kind, and have the peculiarity of being of very limited application; they must be confined to the cases where all the conditions and arrangements are strictly contained. If we observe that a draught of cold air is the cause of catching cold, the sequence is only an empirical one, and is confined to cases where certain conditions are present; and until the conditions are strictly defined, the observation cannot be stated as a general fact even of the empirical kind. Many of the assertions made in everyday life are of this undefined description. An effect is assigned to a cause, without stating the exact conditions and circumstances necessary to insure the sequence.

When we turn from the Inductive Problem of Causation to the other kinds of propositions—namely, Co-existence, Order in place, and Similarity—we find a somewhat different process of invention and proof requisite. The most important class of propositions of co-existence are such as assert the properties of kinds, or the attributes that always accompany one another in the objects presented to us in nature. Thus, when we affirm all the properties of gold, iron, oxygen, oak, horse,

man, we propound propositions of co-existence. These must be sought inductively, and proved by the method of Agreement alone; neither any of the other Experimental Methods, nor the Deductive Method, is applicable. They are also peculiar in not being amenable to any great comprehensive generalisation, like the law of Universal Causation. We can never, therefore, have anything but a cumulative proof of such coincidences—that is, a proof founded on a long series of confirmations, with the entire absence of any exception.

On the propositions of Similarity, Mathematics are founded. For an affirmation of likeness, the ultimate appeal must be to the senses, and personal experience. When we say, three and four are equal to seven, we mean—if the aggregate named three is put along with the aggregate named four—the joint effect is the same as the effect of the aggregate named seven. The truths of Geometry are derivative laws, where order in place is one of the conditions or circumstances: the ultimate laws being the laws of equality, or the laws of mathematics in general.

Before closing the subject of Induction, we may advert to the grounds of the *credibility or incredibility* of things presented to our belief for the first time, and not proved by any independent evidence of their own. When a fact is asserted that we do not know to be true or false, but which agrees with some great established induction, we may say that it is *credible*, and needs only some ordinary degree of testimony to make it actually believed. Thus, if we are told that a great avalanche broke away from a snowy mountain-height, and acquired in its fall such force as to sweep away everything that stood in its course, we reckon the assertion credible, because it is merely an instance of the working of a great natural power. But when it is alleged that the spectres of dead men come and tell secrets to the living, we call the assertion incredible, because it contradicts all the ascertained laws of things, and is not supported by any one generalisation, or any of the usual habits and proceedings of the world. We are so accustomed to the fact that all nature's operations are on the great scale, and are to be found recurring in many different circumstances, that we are entitled to look with suspicion upon any isolated phenomenon. Such phenomenon is not accounted worthy of being entertained until it is shewn that there are more of the same character to be found, or that it can be brought under some of the previously established generalities of nature.

FALLACIES, AND THE DISSECTION OF EVIDENCE.

A few observations on the nature of the more common fallacies will serve to extend the illustration of the principles and ideas that have already been advanced. There are various classes of fallacies, some of which may be enumerated as follows: Misconceptions arising from the suggestions of uncultivated human nature; Fallacies consisting of errors in ratiocination or deduction; Fallacies of bad induction, or violations of the Experimental Methods; Erroneous abstractions; and Fallacies arising from the defects and misuses of the instrumentality of reasoning—namely, Language.

1. We have sufficiently discussed the difficulty that the human mind experiences in getting at nature's own point of view of the trains of causation which support the movements of the world. The earliest impressions of outward things upon the mind are very far indeed from the correct impressions. In the first place, the appearances presented to the senses are often the reverse of the fact, as in the case of the heavenly motions. In other cases, we are led to believe that things are where they are not, as in the way that we are misled by the refraction of light. Our feelings of what goes on within ourselves often suggest an exceedingly false view of the reality. For example, the feeling we sometimes experience of a rush along the nerves, gives us the belief of an actual fluid motion taking place through the body. Our feeling of weight or gravity renders it very difficult to admit the notion of the antipodes, and of the round form of the peopled earth. In the next place, we have very strong instincts that pervert our views of nature still further. We are very apt to suppose that what we see and experience is the true type and resemblance of what we do not see, or that nature works everywhere exactly as with us. Having no means of conceiving the unseen except through the seen, and being ready to believe that our conceptions of things correspond to the things themselves, we are led to assume that particular attitude of mind termed 'narrowness of view.' Hence the discredit thrown upon the statements of the early travellers respecting remote countries, such as China, Abyssinia, and aboriginal America. Another inveterate prepossession of human nature arises from the notions that we form of force, power, and causation, arising from our own sense of effort, action, and resistance. We are beset by the notion that the activity and motions of the world are carried on in exactly the same way that human beings go through their various operations upon the outer world. There is hardly any fallacy so completely opposed to the truth of things as this. The active agency of human beings, in moving matter from place to place, always implies close contact with the things acted on. The great peculiarity of natural powers is their acting through distance, or with intervals of empty space between the agent and the thing acted on. Gravity extends from heaven to earth, or through distances of millions of miles. Heat and light are equally remote in their influences. But in the first consideration of these powers, the idea of close contact, derived from human experience, was so overpowering, that it was considered impossible that these distant actions could be maintained without some medium extending all the way from one of the bodies to the other. This is the real origin of the doctrines of an ethereal fluid pervading space, to exercise the powers of gravity, light, and heat. But for the misleading influence of our own sense of force, the facts would have been at once assumed as the ordinances of nature, that one body can gravitate to another through empty space, and that one body can heat or light another apparently in the same way; and we should have been content to ascertain what relations these actions had to distance, to the nature of the bodies, and to the other circumstances concerned in producing the effect. The human race is not yet emancipated from this fallacy.

2. The fallacies of erroneous Ratiocination or Deduction are what are treated of under the

scholastic or syllogistic Logic, which professes to lay down all the correct forms of the relation between premises and conclusion. The defect of this logic is in stopping short where it does, or in confining itself to a very small portion of the region of fallacy. When an argument is presented to our consideration, as bearing out some particular conclusion, it may often be necessary to trace back the inductions and abstractions that the propositions are made up of, as well as to see that these propositions bear out the conclusion. Thus, let us suppose that the following argument were used against suicide: 'Suicide is an unsocial act, therefore it ought to be treated by society as an offence entailing disgrace upon the memory of the individual.' Like all other steps of deductive reasoning, this must consist of three different propositions, two premises, and a conclusion. One of the premises, called the *major*, must be a general assertion or affirmation, which must contain the *predicate* of the conclusion. Thus, in the present case, the major premise is, 'All unsocial acts are offences entailing disgrace upon the individual committing them.' The minor premise contains the *subject* of the conclusion, and is in this case, 'Suicide is an unsocial act.' The conclusion to be established is, 'Suicide does or ought to entail disgrace on the actor.' Now, as far as the form of the reasoning goes, this is perfectly correct. If the first and second affirmations or the premises are true, the third is true likewise: a scholastic logician could find no fault with the argument. But it is clear that we ought not to be content with this; we must carry our scrutiny into the propositions themselves—considering each of them to involve an induction or deduction, and two abstractions; and we must see that these processes have been correctly performed, or whether they can be verified by the admitted facts of the world. If we take the major premise, 'Unsocial acts are punishable offences,' we find ourselves called upon first to ascertain the exact definition of the class of things here called unsocial acts, or to put into some less ambiguous description the acts meant. Now, when we cast our mind about on the actions referring to society, we find that there are some directly hostile to social interests; that there are others quite indifferent; and a third class that are not hostile, and are yet not indifferent, simply because men choose to put an artificial importance upon them—such as the observance of conventional ceremonial. Now, if unsocial acts mean breaches of the laws enacted for the common interests of society, the argument will have a totally different turn from what it would take if we mean by these acts things that society has no real concern with. It would be admitted, without further discussion, that anti-social acts are rightly punishable by society. If we were now to pass to the minor premise, 'Suicide is an unsocial act,' meaning thereby an act hostile to the interests of society, a new scrutiny would have to be commenced as to the truth of this conjunction. The terms of the proposition being clearly settled, we have to see whether it agrees with the facts of social workings, that suicide is opposed to any one great social interest, or whether, among the consequences or collaterals of this particular act, there is to be found any one or more that conflict with the good of human society. The natural method of proceeding in an instance like the present, would be in the first place to enumerate all the accompaniments that we can find connected with the act of suicide in general; that is, with all acts of suicide, or with the great proportion of them. In the second place, we should have to determine whether any of these accompaniments were among the things that have an antisocial character, or obstruct any of the general interests of society. Nothing less than such a procedure as this is sufficient for the determination of the question raised.

From such an instance as we have now given, it will be seen that fallacies may lurk in the Deductive, Inductive, and Abstractive steps of an inference, one or all; and hence the reason for adopting these designations as the heads of a classification of fallacies. An error must exist whenever any one of these processes is insufficiently performed; and to rectify the error, we must revert to the rules for their accurate performance, which are founded on what we have seen to be the essential characters of each process.

3. A very large class of fallacies is included under the Abuse of Language, which is the instrument of the greater part of our reasonings, and of all of them that can come under the province of Logic. Many of these fallacies are not to be distinguished from such as come under the other heads. But Language has certain tendencies of a fallacious kind, that make a class apart from all the rest. It is apt to stand in our minds in the room of the facts that it expresses, and thus to obstruct our view of the realities of the world. Being a powerful instrument for fixing ideas in the mind, it gives equal aid to the false and to the true, and thereby perpetuates the reign of whatever errors have once been clothed in words. We have formerly seen that the use of a general name is a perpetual affirmation of similarity among the things to which it applies. Hence, if a wrong generalisation has been made in any case, or if a certain number of things have been falsely declared to have a common feature, the general name is the instrument of circulating and maintaining the falsehood in the world. Another evil growing out of the nature of Language is connected with the tendency that there is to recognise the separate existence of whatever has a separate name. Hence arose the doctrine of Realism, which maintained that abstractions had a distinct and dependent existence, and that concrete objects were actually formed by the union of their abstract constituents. Thus, wisdom, virtue, government, roundness of form, hardness, which have each a distinct name, and are distinguished by the human intellect, were thence supposed to have distinct existence, or could be found apart from the complex objects that we call 'wise,' 'virtuous,' 'round,' 'hardness,' &c. The great scholastic controversy of the middle age turned upon this question, and it was not till the seventeenth century that it was generally admitted that these abstractions had no more than a mere intellectual or verbal separateness of existence.

As a supplement to the account of the Syllogistic or Scholastic Logic given above, we may here present an enumeration of the Fallacies usually treated of in connection with that Logic. These were of a very mixed and various character, some being violations of the legitimate syllogisms,

while most related to matters quite different. As many of the designations have come into familiar use, it is proper to take notice of the leading cases.

The *undistributed middle* is a pure breach of syllogism. 'A term is said to be "distributed" when it is taken universally so as to stand for everything it is capable of being applied to; and consequently "undistributed," when it stands for a portion only of the things signified by it. Thus, "all food," or every kind of food, are expressions which imply the distribution of the term "food;" "*some* food" would imply its non-distribution.' The syllogism, 'Food is necessary to life; corn is food; therefore corn is necessary to life,' is faulty from undistributed middle; inasmuch as the affirmation, 'food is necessary,' &c. has the form of a universal proposition, with the reality of a particular one.

The *æquivocatio* is when a word is used in two different senses, giving really no middle term—if the middle term be in question—or a term in the conclusion which is not the same name as that used in the premises. For example, 'All criminal actions ought to be punished by law; prosecutions for theft are criminal actions; therefore prosecutions for theft ought to be punished by law.' Here the middle term is doubly ambiguous, both *criminal* and *action* having different senses in the two premises. 'The following example can be traced through books for three centuries: "Every dog runs on four legs; Sirius (the dog-star) is a dog; therefore Sirius runs on four legs."'

'The *fallacia compositionis* and *fallacia divisionis* consist in joining or separating those things which ought not to be joined or separated. Thus, "two and three are even and odd; but five is not even and odd."'

'The *fallacia accentus* was an ambiguity arising from pronunciation. A very forced emphasis upon one word may, according to usual notions, suggest false meanings. Thus, "thou shalt not bear false witness against thy neighbour," is frequently read from the pulpit either so as to convey the opposite of a prohibition, or to suggest that subornation is not forbidden, or that anything false except evidence is permitted, or that it may be given *for* him, or that it is only against neighbours that false witness may not be borne.'

'All these fallacies *in dictione* come under the head of ambiguous language, and amount to nothing but giving the syllogism four terms, two of them under the same name. The fallacies *extra dictionem* (apart from or unconnceted with the language) are set down as follows:

'The *fallacia accidentis* (judging of a thing by some accidental property), and that *à dicto secundum quid ad dictum simpliciter* (passing from what is true in some respect to what is true absolutely). The first consists in inferring of the subject with an accident that which was premised of the subject only; the second, in inferring of the subject only that which was premised of the subject with an accident. Of the first, we may give the instance: "Wine is pernicious; therefore it ought to be forbidden." The expressed premise refers to wine used immoderately; the conclusion is meant to refer to wine however used.' *

The *petitio principii*, or begging of the question, is one of the logical terms that has found its way into ordinary life. 'Galileo has charged Aristotle himself with having fallen into this error, when he tried to prove that the earth was at the centre of the world by this argument:

'The nature of heavy things is to tend to the centre of the universe, and of light things to go off from it;

'Now, experience proves that heavy things tend towards the centre of the earth, and that light things go off from it;

'Therefore the centre of the earth is the same as the centre of the universe.

'It is clear that there is in the major of this argument a manifest begging of the question; for we see well enough that heavy things tend towards the centre of the earth; but where did Aristotle learn that they tend towards the centre of the universe, unless he assumed that the centre of the earth is the same as the centre of the universe?—which is the very conclusion he wishes to prove by that argument.' *

Arguing in a circle is at bottom the very same fallacy.

'The *ignoratio elenchi*, or *ignorance of the refutation*, is what we should now call answering to the wrong point; or proving something which is not contradictory of the thing asserted. It may be considered either as an error of form or of matter; and it is, of all the fallacies, that which has the widest range.'

The *argumenta ad hominem*, 'having some reference to the particular person to whom the argument is addressed, will generally be found to partake of the above fallacy. Such are *recrimination* and *charge of inconsistency*, as: "You cannot use this assertion, because in such another case you oppose it." But if the original argument itself should be a personal attack, then such a retort as the preceding may be a valid defence.'

'The *fallacia consequentis* (now very often called a *non sequitur*) is the simple affirmation of a conclusion which does not follow from the premises.'

The *non causa pro causa*. This is a fallacy of insufficient induction, or the inferring of a connection of cause and effect where there is only a mere sequence—as in the celebrated instance of the rustic who made Tenterden steeple the cause of Goodwin Sands. The words *post hoc, ergo propter hoc*, also express the same fallacious tendency to ascribe a necessary connection between two things that happen to occur in succession. This is the great argument in favour of every medicine that has been believed efficacious: some one had it, and got better.

'The *fallacia plurium interrogationum* consists in trying to get one answer to several questions in one. It is sometimes used by barristers in the examination of witnesses, who endeavour to get *yes* or *no* to a complex question which ought to be partly answered in each way, meaning to use the answer obtained, as for the whole, when they have got it for a part.' †

THE LOGIC OF THE SCIENCES.

The general laws and abstractions that are arrived at by the methods above described, are

* De Morgan's *Formal Logic*, chap. xiii.

* *Port Royal Logic*, part III. chap. xix.

† De Morgan, p. 269.

collected together under separate heads, according to the subjects to which they relate; and each collection of generalities is called a Science. When the aggregate is formed on the plan of taking in all that belongs to one distinct department of natural phenomena, we have a *pure* or an *abstract* science. Thus the collection of laws that has reference to the natural group of organised and living bodies makes up the pure science of Life, which has been termed Physiology or Biology. But when the truths of nature are brought together from different regions of phenomena to serve some practical purpose, or to explain some local appearances, the aggregate is a *mixed* or *concrete* science. Thus, in the science of Medicine, the laws of Physical, Chemical, and Physiological actions are brought to bear upon the practical end of curing disease; and in the science of Geology, there is a similar gathering of doctrines to explain the complex appearances of the earth's crust. The classification of the abstract sciences will therefore follow the different kinds of action that are made use of in nature; while the mixed and concrete sciences will be as various as the practical objects of life, and as the local contiguities of different modes of operation.

M. Auguste Comte was the first to carry out to the full this great distinction among the sciences, and to give a rigorous definition of the abstract division. The abstract sciences, according to him, are Mathematics, Astronomy, Physics, Chemistry, Biology, and Sociology, corresponding to the six primary or fundamental classes of natural properties and actions. Mathematics has reference to number, quantity, and extension; Astronomy is the science of gravitation; Physics, the science of cohesive masses of matter; Chemistry includes the atomic affinities of unlike substances; Biology treats of the laws of living beings; and Sociology has reference to the structure of human society. The order now given has been shewn by M. Comte to be the true natural order and succession of these sciences, being the order of their first discovery, as well as the order of their easy comprehension and natural dependence. In the present sketch we shall prefer to include Astronomy with Physics, and to detach the science of Mind from the comprehensive branch relating to living beings. The arrangement will then stand thus: Mathematics, Physics, Chemistry, Biology (Life), Psychology (Mind), Sociology (Society). These lay hold of six different groups or classes of natural appearances and laws; and there is not, as far as we know, any fact, process, or operation in the world that does not come under some or other of these six heads. The knowledge of Mathematics, Physics, Chemistry, Vegetable and Animal Physiology and Anatomy, the Human Mind and Human Society, is the knowledge of the whole of nature. If we are versant in all the laws and abstractions of each of these six subjects, we are prepared to understand every event that can possibly occur in the world.

The natural dependence of the abstract sciences in the order now given may be explained thus: Each one is dependent on all that lie above it, and independent of all that lie below it; and as we proceed from the top to the bottom of the list, we pass from the most simple and most universal properties and laws to such as are more complex and limited; in other words, there is a connection of dependence and of generality: the first sciences are the least dependent and the most general, the last are the most dependent and the most special. *Mathematics*, which treats of magnitude and numerical properties and laws, extends to all the materials and operations of the universe; everything that exists has the property of being more or less, and is subject to the laws of quantity. The phenomena of all the other sciences come under the scope of mathematics, and often depend directly on its doctrines, while these doctrines are themselves quite independent of all other properties. Physics and Chemistry would be completely upset if any of the Arithmetical or Geometrical laws or rules were to change; but no alteration in the physical or chemical properties could affect the numerical properties of things: three times six would be eighteen, and the binomial theorem would be eternal, whatever revolution was produced in the laws of heat or atomic proportions. But if we take the *physical* properties of matter, which include the laws of the aggregation of bodies, and the four agencies of gravity, heat, electricity, and light, we find that these are dependent on the numerical properties of matter, and independent of its chemical properties. Physical properties are superadded to form and size, and vary with these attributes, while chemical properties are a subsequent addition. The *chemical* powers are modified by physical states, but physical powers are not modified by chemical characteristics. Gravity acts upon all bodies the same, whatever their chemical affinities may be, and would continue to act though these were abolished. In like manner, the *vital* properties of matter are modified by the numerical, physical, and chemical properties, without reacting upon these so as to alter their character. So the laws of *mind* are still more complex and dependent, and so much the more limited and special. Not only all matter, but all possible or conceivable existence, shews mathematical attributes; all matter shews physical characters; a certain portion of matter is placed under the sweep of chemical combinations and decompositions; a select fraction of this is organised into the forms of life; and a still more limited portion is employed in connection with the appearances of mind. Unless we know all that can happen from numerical combinations, we cannot explain physical phenomena: we need both numerical and physical, as well as chemical, knowledge to comprehend chemical phenomena; and all the three are required as a preparation for the science of life. Any attempt to explain one class of properties while we are in ignorance of the previous classes, is an inversion of the order of things, and is nearly as hopeless as the ascent to a height without passing through the intermediate spaces. The laws of phenomena obtained previous to the understanding of all that should precede such phenomena, can at best be but empirical laws, and must be strictly limited to the circumstances where they have been observed. The laws of physiology are almost wholly empirical, owing to our imperfect acquaintance with the physical and chemical operations concerned in the vital processes.

Each of the six fundamental sciences has a logical character of its own—that is to say, the method of proceeding for establishing the general

laws and properties that make up any one science varies with the nature of the phenomena included in it. Hence, the cultivation of each confers a distinct and separate discipline on the intellectual faculties. Astronomy, for example, carries to the highest perfection the two processes of observation and deduction. In no other science have the means and devices of accurate observation been so much improved ; and, on the other hand, as all the phenomena can be deduced from the ultimate laws of mechanics, combined with the law of gravitation, with the most complete numerical accuracy, the science affords a perfect instance of the deductive method of arriving at truths. If we pass from Astronomy to terrestrial Physics, including the laws of solid, liquid, and gas, heat, mechanics, hydrostatics, optics, electricity, &c., we find ourselves in the domain of experiment, which is entirely inadmissible in the celestial physics ; and the cultivation of the experimental devices, of excluding and including known causes and circumstances, is in the highest degree practicable. For the last two centuries, Physics has been the great field of experimental research ; and it may be said that the art of accurate experimenting was first acquired in this field, although it has since been extended to other branches. The experiments that decided the weight and pressure of the atmosphere, Newton's experiments on light, the researches of Dr Black on latent heat, and the very extensive experimental inquiries that have been made within the last seventy years on Electricity, may be alluded to as illustrious not only in the history of Physics, but in the progress of the human reason. Chemistry is, like Physics, a highly experimental science, but its distinguishing feature is its having to provide for a classification of the materials of the globe according to their composition. As it shews that the earth consists of about sixty simple substances, which have almost an infinite capacity of combining into compounds, it has to ascertain the circumstances attending on all combinations and decompositions, and to make a regular classification of all the resulting bodies according to the simples that make them up. For this it has to invent a grand system of nomenclature and arrangement, such as is not required to the same extent in any other science, but is not without its use, apart from the immediate purposes of chemistry. The science of Life requires, as its peculiar auxiliary, a system of classification by genera and species, and carries this device to its utmost perfection. In like manner the sciences of Mind and Society have their peculiarities of method, or their special contributions to the logical cultivation of the human intellect. The lessons that all the leading sciences agree in cultivating are—the supremacy of reason over sense and instinct, and the necessity of bringing all assertions to the test of rigorous proof. We shall now advert to the fundamental sciences, with the view of bringing prominently forward the peculiarities of the classes of phenomena which they severally include :

The science of *Mathematics* is divided into two great branches—the one Abstract, including Arithmetic, Algebra, and the higher or transcendental Analysis ; the other is called Concrete, and takes in Geometry and General Mechanics. The Abstract branches consider number and quantity in general without reference to any special things numbered or quantitatively estimated. The Concrete branches refer to peculiar kinds of quantity : the one, Geometry, referring to space and the forms of things occupying space ; and the other, General Mechanics, being devoted to motion and the things necessary for expressing motion—namely, space and time. Mathematics proper, however, is usually considered to terminate with Geometry.

Arithmetic reposes upon the ten figures and the decimal notation. Without inventing names for the successive numbers, and adopting some principle for expressing shortly and systematically the higher sums, no nation could ever progress in arithmetical calculation, or in the arts and sciences where it is much required. The chief business of Arithmetic comes to be the reducing of all possible combinations of numbers to one universal form, or to the gradations of units, tens, hundreds, &c. Thus the multiplication table, which contains the fundamental laws of the science, merely serves to shew how to reduce a product of any two numbers to a product where ten shall be one of the factors. 'Nine times seven are sixty-three,' means that if a row of seven be taken nine times, the sum-total will be the same as six rows of ten and three over. When all products are reduced to the one decimal scale, their comparison among themselves becomes much more easy than if they were kept in all variety of scales. If we wish to compare nine times six with eleven times five, we find it most convenient to bring both into products of tens, by making the one fifty-four, and the other fifty-five.

Algebra is a higher process than Arithmetic, and has been defined the reduction of equations. Its main peculiarity lies in putting two different complex expressions that are equal over against one another, and then in operating upon the two by adding, subtracting, &c. the same things from both, so as still to preserve the equality, and at the same time to bring the equation to some simple form that will give the value of a single ingredient of the original expression. Thus, an easy question in Algebra would be to find a number which, when added to its square, would give 56. Here an equation would be formed by putting 56 on one side, and on the other an expression of a number added to its square, the number being represented by a letter—such as x—and the business would then be to operate on this equation till it is reduced to another having on one side only the representative of the number itself, in which case the other side would give the actual number in arithmetical figures. The higher analysis was invented by Newton and Leibnitz to solve such questions as computing the areas and circumferences of curved surfaces, and the spaces and times of accelerated and retarded motions.

Geometry treats of the laws and properties of lines, surfaces, and solids, straight or curved. It has two branches—Special and General Geometry : the one is exemplified in Euclid, who treats each figure by itself in succession, as in triangles, circles, &c. General Geometry treats whole classes of figures at once by stating them in Algebraical Language.

General or Rational Mechanics lays down the first principles or laws of motion, and applies

these to calculate the effects of all possible kinds of forces, single or combined. It makes an important distinction between forces that are counterbalanced so as to produce rest or equilibrium, and forces productive of movement; this gives rise to two branches named Statics and Dynamics. To determine the path of a projectile is a simple mechanical problem: two forces are given, which, separately, would produce certain known effects, and the question is to find the effect of both acting together.

Astronomy is the link between General Mechanics and Terrestrial Physics: it is a case of motion and forces where the natural agent, gravity, is brought into the question. Experimental induction having traced out the law of gravity as the power concerned in keeping the heavenly bodies together, the principles of mechanics enable us to compute, by the help of mathematics, all the consequences of this agency —that is, if we find that the moon is acted on both by the earth and by the sun, with a certain energy depending on the mass and distance of each, it is possible to calculate what course she will describe under the two actions, and where she will be at any specified time. There are certain terrestrial actions—as the Tides—which come under Astronomy from their being caused by distant gravitation.

The first branch of *Terrestrial Physics* is commonly termed the Properties of Matter, meaning thereby the laws and peculiarities of the aggregation of matter into solid, liquid, and gas. The agency that succeeds to gravity is the cohesive power that binds the atoms of bodies into masses of more or less firmness of structure. It requires us to recognise as a first principle of the composition of the material world, that all substances are made up of exceedingly small particles or atoms, which are gifted with powers of mutual attraction and repulsion; and under the action of these powers become, according to the way that they happen to be adjusted, solids of more or less compactness, liquids, or airs. These powers of adhesion are very varied and unequal, and in this respect contrast with the uniformity and regularity of the gravitating force. They not only differ in different substances, but they differ in the same substance, in consequence of there being a grand pervading energy of nature, called Heat, located in the first instance in the sun, which is able to overrule and modify them.

The first division of Terrestrial Physics being the Laws of Material Aggregation, and the second the Laws of Heat, it is usual to follow these up with practical Mechanics, Hydrostatics, Pneumatics, and Acoustics which involve no new first principle not contained in the previous departments. There then remain the two subjects of Electricity and Light, each involving a distinct natural agency. Electricity has now been completely generalised, and shewn to be a wide ranging power of the *polar nature*, which puts on many forms according to its material connections, but invariably maintains the character of a polar or double force. There are no less than six or seven subordinate branches, falling under two grand divisions, which are distinguished by the terms Statical or Reposing, and Dynamical or Current Electricity. The first of the subordinate branches is the oldest—namely, Magnetism, where the polarity is most conspicuously exhibited, from its acting on large masses of iron or other magnetic metal. The second of the Statical branches is Frictional Electricity, or the electricity of the common machine. This branch was created in the latter half of last century by Franklin and others. The first of the Dynamical branches is termed Voltaic Electricity, or the excitement of the voltaic pile, which first shewed the close connection between electricity and chemical action. Next follow Electro-magnetism and Magneto-electricity, being the laws of the derivation of magnetism from electricity, and conversely of electricity from magnets. Thermo-electricity is the derivation of the excitement from heat, which completes the proof of the connection between these two great natural powers. In addition to all these, electricity has to be considered in its relation to animal and vegetable bodies, as being both produced and expended within the living organism.

The subject of Light has, in some of its bearings, been set forth with great distinctness, as in all the mathematical relations of its incidence, reflection, and refraction on surfaces; but as to its origin and ultimate action on the surfaces that it renders visible, and on the receiving surface of the eye, nothing is yet known. Most bodies, when heated to some given temperature, become luminous; but it does not appear that any of their heat is wasted in supplying the rays of light; so that, although an undoubted connection subsists between light and heat, it is totally different from the relation of heat to electricity. Hot bodies give light *in addition* to their heating power; whereas, if such bodies are made to yield electricity, their heat is consumed or wasted in the act of being turned into electric excitement. No means has yet been found of investigating the changes wrought in the surfaces of bodies by the action of light; but the invention of Photography seems to be a beginning in this direction.

Chemistry is related to Physics through Heat and Electricity. It treats of the circumstances and laws of the combination of simples into compounds, and the resolution of compounds into simples. The combinations of chemistry take place in fixed proportions, and end in producing out of two substances a third so different from either, that it could never be suspected to be made up as it really is.

Combination and decomposition being the great facts of chemistry, it became an accurate science when the laws of these processes were suggested by Dalton. Chemistry is usually divided into Inorganic and Organic. Organic chemistry treats of the chemical composition and actions of the substances that are formed in the vegetable and animal processes. As distinguished from the materials presented by the mineral and inorganic world, these substances are usually very complex. Sugar is by no means an extreme example of organic complexity of combination; but one of its atoms contains twenty times as many atoms of simples as an ordinary inorganic acid, such as oil of vitriol. The products of the animal tissues are far more complex than even this. The number of substances in nature that are chemically distinct may amount to hundreds of thousands, giving thus a prodigious choice for human purposes when once they come to be properly known.

There is scarcely a single vegetable or animal species that does not yield some peculiar and characteristic chemical compound.

Organic Chemistry is the link connecting chemistry with the science of living bodies. It is necessary to know fully all the physical and chemical properties of the tissues and substances used in vegetable and animal life, in order, by their separation according to the experimental method of residues, to ascertain what functions are due to vital powers and properties, rightly so called. Thus the act of digestion is performed partly by the physical action of solution, and partly, it would appear, by chemical combination; but when these are allowed for, there still remains a portion of the effect to be ascribed to a power different from either.

The general science of *Life* is divided into Vegetable and Animal Anatomy and Physiology. Anatomy is understood to mean the description of the organised structure of living bodies; and Physiology describes the processes and changes that go on within them.

The fundamental peculiarity of an organised structure is, that it is made up not of atoms, but of cells, which have the power of breaking up and giving birth to other cells from a nucleus in their interior or in their walls. These cells adhere together, and form tissues, which, in the living state, go continually through the process of decay and renewal, by the operation of the bursting of old cells and the growth of new. The contact of a cellular mass with certain kinds of unorganised matter is sufficient to convert the whole of this matter into vital tissue, by making it go together into coherent cells; the principle of like producing like, or of the communication to a shapeless mass of form and organisation by the touch of what is already organised, being one of the laws of vitality.

The grand difficulty in physiological science is to explain how so small a point as the seed of a plant, or the germinal matter of an animal, can contain within itself such a definite impress as to determine exactly the character of the future expanded being. But we ought to consider, that although the whole futurity of a man may at one stage be contained in two or three cells, yet each of those cells, in comparison with the *ultimate atoms* that make it up, is like the whole of St Paul's as compared with a single stone; and therefore there is abundant room for its containing all the essential characteristics of the full-grown individual, although they cannot be traced even by the microscope.

The study of anatomy goes farther and farther in simplifying the animal structure. A great beginning was made by Professor Owen, when he published his discoveries regarding the vertebrate skeleton, or the bony framework of all that class of animals that have a backbone, as distinguished from shell-fish and the other creatures where the hard skeleton surrounds the fleshy and soft parts. He shewed that all these animals, from the fish and reptile, up to man, are made on one pattern, varied to suit their different peculiarities; and that a fundamental or general skeleton can be assigned as the point of departure for the whole. What is still more singular, this fundamental skeleton is a repetition of the same piece from head to foot. In fact, if we take one of the vertebræ of the backbone, we have an example of the simple piece, which, by being repeated and modified, makes the whole skeleton of a man, a quadruped, a bird, a fish, or a reptile. Four vertebræ joined together, and having some of their parts more expanded than usual, constitute the head and the two arms. So that, to make the skeleton of any animal, what is required first is a sufficient number of these vertebral cross-pieces; and in the next place, a determination of the extent of growth that is to take place in their several parts, so as to suit the demands of the species proposed to be created. Professor Owen was able to identify every bone of every animal of the vertebrate class with the corresponding bone of every other animal, through all their changes of form, and also to assign the portion of a vertebral cross-piece that every one of them sprung from. As regards the complicated structure of the head, Owen had the glory of completing the identification through the whole species, and of finally clearing up all the doubts and perplexities that were left hanging around the subject by the most illustrious of his predecessors. One magnificent idea may now be said to reign through this wide region of nature's works, which includes the nobler half of the entire animal creation.

As the *Mind* of man is a portion of the living system, and as a special organ is devoted to its action on the framework, the study of this organ —the brain — under anatomy and physiology, might naturally be supposed to be the prelude to the science of mind. In this point of view, psychology would be the natural sequel to the general science of life. But it so happens that this is not the only way of approaching the subject of mind: had it been so, we should have been in total ignorance of the mental phenomena until within the last few years; for it is only of late that any progress has been made in tracing the laws of mind from the anatomy of its material organ. There are two other great sources of knowledge on this subject—namely, the outward appearances and manifestations of thought, and feeling or consciousness; and the inward sense that each individual has of what passes within himself. These have been illustrated in our number on the HUMAN MIND.

But there can be no doubt that the future progress of anatomical and physiological discovery will act powerfully in throwing light upon the laws and properties of mind. It is not the dissection of the brain alone that we depend on: the structure of the organs of sense and of the muscular system, which are the terminating points of the great proportion of the nervous threads, is of equal consequence. But no part of the system is unimportant in its bearing upon the thoughts, feelings, actions, and volitions of the mind. And if ever the laws of mind should be completely traced through the medium of the anatomy of the framework—a thing scarcely to be hoped for—psychology would become purely a dependent branch of biology; but in the meantime it possesses an independent existence, and it has in all ages been studied, and in some measure understood, without the help of any of the other abstract sciences that stand before it. This is perhaps the only apparent break in the strict dependence of the six fundamental sciences.

The great peculiarity of the method of psychology

henceforth must be the reconcilement of the indications of the three different sources of knowledge —anatomy, external manifestations, and consciousness. No principle of human nature can be finally accepted till it is verified in all the three ways.

Sociology, or the science of human *Society*, comes last of all, as being most complex, or as involving all the phenomena of the previous sciences. The arrangements of society depend on the properties of the inorganic and organic world on the one hand, and on the character of the mind of man on the other. The life of men and of societies is restricted by the mathematical, astronomical, physical, chemical, and vital laws and conditions of the surrounding world, and is rendered more perfect in proportion as these are better known.

The more immediate dependence of the structure of society on the peculiarities of the mind of man, has enabled the subject to be studied along with this last from the very dawn of human speculation, and while all the preceding sciences were in their infancy. But it has been shewn by M. Comte, that every advance in these sciences has been accompanied with some corresponding advance in the mode of viewing social questions; so that all history attests the existence of a real dependence under the outward appearance of independence.

The greatest simplification that has been made in the complicated subject of society has arisen from carrying out a distinction derived from the anterior sciences; the distinction in Mechanics between Statics and Dynamics; and in Biology between the powers that maintain organic life and the powers that bring about the progress of the being from one stage to another. In society, the terms Order and Progress express the two corresponding ideas. Order means the maintenance of the peaceable workings of any one society; Progress means the advancement from one arrangement to another of a superior kind—as from the state of slavery to the state of liberty. By discussing the two subjects apart, all the questions relating to society and history are at once freed from a large share of the embarrassments and difficulties that have always surrounded them.

The doctrines of Social Order are more particularly dependent on the laws of human nature, and are advanced in precision exactly in proportion to the accuracy of our knowledge of these laws. The fundamental idea of society being the harmonious co-operation of a multitude for the better attainment of common ends, and the first step in the working out of this idea being the setting up of a central government, or ruling power, the grand requisite of good order is *obedience* to this power. Where the government is obeyed, order reigns, whatever other evils may exist; where successful disobedience has occurred, there is disorder or anarchy. To secure obedience is, therefore, the problem of Order; and this must be accomplished by connecting the government with some of the most powerful reigning impulses of the human mind. If the sentiment of filial obedience be very strong, and if the people can be induced to consider the supreme civil ruler as a father, they will be disposed to render him obedience with the whole force of their filial devotion. If the religious sentiment is high in a people, and if they can be made to believe in the Divine right of kings, obedience may be secured from this source. If society is so constituted as visibly to be for the advantage of the majority of its members, the sentiment of self-interest will suffice to keep up the spirit of obedience. It will thus be seen that the supports of Order are such of the mainsprings of human action as can, for the time, be brought into harmony with the principle or pretence that lies at the foundation of the existing government. Hence the character of the people is an important consideration in determining the means of securing their obedience.

Order not only implies a harmonious relation between the mass of a people and their central government—it extends to all the smaller associations included within the greater. The proper constitution of local governments, of the spiritual government, of the family, of the relations of master and servant, teacher and pupil, is a matter of adjustment according to the prevailing impulses of the individuals concerned, and no one rule can be made universal in any of the cases.

Progress, which is also termed Civilisation, means the advancement from one state of Order to a higher, or to a state where a superior class of the impulses and capacities of man are brought into action. When a government based on the superstitious prostration of the mind, gives place to one recognised by the reason, on the grounds of its contributing to the well-being of the society, a step of progress has been achieved. So, when a clear knowledge of affairs in a ruler, instead of the arts of oratory, is the means of gaining a people's confidence and co-operation, the society has entered a higher stage of advancement.

The proper meaning of Civilisation is the application of intelligence to the improvement of the human condition. It includes all that is not derived immediately from nature; in other words, nature and civilisation together make up the whole of human existence. The instinctive capacities of men are the immediate gift of nature; the powers acquired by the use of intelligence and will, confirmed into habits, and transmitted by instruction from age to age, are civilisation. The original genius, or inventive capacity of man, is the origin of everything included in human progress. Consequently, civilisation consists of as many distinct streams as there are divisions in the arts of life and the creations of the human intellect. The *industrial arts*, the *training arts*, the *healing arts*, the *arts and forms of social intercourse*, the *art of government*, *morality*, *religion*, *science*, the *fine arts*, *literature*, and the *art of living*, are all included in this one comprehensive designation.

NATURAL THEOLOGY—ETHICS.

NATURAL THEOLOGY is the scientific statement of such conclusions regarding God as man can reach by reflection upon himself and the universe amidst which he is placed. Its relation to Revealed Theology is not that of a rival, but of an indispensable preliminary. Without entering on the question of the ultimate possibility of a revelation, it seems plain that such revelation is possible only in so far as a natural theology is attainable, and after its principles have been attained. There are two parties to a revelation—God, the revealer; and man, the receiver of the revelation. Before man can recognise and receive any communication as emanating from God, he must be aware of, or, at all events, believe in, the existence of God; and he must possess as much knowledge of the divine character as is needed to enable him to say whether the alleged revelation is likely to have proceeded from a divine source. This previous knowledge, of course, is not derivable from the revelation, which is still to be tested, but must come from those investigations into nature's witness for God whose collective result forms natural theology. Revealed theology is thus dependent for its reception upon natural theology, and the degree of assent to the principles of the one is conditioned by the credibility established for the conclusions of the other.

The problems of natural theology are two in number—the existence and the nature of God. Is there a God? And if so, what is He? With respect to the first question, it undertakes to establish an affirmative, or at least to shew, that the human mind is so powerfully determined in the direction of an affirmative, that it cannot escape taking action upon it without proving false to itself. With respect to the second question, it professes to demonstrate a series of essential attributes. To treat these questions separately, in an absolute sense, is impossible. A being and its attributes are inseparable in fact, if not also in thought. Accordingly, in arguing for the being of God, natural theology is simultaneously doing much for that second branch of its aims which embraces the nature and character of God.

I. THE BEING OF GOD.

In treating this part of the subject, strict order would demand that an opening be made with a definition of God; but as that would require an enumeration of the qualities which fall to be investigated under the second division of his subject, the natural theologian usually confines himself to saying that he seeks to make good the existence of an intelligent and moral cause of all else that exists and occurs. The discussion of this position is commonly and not unnaturally introduced by a reference to the *consensus* of mankind as to the existence of some such Supreme Being as has now been generally described. Universally and always, religion and worship have existed, in infinite variety of form, but with unity of essence. It has been objected that Buddhism presents an exception, exemplifying a vast religion without a God. But to this it may be answered, first of all, that it is by no means clear that even in its origin Buddhism was atheistic, at least polemically. If Buddha said nothing about God, he did not argue against him, and there may have been reasons, such as the theological exaggerations of Brahmanism, which temporarily determined him to emphasise the moral rather than the theological view of things. His followers, at all events, have not been able to escape the influence of the religious instinct. Temples, rituals, priesthoods, popular adorations, myths, relics, and superstitions, diffused all over the extensive regions nominally identified in faith with the Indian reformer, bespeak the ineradicable propensity of human nature to recognise and revere something that lies behind the visible. This universal agreement, however, although strong as a presumption, does not amount to a demonstration. Men may be agreed, but they may be agreed in error; and since in the case before us, while substantially at one that there is something that is divine, they have been endlessly and hopelessly at variance as to what that something is, so that the value of their unanimity is impaired by the extent of their diversity, it was necessary to draw out the considerations that support the leading conclusion of natural theology in such a form as should sustain the criticism and command the assent of the scientific reason. In performing this part of his task, it is usual for the natural theologian to arrange his materials of argument in four divisions: the Teleological, the Cosmological, the Ontological, and the Moral; the first two being drawn from objective, and the last two from subjective, sources of information.

1. The Teleological Argument.

This argument, which derives its name from its grounding itself on an assumed adaptation of means to end (*telos*) in nature, is that which comes first in the natural order of thought. In the history of reflection in the individual mind, interrogation of the external precedes introspection. Nature demands to be heard more clamantly than consciousness. The first thought of God, therefore, is probably excited by the perception of a supposed arrangement in the external universe, and it is from this outward order that natural theology draws its oldest and most obvious argument for the existence of God. The argument, put briefly, is, that the universe exhibits traces of design, implying, of course, the presence and activity of a designing mind. In our attempts to interpret the constitution and processes of nature around us, we are constrained to infer causation, intelligence, supremacy, unity of plan, and moral intention. In the movements of the astronomical universe, in the growth of plants and animals, in the activities of the various physical, chemical, and

other forces, we recognise what we call causality. Changes obtrude themselves upon our notice: we call them effects, and say that they are produced by adequate causes. What do we exactly and fully mean by such phraseology? According to the experiential school of Hume, we mean by a cause nothing more than an antecedent. We first observe one thing happen, and then we observe another thing happen, and that is all we are entitled to say about the matter. It is simply a case of No. 1, 2, 3, and so on; we must not say that No. 1 leads to No. 2, and No. 2 to No. 3, except in the sense of numerical arrangement. The cannon-ball crashes through the target—the true history of the transaction is, not to say that the ball did it, but simply that the opening up of the target occurred subsequently to the approach of the ball. The natural theologian, on the other hand, contends that this account of the matter is seriously defective; that in its conception of a cause, the mind is irresistibly compelled to unite with the relation of antecedency the idea of efficiency, which again involves the notion of volition. It is affirmed that we cannot conceive of effects and changes, physical or otherwise, apart from force, and that what we mean in the ultimate analysis by force is an expression of will. Our earliest conceptions of the possibility and nature of physical change, it is said, are associated with acts of will on our part. We find that by a simple effort of determination, we can alter the relations of the parts of our bodily frames, and through them produce alterations in nature around us. That we have, within a limited range, this command over matter, is unquestionable. How we have it, we may not be able to explain, but of the fact that we have it, there cannot be a doubt. This *datum* of our own experience not only enables us to conceive the subjection of the whole material universe to an infinite Will, but further, as is maintained, compels us to associate volitional efficiency with the conception of cause and force. Our first impressions of physical change having been associated with a conscious forthputting of will, we irresistibly explain other physical changes, not springing from our wills, as immediately or ultimately due to a will external to our own. Hence to the natural theologians of primitive times the world swarmed with animated fetiches, and still we personify the wind and the lightning, and the more striking phenomena and forces of nature; we say that the steam is *able* to drive the engine, and the powder to blast the rock; a hasty man kicks the post against which he has stumbled; and we regard plants as more alive than minerals, although in the true sense a tree is as dead as a stone.

But besides causation, ultimately explicable as will, the natural theologian finds in nature art and contrivance, revealing intelligence. To the illustration of this idea the largest part of many of the leading treatises on natural theology is devoted. Design is sought to be shewn in the individual organs of animated structures, in the relations of different organs to each other, in the adjustment of the world's constitution to the wants and instincts of animated creatures, as well as to the moral and intellectual history of man, and in those cosmical arrangements whose contemplation leads us forth into the infinitudes of space. The whole argument turns here upon the question, whether these arrangements do really constitute art and reveal contrivance, or whether they are simply 'conditions of existence,' of which we can say no more than that there they are, and such and such is their character. The whole question is sufficiently raised by the difficulty stated by Hume. 'When two species of objects,' he says, 'have always been observed to be conjoined together, I can infer, by custom, the existence of one, whenever I see the existence of the other, and this I call an argument from experience. But how this argument can have place, where the objects, as in the present case, are single, individual, without parallel, or specific resemblance, may be difficult to explain. And will any man tell me with a serious countenance, that an orderly universe must arise from some thought and art, like the human, because we have experience of it? To ascertain this reasoning, it were requisite that we had experience of the origin of worlds; and it is not sufficient surely that we have seen ships and cities arise from human art and contrivance.' What Hume asserts here is, that there is no specific or generic resemblance between the works of nature and those of art; that nature, as he elsewhere expresses it, is a 'singular effect;' and accordingly, that although we may have the right, from experience, to associate a constructive intelligence with the works of art, it does not follow that we have the right to associate such an intelligence with the works of nature. The question, therefore, comes to be: Is there a generic resemblance between nature and art? or must we place nature in a totally distinct genus by itself?

Natural theologians assert that there is no generic distinction between art and nature, that nature is essentially artistic, that both come under the category of contrivance, that the human eye, for example, is as much an invention to suit a purpose as a watch is, and that the more closely the works of nature are examined, the more forcibly will this resemblance strike the mind. In the eye, for instance, we have what is neither more nor less than a highly ingenious optical invention, formed in perfect harmony with those secret laws of light which science is only now bringing to the surface. First of all, we have the retina or nerve-expansion to receive the impressions of light. An opening exists in the ball to receive the rays. There is an arrangement by which this opening contracts when there is more light than is wanted for the purpose. To project an image of the object on the retina, lenses perfect in construction are interposed between it and the eye-ball, to produce the necessary refraction of the rays. As a white lining of the walls of the eye-chamber would have reflected the light from all sides, and made vision impossible, it is exceptionally painted black, to absorb the useless rays. A system of muscular cords adjusts the position of the eye according to the nearness or distance of the object.

Can it be maintained, the natural theologian argues, that there is any essential difference between such an instrument as this as a contrivance for conveying visual images, and a watch as a contrivance for indicating the hour? And if there is no essential difference, how can we infer a watchmaker from the watch, and refuse to infer an eyemaker from the eye? How is it that we conclude that an intelligence like our own must have been

at the framing of such an object? Or, for that matter, how do we come to assume the existence of other intelligences round about us in life at all? Simply by an irresistible compulsion of our own consciousness and experience of ourselves. We have become acquainted with order and arrangement, and learned to understand it, in the act of producing order and arrangement ourselves. And wherever we see the adaptation of means to end, we cannot avoid attributing it to some being who is essentially a repetition of ourselves, endowed with a consciousness and intelligence identical with our own. We infer the existence of other intelligences because we observe them engaging in various processes, which our experience of ourselves assures us can spring only from such will and intelligence as we possess. We conclude that a watch must have had a watch-maker, because we know contrivance only as the offspring of mind, and if the universe is not less manifestly a contrivance than a watch, a universe-maker is as unavoidable a conclusion as a watch-maker. The whole question is, whether nature and art are reducible under the same category of contrivance: that is an ultimate question which each thinker will determine for himself; but where it is determined affirmatively, it does not seem possible to impugn the natural theologian's conclusion.

The main difficulties of the teleological argument lie in establishing will and intelligence as the cause of the order and arrangement which we observe pervading nature. If it be granted that this point has been reached, the ideas of supremacy, unity of plan, and moral intention can be managed with comparative ease. By the Divine Supremacy is meant, that the will and intelligence which we have found in the universe, are there, not as a mere part, or product, or necessary evolution of the universe itself, but as the controlling and formative power of the universe, extra-mundane or supra-mundane, in the sense of dominating and shaping things and events according to the aim and plan selected. In ourselves, and within our limited sphere, we know that will and intelligence can mould material nature to its designs. Our plans and arrangements are not evolved by material nature (including under that term our own physical organisms), but by ourselves (as distinct from our physical organisms, although possessing and using them as instruments), and we can compel material nature, within certain limits, to take on the complexion and form of our designs. This datum of experience we have no difficulty in transferring to the boundless will and intelligence which we behold everywhere, as matter of fact, irresistibly impressing its yoke upon nature; and so recognising God, not as the mere thought of the universe, but as its Lord, subjecting it to his thought.

Unity of plan points to unity of authorship, and is an argument for the monotheistic as opposed to the polytheistic scheme of a divine government. A childish and primitive natural theology, not contemplating existence as a whole, assumed a God for every group of phenomena; but with the rise of the notion of a universe,* monotheism naturally recommended itself to the speculative instinct.

* It may be maintained, however, that many polytheisms are corruptions of an originally pure monotheism, through popular misunderstandings of names of God, and the ordinary influences that create mythology.

At the same time, unity of plan is not maintained in natural theology as entirely precluding a plurality of divinities, inasmuch as unity may be the result of the harmonious action of a variety of co-operating agents who understand each other, as well as of a single agent. But the same advance of science which reveals the unity and inter-dependence of natural phenomena, points also more and more to its boundlessness, and suggests the idea of infinity. On the polytheistic basis, an infinite universe would require a plurality of infinite intelligences, since each would require to understand the whole scheme, in order to co-operation for unity. A plurality of infinites, however, is inadmissible; while on the ground of experience and observation, the tendency of science, in its doctrine of the correlation of forces, to reduce all the energies of nature to one central force, whose theological equivalent is a single efficient will, corroborates the monotheistic inference reached by speculative deduction.

The Teleological argument is further held to establish a certain moral intention in the plan of nature, and so to cast a measure of light upon the character of God. Existence has an aim; the universe is fashioned and regulated so as to attain an end. That aim is the production of beauty and order in physical nature; of happiness among sentient beings; of enlightenment and virtue in the intellectual and moral sphere. The testimony of nature, of individual experience, of the history of the race, is appealed to as demonstrating the gradual but certain development of this purpose. Against this, there is to be set off the unquestionable fact of evil in its various forms; deformity, pain, disease, grief, death, ignorance, sin. In dealing with these difficulties, the natural theologian seeks to shew, with respect to some of them, that they are evil rather in appearance than in reality; as being in different ways the conditions of a higher good, and so really good in disguise. Sin he admits, but throws the responsibility of it on the free-will of man, and denies that its introduction is any impeachment of the righteous design of God. Certain other forms of evil, also, he admits, but maintains that they cannot be fairly permitted to overturn the clear and powerful witness of the universe and its history to the goodness of the divine purpose, and that they ought to be treated simply as difficulties and exceptions which await explanation from another quarter.

The criticism of Kant on the value of the Teleological argument has been accepted by many natural theologians as substantially correct. Admitting (under qualification) its validity for proof of the existence of a world architect or artist, he denied that it demonstrated a Creator in the strict sense of the term. The God whom it demonstrates is adequate to the production of the order and arrangement which we observe in the form of the world, but He is not adequate to the causation of the matter which He has worked up into the adaptations which we see. It has not been found easy to meet this criticism. The proof of intelligence and will as the source of the order in the world, comes, as has been seen, from our own conviction of the capacity and necessity of mind for effecting change and arrangement in physical nature. The key for the interpretation of the universe to this extent we find in ourselves. But we have no key to the problem of creation,

strictly so called. We know by experience that mind can control matter where it exists, but we do not know by experience that mind can bring matter into existence. Accordingly, all that this argument entitles us to infer is, that a God supreme over matter exists. On the further question of the causation of matter, it throws no light. It may be doubted, however, whether Kant's further criticism is well founded—namely, that from this defect the argument is insufficient to furnish 'a theology which is itself to be the basis of religion.' It may not, perhaps, furnish the absolute and all-sufficient Deity demanded by the metaphysicians. But the average mind does not require to be satisfied of the completeness of the metaphysical definition of its God before consenting to be religious. It is sufficient for the purposes of practical piety that it should feel itself in the presence of One who is manifestly master of the universe.

2. The Cosmological Argument.

That dependence of matter on the *fiat* of a Creator, to the establishment of which we have seen that the Teleological argument is unequal, is supposed to be made out in what is called the Cosmological argument. It is so called (*kosmos*, world) from its being based on the fact that there is a world, considered not in reference to its order or contents, but merely as a form of actual existence. It is also called the *argumentum a contingentia mundi*, or argument from the contingency of the world, because its validity depends upon the accuracy of the principle that the world exists not necessarily, but contingently. Contingent existence is that which we can annihilate in thought, or imagine out of existence, without involving ourselves in a contradiction. Necessary existence is that which we cannot so annihilate in thought. Now, we know by experience that something exists. The world and we ourselves exist. If something exists, something necessarily exists. Much that exists may exist contingently; it may, without contradiction, be conceived as removed from existence, but while it exists, it can do so only as dependent upon something which exists necessarily. Once given existence, it is impossible to shape the conception of all existence as non-existent. Something must remain, capable of accounting for the rest. The existence of the contingent is therefore a pledge of the existence of the necessary, which must also be eternal, and capable of supplying a cause for contingent existences as they come and go. The question accordingly comes to be, whether the world is a contingent or a necessary existence? Can we, without contradicting some *datum* of reason or experience, conceive it out of existence, or must we conceive it as eternally existing? In the latter case, it is necessary and self-sufficing; in the former case, it postulates some necessary and primal Being equal to its causal explanation when it enters as a novelty upon the field of existence.

Natural theology maintains the contingent character of the world's existence, by means of various arguments designed to shew, not only that it may, but that it must, have had a beginning, that it can be wholly annihilated in thought, and that therefore, so far from being self-existent, it must be regarded simply as an effect explicable by the causation of a supreme, necessary, primal Being. Some of these arguments are of questionable validity. It is said, for example, that history points to a comparatively recent creation of the human race, and that geology discloses new genera and species of plants and animals, which must have been created during the comparatively later periods of the history of our earth. But even supposing such arguments to have made good their position against the evolution theory, they do not touch the real difficulty in the present case—namely, the creation, properly so called, of matter. The creation of new genera spoken of is creation only in a figurative sense. It is nothing more than the working up of pre-existent matter into a fresh set of forms, which we have seen, in connection with the Teleological argument, to be perfectly within the competency of a supreme world-artist, but not to imply a Creator in the true sense of the title. What we want to know is, whether the pre-existent matter is contingent or necessary in its character; and statements as to new applications of matter assumed to be already existent, cannot, even if true, help us to settle the question whether it is eternal or originated.

The philosophers of antiquity regarded all the forms of nature as contingent; while matter was considered by them as primal and necessary. Kant regards this attempt to retain the eternity of the essence of matter, while dispensing with the eternity of its form, as involving a confusion, for which he endeavours to account. 'If they had regarded matter,' he says, 'not relatively—as the substratum of phenomena, but absolutely and *in itself*—as an independent existence, this idea of absolute necessity would have immediately disappeared. There is nothing,' he goes on to say, 'absolutely connecting reason with such an existence; on the contrary, it can annihilate it in thought, always and without self-contradiction.' His argument is, that matter, which, apart from its form, is simply extension and impenetrability, is necessary only as the *substratum* of the phenomenal and perceptible; and that in thinking away the phenomenal, which it is always possible to do, we simultaneously think away the necessity of its *substratum*, and leave matter and its form alike contingent. It is indeed impossible to conceive extension and impenetrability left standing apart from any particular form or determination of thing extended or impenetrable, and those who saw that the forms of nature were neither necessary nor eternal, ought to have seen that the same held good of their subjacent matter.

The eternity of matter is a difficulty which natural theologians have found so formidable that they not seldom pass it over in silence. The criticism of Kant, at this point, therefore, is peculiarly valuable, more especially when regard is had to his unfavourable attitude to all the speculative arguments for the existence of God, excepting the Moral argument. He has done further service in the same direction by contributing an argument from another point of view, to shew that the material universe must have begun in time. His argument bases itself upon the principle, that an elapsed eternity, or infinite series of successive states or conditions of things, is an impossibility. Infinity of series, he holds, consists in the fact, that it never can be completed by the process of

adding on part to part. However much has been added on, there will still be the possibility and the necessity of adding on more and more in the ceaseless march through infinity. But if the world never had a beginning, then this impossible infinity of series has actually occurred. An impossible eternity of world-history has, as matter of fact, been finished. But as the realisation of the impossible is absurd, the supposition that involves it—namely, the beginningless character of the world, must also be absurd, and we must conclude that at some time the material universe began to be.

If these considerations may be relied on, the *contingentia mundi* is sufficiently made out. The universe is not eternal, and does not exist of necessity. But it exists. Its existence, therefore, must have been given to it. There must, accordingly, be some Being (not material, otherwise it too would be contingent, and need a necessary cause) existing by necessity, and eternally, and capable of originating the universe. Who, or what, is this primal Being? If we are driven to regard it as causing the existence of matter, then must we not hold it to be a will? Matter, in its beginning, comes upon the scene as a novelty, a change, an effect. According to principles already discussed under the Teleological argument, we cannot resist interpreting the causation of such a change into the act of a will. Is this primal and necessarily existing will different from or identical with that contriving and constructive will which the Teleological argument disclosed to us at work in the order of the universe? The natural theologian holds that there are not two wills, but one and the same will. The matter and the arrangement of the universe cannot be separated in fact, and, therefore, cannot be separated in causation. We cannot have arrangement without matter, but just as little can we have matter except in some arrangement. Matter and its form must be produced together, and in an inseparable and mutually pervading unity. Therefore, there must have been a corresponding unity of will in their causation. The creative and constructive *fiat* must have formed one complex act, emanating from one volitional centre. In some such way as this, the Cosmological argument is held to supplement the Teleological. The latter reveals the world-artist, the former shews him to be further the world-maker. The *ornatus mundi* leads us to recognise design; the *contingentia mundi* compels us to infer creation; the unity of both demands a creative design, a designing Creator.

3. The Ontological or *à Priori* Argument.

In this class of argument we are, or ought to be, recalled from the sphere of outward experience to that of inward thought; we reason from ideas to facts (*à priori*, deductively, from the first in thought to the subsequent in fact), not from facts to ideas (*à posteriori*); we argue realities of being from our own thoughts of being (*ontology*, *logos tou ontos*, *theory of being as being*).

This mode of viewing the subject has been presented in various forms by Clarke, Descartes, and others. Perhaps the most purely ontological argument is that propounded by Anselm. He holds that the actual and necessary existence of God is an essential part of our conception of God, and that, therefore, He must exist, or, at all events, we must regard Him as existent. But neither of these conclusions fairly follows. The first is justly open to the objection taken by Kant against all assumption of the objective reality of our *à priori* conceptions. Even granting that we cannot escape the notion of God's necessary existence, it does not follow that He exists merely because we cannot help thinking that He does. But, further, is it the case that the actual as well as the necessary existence of God enters as an essential element into our idea or definition of Him? The actual existence of a thing forms no part of its definition. The definition of a hundred hypothetical crowns is the same as the definition of a hundred real crowns. The actual existence of them is an affirmation made, on extraneous evidence, regarding the things defined, but it is not derived from and does not enter into that idea itself. Similarly, the mere conception or definition of God cannot be allowed to comprise the actuality of His existence. We may be entitled to define that *if* He exists at all, He exists necessarily, but this hypothetical necessity of existence does not warrant the inference of real existence. That must be made good by considerations external to the mere conception or definition itself. Our thought of God, therefore, as necessarily existing, if He exists, which is all that Anselm was entitled to assume in the circumstances, does not compel us to a belief in His actual existence.

Of much the same nature and value is the argument of Cousin, that the finite implies the infinite, that we cannot think the one except as in contrast, and therefore in contemplation of the other, that along with our direct and explicit perception of the finite, we have an indirect and implicit knowledge of the infinite. It may be doubted whether this is psychologically correct. White is the contrast and antithesis of black; and it may be said that in thinking black, we must also think it as that which is not white; but could any person be said to have acquired the conception of white, merely by negativing his conception of black, and before he had directly perceived white? But even granting that in this negative way we obtain a conception and conviction of the infinite, how does that prove that the infinite exists? It may prove that we cannot help having the idea, but how are we, without any foundation in experience, to bridge over the chasm between our subjective necessities and the realm of objective reality?

Since the days of Kant, the Ontological argument, as well as that part of the Cosmological argument which is really Ontological—that is, consisting merely of deductions from our own ideas, unverifiable in experience—has not been put forward as conclusive by natural theologians, and has only been employed by them as imparting a measure of probability to considerations derived from less questionable sources. Kant's criticism was briefly to the effect, that we have no warrant in reason to translate our own mere subjective necessities into objective realities. While this may be conceded, it must be observed that practical religion is not rendered less obligatory by the concession, inasmuch as we are bound to act upon our irresistible convictions, in the absence of more complete verification, and that any inferences to the existence of God arising

from external experience, will have their force greatly augmented if, from within, our minds, from data of their own, urge us to the same conclusion. It may be useful to close this section with a quotation from Kant's preface to the second edition of his *Critique of Pure Reason*, which shews very fairly his relation to the whole question. After stating that his method will 'confer an inestimable benefit on morality and religion, by shewing that all the objections urged against them may be silenced for ever by the *Socratic* method —that is to say, by proving the ignorance of the objector'—he goes on to say that 'the loss of certain fancied possessions, to which, on his method, speculative reason must submit, does not prove in any way detrimental to the general interests of humanity. The loss falls, in its whole extent, on the *monopoly of the schools*, but does not in the slightest degree touch the *interests of mankind*. I appeal to the most obstinate dogmatist, whether the proof of the continued existence of the soul after death, derived from the simplicity of its substance; of the freedom of the will, in opposition to the general mechanism of nature, drawn from the subtle but impotent distinction of subjective and objective practical necessity; or of the existence of God, deduced from the conception of an *ens realissimum*—the contingency of the changeable, and the necessity of a prime mover, has ever been able to pass beyond the limits of the schools, to penetrate the public mind, or to exercise the slightest influence on its convictions. It must be admitted that this has not been the case, and that, owing to the unfitness of the common understanding for such subtle speculations, it can never be expected to take place. On the contrary, it is plain that *the hope of a future life* arises from the feeling, which exists in the breast of every man, that the temporal is inadequate to meet and satisfy the demands of his nature. In like manner, it cannot be doubted that the clear exhibition of duties in opposition to all the claims of inclination, gives rise to the consciousness of *freedom*, and that the glorious order, beauty, and providential care everywhere displayed in nature, give rise to the belief in a wise and great Author of the universe. Such is the genesis of these general convictions of mankind, so far as they depend on rational grounds; and this public property not only remains undisturbed, but is even raised to greater importance, by the doctrine that the schools have no right to arrogate to themselves a more profound insight into a matter of general human concernment, than that to which the great mass of men, ever held by us in the highest estimation, can without difficulty attain, and that the schools should therefore confine themselves to the elaboration of these universally comprehensible, and, from a moral point of view, amply satisfactory proofs. The change, therefore, affects only the arrogant pretensions of the schools, which would gladly retain, in their own exclusive possession, the key to the truths which they impart to the public.'

4. The Moral Argument.

Here we take the word moral, not only in its strict sense of ethical, but further, in that loose sense in which it is often employed to denote merely the opposite of physical. Starting from the facts of consciousness, it is argued that we have experience of various states of mind which reveal or postulate a Supreme Being, who is also a moral Being. Among these states of mind the chief are, the sense of dependence, the sense of responsibility, and the sense of imperfection. It is argued, that when we abstract our minds from perceptible things, and fix our attention entirely upon ourselves and our position in the universe, we are impressed with the feeling of dependence, of being in the hands of a power which we cannot resist, which is equal to maintaining us in such position and faculty as we possess. We know that we did not bring ourselves into the world; we were not consulted in the matter; in a few years, we must disappear from the scene, however anxious to stay. In this experience, it is said, we do not so much infer, as directly feel, the grasp of a power which, as directing and sustaining us, must be capable, in some sense, of understanding us. Recognising ourselves as derived beings, we become aware of our vicinity to the source of our existence, which, we consider, must contain the constituent essence of such a being as we know ourselves to possess.

Still more important and significant is the sense of obligation and responsibility. Conscience is the greatest fact in human nature. We have a power of distinguishing between what we call 'right' and what we call 'wrong,' and we are capable of a unique act of consciousness, in which we feel that we 'ought' to do the right, and are answerable for the wrong. The argument drawn from this experience is not affected by any theory as to the criterion of virtue, as to what makes an action right or wrong. The intuitional or the utilitarian theory of ethics may be the true one; certain actions may be right in themselves, absolutely, and without reference to their effects; or they may be right simply because they promote human happiness. Such considerations do not affect the element of consciousness which is expressed by the word 'ought.' Why 'ought' we to promote happiness? If it be said that our own best happiness is involved in doing what we 'ought,' the remark may be admitted without in the least degree altering the fact, that the sense of 'ought' remains. There is only one way of getting rid of the premises of the argument with which we are dealing here, and that is by declaring that the words 'ought' and 'duty' represent illusions imposed by the mind upon itself, that they really mean nothing more than the strong desire to be happy in the most effectual way. This, of course, is a matter on which there may be diversity of opinion. But where it is conceded, that, without denying the fact and the legitimacy of the desire of happiness playing a determining part in human action, the feeling of obligation represented by the words 'ought' and 'duty,' and a sense of responsibility in connection with such obligation, form an irremovable element in consciousness, natural theologians contend that the inference to a supreme lawgiver and judge is inevitable. 'Ought' means that something is 'owed,' and 'duty' means 'what is due.' To whom do we 'owe,' to whom is it 'due,' that we should act in such and such a manner? Not to ourselves; for we cannot be said in any proper sense to owe, or be in debt, or be responsible to ourselves. Not to others; for often the things which are felt most obligatory by the most conscientious men, are things which they cannot be

said to 'owe' to others, or to be responsible to them for performing. What our sense of obligation and responsibility, therefore, means, is, that there is beyond us, and not resident in human society alone, an authority, entering into the scheme of things of which we form a part, requiring us to do what is right, and having the power and the resolution to enforce its law with needful sanctions. There is a difference among natural theologians as to the manner in which this conclusion is to be arrived at, some reaching it inferentially, others directly. Chalmers and Butler speak of conscience as the 'judge within the breast,' the 'monitor within,' as though it were a power or presence in us, different from ourselves, and located there by another. They then infer from the existence of this moral formation, the existence of a creative Being of corresponding moral nature, according to the principles of reasoning already familiar in the Teleological and Cosmological arguments. To some, and apparently with reason, this view of the case seems to confound figure with fact. To speak of conscience as a 'judge,' or a 'monitor,' or a 'delegated power,' or a 'faculty,' is to use the language of metaphor. My conscience is simply myself in a peculiar phase of experience, in a state of moral sensation or consciousness, acknowledging that a certain thing ought to be done, or confessing that a certain other thing ought not to have been done; elated by the sense of rectitude, or dejected by the feeling of ill-desert. In this state of consciousness, it is said, we have the virtual revelation of a moral governor, we feel that we stand immediately related to One who is master of our wills, whose dictates are imperative, and before whose displeasure we tremble. If this be correct, the idea of God as a moral supremacy which we derive from conscience, is not inferential, but direct.

A third aspect of the Moral argument is that which is taken from a sense of imperfection, whose presence is assumed in the mind. It is argued, that we have capacities of mental development, susceptibilities to happiness, aspirations after sympathy, longings to adore, which are not provided by anything within the range of our sensible experience. But all else that we know around us has the idea of its being fulfilled. As a rule, it achieves and receives all that it was fitted for. Is man to be exceptional? Must we not conclude that there exists some correlative Being capable of giving him the opportunities of thought, the range of happiness, the fulness of sympathy, the object of worship for which his nature hungers, for which it seems waiting?

This reasoning from the imperfection of the present, lies, in its general reference, at the foundation of Kant's Moral argument for the being of God, to which he allows validity in its own sphere, while denying the sufficiency of the Ontological and other speculative arguments. Kant holds that the facts of the moral universe necessitate recourse to the ideas of immortality and God. We are compelled to acknowledge the authority of a moral law, which demands nothing short of perfect holiness or conformity to itself. This conformity is not attained in this present life; and as we cannot assume the law to be meaningless, we are constrained to postulate the perpetuation of human life beyond the present, to afford scope for the gradual approach of human nature to its ideal perfection. In this way the belief of immortality is forced upon the mind through the operation of its own constitution. In the same manner, the idea of God becomes a necessity. We are compelled to acknowledge the obligatoriness of a connection between holiness and happiness. The good man, and no other, ought to be the happy man. But this connection is not seen realised in nature. Yet nothing else can be acquiesced in by the mind. We are therefore compelled to assume somewhere a Cause, superior to nature, that shall aid man in fully adjusting happiness to virtue. Such a Cause must have the capacity of distributing its action in conformity with the principles of justice. That is to say, it must be a moral Being, the ethical legislator himself. Thus the idea of God also is irresistibly pressed upon the moral sense.

The cumulative result of all the arguments that have now been reviewed is held by natural theologians to form a demonstration of the existence of a Supreme Being, Intelligent and Moral, Creator and Controller of all else that is. If it has not been shewn that such a Being is an object of direct knowledge, and therefore as fairly within the range of experience as any of the objects of sense, it is maintained that, at all events, a necessity of believing in Him is so forcibly brought home to the mind, that we are not only justified, but required to act as though He were certainly known to exist. According to the obvious practical principle emphasised by Butler, we are bound to take action upon a probability as much as upon a certainty. Moreover, if we are constrained by the constitution of our minds to adopt such and such beliefs, we must obey them, we must be true to ourselves, we must satisfy our consciences. If, therefore, natural theology has done no more than shew the existence of God to be probably true, or, at all events, an unavoidable *credendum* for the human mind, it has still established a right to summon men to the life of practical religion and virtue. What this life is to be, must be determined by a consideration of the character and attributes of God, in reference to which our careers as religious beings have to be regulated. Hence, having discussed the Being of God, natural theology has to investigate

II. THE NATURE OF GOD.

The question raised here is, What characteristics, qualities, or attributes are we to ascribe to the Supreme Being whose existence is thus presumed to have been demonstrated, or shewn to be an unavoidable *datum* of human thought? In the course of this demonstration, several attributes are supposed to have been collaterally proved, such as Omnipotence, Intelligence, Moral Intention. In proving God to be a cognisable Being at all, we must prove him to be some kind of Being, and therefore the proof of attributes and the proof of existence are to a certain degree inseparable. Under the present head, therefore, the work principally demanding to be done would at first sight seem to be, analysing, in the light of the evidence furnished by nature and consciousness, the complement of attributes comprised under the general categories of Omnipotence, Intelligence, and Moral Intention, assumed as already ascertained. But before doing this work, which

involves details rather than principles, it is usually considered necessary to deal with two questions, which could be touched incidentally only under the first section, but which must be fully met before any attempt to delineate the divine nature can be advantageously entered on. The first of these questions may be put thus: Is the nature of God accessible to investigation? and the second: If accessible to investigation, does it imply personality, or such a character as admits personal relations to it on our part? Both of these questions must be answered affirmatively, before we can be expected to take the pains of inquiring into the divine attributes. If either of them is negatived, such an inquiry ceases to be practically urgent. If the first is negatived, if it is settled that the nature of God cannot be known, nothing more can be done. We must be satisfied to believe that there is a mysterious something called God; but as we can learn nothing about it, we need not ask what duties we owe it. If the second question is negatived, if it is decided that God cannot be construed under personal relations, nothing more need be done. If God is incapable of demanding or receiving duties, the characteristics of such a Being may be an object of curiosity, but can have no interest for practical religion. Now, both questions have been answered in the negative, the first by the theory of Agnosticism, or doctrine that God cannot be known; and the second by the scheme of Pantheism, or doctrine that the universe is God, and incapable of personal relations towards us. These are really the great questions of natural theology, when it directs its attention specially to the nature as distinguished from the Being of God.

1. Is God Knowable?

The negative of this question, so far as we have to do with it here, is not made in an atheistic sense. It is not alleged that the religions of the world have been all in vain. A power behind the world is admitted to exist, but it is declared to be altogether inscrutable. This is the position taken up by Mr Herbert Spencer. He speaks of an 'Absolute Being,' an 'Unknown Cause,' an 'Inscrutable Reality,' an 'Ultimate Cause,' underlying all the phenomena of the universe. Those phenomena themselves are knowable, and they may all be resolved into 'Force.' 'Force,' again, 'as we know it, can be regarded only as a certain conditioned effect of the unconditioned cause—as the relative reality indicating to us an absolute reality by which it is immediately produced.' 'By the persistence of force we really mean the persistence of some power which transcends our knowledge and conception. The manifestations, as occurring either in ourselves or outside of us, do not persist; but that which persists is the unknown cause of these manifestations. In other words, asserting the persistence of force, is but another mode of asserting an unconditioned reality, without beginning or end.' What this unknown cause or persistent force can effect, may be gathered from what Mr Spencer says when speaking of the duty of the man who has attained to some new but unpopular truth: 'He, like every other man, may properly consider himself as one of the myriad agencies through whom works the unknown cause; and when the unknown cause produces in him a certain belief, he is thereby authorised to profess and act out that belief.'

To many natural theologians, the doctrine of the unknown cause, as thus stated, does not appear to be perfectly consistent with itself. If we can describe it as the source of, or even as identical with that 'Force' which produces all the phenomena of experience; if it is the author of 'belief' in conscious beings; if, as appears, it can confer a moral 'authorisation' to 'profess and act out belief,' it seems going too far to say that 'the power which the universe manifests to us is utterly inscrutable.' This may be true in the same sense in which it may be true that 'in its ultimate essence nothing can be known.' In that sense we may be said not to know ourselves, nor the external world, nor other human beings. Is our neighbour, however, 'utterly inscrutable to us,' because we can regard him only as the 'unknown cause' of certain phenomena physical and moral, and cannot know him in his 'ultimate essence?' Natural theologians, for the most part, admit that they cannot know God in his ultimate essence, that in that respect He is 'incomprehensible.' But they affirm that, by careful observation of the phenomena of nature, consciousness and society, which, on Mr Spencer's shewing, are all traceable to the unknown cause, they can know his relations to themselves, and can adjust their behaviour accordingly.

This amount of knowledge seems to such theologians to furnish, in the circumstances, a sufficient basis for a life of religion, especially when regard is had to the practical principle announced by Mr Spencer, that 'where the unknown cause produces in a man a certain belief, he is thereby authorised to profess and act out that belief.' They affirm that they are constrained to hold such beliefs regarding the unknown cause as require them to worship and obey him as a moral ruler. They say that they cannot do otherwise than attribute force to the exertion of will, and regard will which has produced intelligences conscious of duty as intelligent and moral. The only answer which, on Mr Spencer's principle, seems possible from his side, is, that these beliefs are not rightly reached. And this is really the answer he makes. He says that this interpretation of the unknown cause into intelligence and will, is not only illegitimate, but inconceivable. 'The analysis,' he says, 'of every possible (theological) hypothesis proves, not simply that no hypothesis is sufficient, but that no hypothesis is even thinkable.' Even were it thinkable, he denies that it must necessarily be adopted. 'Is it not just possible,' he says, 'that there is a mode of being as much transcending intelligence and will, as these transcend mechanical motion? It is true that we are totally unable to conceive any such higher mode of being. But this is not a reason for questioning its existence; it is rather the reverse.' It may be answered, however, that a mode of existence which we are 'totally unable to conceive' can never be before our minds at all, whether for affirmation or denial, and that if the will and intelligence of the 'ultimate cause' be an inevitable belief on our part, we are not only 'authorised,' but compelled to 'profess and act out that belief.' Accordingly, it seems necessary for Mr Spencer's argument to fall back upon his

affirmation that the hypothesis is 'not even thinkable.' And here a distinction has to be made. Mr Spencer does not appear to regard the idea of a 'great artificer' of the universe as unthinkable. But he says that this idea brings us no further than to the conception of the world's construction out of pre-existent materials. It does not unable us to conceive the creation of the pre-existent material out of nothing; and he adds, that 'unless it helps us to understand that, it is worthless. The production of matter out of nothing, is the real mystery, which neither this simile nor any other enables us to conceive; and a simile which does not enable us to conceive this, may just as well be dispensed with.' This, however, is a point which natural theologians dispute. They argue, that if they have reason to believe themselves at this moment in the hands of an intelligent moral governor of the universe, they cannot afford to 'dispense with' the idea, or disregard it as 'worthless.' They find it advisable to 'profess and act it out.' They find it in the meantime a source of happiness and an aid to duty, and unless it can be shewn that they have no right in reason to its possession, they maintain their claim to hold and obey it. Mr Spencer affirms that we cannot think the universe either as eternally existent or as being created. The answer of the natural theologian is, that such a consideration does not destroy the significance of his present consciousness, which compels him to postulate an intelligent will, manifestly able to dominate the existing universe. If this is known, or if it can be shewn to be a necessary belief of the human mind, it would appear that the Agnostic theory breaks down. Granted, it can shew that we are necessarily ignorant, or not necessitated to any thought, of the original or eternal relation of God to the universe, it does not follow that we are ignorant, or not necessitated to some thought, of the present relation of God to the universe. Because we do not know everything, it does not follow that we know nothing.

The Agnostic doctrine is maintained from another quarter. The teaching of Sir W. Hamilton, and of his disciple, Mansel, is to the effect not only that we cannot know God in his essence, but that we cannot consistently hold any positive ideas respecting his qualities, all our thinking of Him being relegated to an attitude of mind which they call faith. They affirm that if God is to be thought of at all, it must be as the absolute, the infinite, that which stands in no necessary relation to anything else, that which includes within itself all possible modes of being. But if we think of God as an intelligence and will, shaping and ruling the universe, we make Him a person, and so deny Him as the infinite and absolute. This is represented as happening in various ways, of which one or two only need be mentioned. When, for instance, we think of Him as a will controlling the universe, we personify Him, and limit his being. We place Him here, and the universe over against Him, and He is no longer the infinite; his being does not contain all being. Again, when we ascribe to Him intelligence, He ceases to be the absolute. Intelligence must necessarily have an object. Accordingly, in making God intelligent, we bring Him into necessary relations to an object of intelligence; that is to say, He is no longer the absolute. It is therefore impossible for us to ascribe any thinkable characteristics to God, since this is inconsistent with thinking Him as the absolute and infinite. But further, even when we try to think Him as absolute and infinite, we necessarily fail. We cannot think the absolute and infinite. In thinking any object, we must think it as out of ourselves, and therefore related to ourselves. We thus limit it, and make it related; in other words, we do not and cannot think it as the infinite and absolute. God, therefore, cannot be thought at all. But by means of what is called 'regulative knowledge,' it is sought to be shewn that we must make Him an object of *faith*. It becomes 'our duty to think of Him as personal.'

To this criticism, natural theologians usually reply, that if the absolute and infinite are unthinkable, it is meaningless to say that God must be thought under those characteristics; and that, therefore, in making such a statement, no valid obstacle is placed in the way of our thinking God as intelligence and will. But even supposing the absolute and infinite, in the sense under consideration, were thinkable, where, it is asked, is the proof that it is necessary so to think of God? From data of experience, we feel ourselves constrained to infer the existence of an intelligent moral ruler. Is there anything in these data, or in the nature of the conception inferred from them, compelling us to postulate that this ruler must be capable of existing out of all relations, and must include all being in himself? If He has irresistible and discretionary power over the universe, what more is wanted to constitute a basis and a call for our adoration? Granted, He is not infinite in the sense of including all beings in himself, what does it matter if He can control all beings as He pleases? Granted, even, He is not absolute, in the sense of there being some necessary principle of the universe co-eternal with himself, still, if He is independent of this principle to the extent of being absolutely able to mould it at his pleasure, what more do we require? In short, the answer of natural theology to the Agnostic doctrine is, that in the present state of the world, experience presents to us evidence which compels us to assume an intelligent and moral ruler. When we try to go back to, or before some supposed beginning of the world, difficulties, and possibly inconceivabilities may meet us, but these form no warrant for cancelling the beliefs which are forced upon us by experience within the world. We may not be able to form any ideas as to the ultimate essence of this ruler whom we call God, but we can reach some conception of his powers and relations to us by what we observe of his operations. We may not be able to conceive all his relations to all that exists, but we can conceive some of them. Partial Agnosticism, therefore, is admitted. Absolute Agnosticism is denied. Our ideas are not adequate to the subject, but they cover a part of it, and the fact that we do not possess perfect or adequate ideas, is no reason for our throwing aside those which we do possess.

2. Is God Personal?

Besides the general Agnostic denials, a special negative to this question is maintained by the various schemes of Pantheism that have from time to time appeared in the history of human thought, the purpose of which is not to deny God,

but to define him. In the different systems there is a consensus of tendency to efface the distinction between God and the universe (as commonly understood), and to include God in the universe, or the universe in God. Beyond the universe and its forces there is nothing, and if we mean anything at all by God, it can only be the eternal activity, the endlessly fluctuating life which these are evolving. All things taken together form a unity, which however multiple in its forms, is yet indivisible in the sense that we cannot segregate one part of it as independent, and say that the remainder is dependent upon this. All is necessary, all is eternal, and this All, if you choose, you may call God. The All is made up of thoughts, and things, and processes, and if in thinking of this complex aggregate you find it necessary to seek some central principle of unity for your thought, some underlying and abiding substance, you may call it God, but you must bear in mind that this God-substance exists only in its forms and developments, and that these all partake of each other, flowing into and out of each other, the minds of men being God thinking, things God at rest, and processes God in motion. Between the different parts of this complex All, it is plain there can be no moral relation, any more than there can be between the different parts of a machine. All fit into each other to form the unbroken unity, and all, therefore, are equally good, or rather equally without character. Moral relations require at least two thinking and responsible beings to constitute them. One being can have no duties. But if all the thinking of the universe is that of one substance evolving its thoughts at different points of projection, there is no room for moral obligation, since there is only one thinking Being. The idea of duties between man and man—that is, between one set of the universe's or God's ideas and another, is as inadmissible as the idea of duty as owing by judgment to sensation, or by imagination to perception. God being thus identified with the universe, loses all personality. He has no relations, except internal and mechanical ones between his constituent parts. The investigation, therefore, of his qualities can be nothing more than an inquiry into the history of that perpetual flux of development, in which we ourselves are evanescent forms. Such an inquiry may be amusing, but cannot have any ethical significance.

The history of opinion shews that the tendency to a Pantheistic view of the universe is natural to a very large class of minds. Universally and always, it exerts a vast influence over religious thought. Natural theology accounts for its extensive prevalence chiefly on two grounds: 1. The difficulty of conceiving the creation of the universe; and, 2. The natural preference of thought for objective over subjective inquiries. There is an acknowledged difficulty in conceiving the world as coming into existence out of nothing. To minds that have determined on regarding this as inconceivable, but have not adverted to the fact that the opposite is equally inconceivable, the eternity of the universe becomes a necessary belief. Thus existing uncaused, it is consistently enough regarded as containing within itself the sufficient ground of all its phenomena. Existing necessarily, all that it produces are necessary evolutions, and among these thought takes its place without difficulty, being not less easy to regard as a necessary growth of nature than the order which prevails in the world. Having assigned thought in general to this origin, the observer almost, as a matter of course, puts himself among the other necessary evolutions which together make up the universe.

It is to this superficial treatment of himself and his own consciousness that the natural theologian ascribes what he regards as the radical error of the Pantheistic theorist. He has begun at the wrong end. Instead of commencing with what is nearest and surest—namely, himself and his own experience, he has commenced with what is most distant and doubtful, the external world and its origin. Instead of interpreting the external by the light of principles yielded by the internal, he forces upon the internal a definition gathered solely from contemplation of the external world. On such a perverse method, it was scarcely possible to escape error. Looking only, as first impulses suggest, upon the external world, and regarding it, as on the hypothesis of its eternal and necessary existence it must be regarded, as a self-acting state of things, producing mechanically and inevitably all that appears, it is not unnatural to conceive thinking beings and their thoughts as homogeneous elements in the whole, and then tacitly to transfer this view of thought as a phenomenon to one's own thought and self. But here, it is said, the fatal mistake is committed of not remarking the gulf that lies between the objective and the subjective. By no possibility can we identify ourselves with the world as generically similar parts of the same unity. The me and the not-me, the self of which we are conscious, and the phenomenal of which we are not conscious, will not coalesce. Our own personality stands out as a stubborn and irreducible *datum* of thought. We cannot think of ourselves as another substance thinking. Be the external universe what it may, we are one being, and it is another. The more we scrutinise our own consciousness, the more deeply do we become convinced that so far from the arrangements of the universe producing thought, it must be thought that lies at the foundation of the arrangements of the universe. In calling this thought God, we place it outside and separate from ourselves. We cannot recognise ourselves as part of God, as God thinking. Such a description has no meaning to us. We are one thinker, God is another; we within the sphere of our own consciousness; He within the sphere of the external universe.

These deliverances of consciousness, it is contended, are the surest and most authoritative of all the elements of our knowledge, and should be made the standard by which all our other conceptions and conclusions are tried. In presence of these, every other opinion inconsistent with them should give way. It is in virtue of this paramount authority of the testimony of consciousness that natural theology holds the Pantheistic hypothesis untenable. We know ourselves to be separate and independent personalities, and in relation to us God also must be a personality; Infinite, it may be, in his qualities, and beyond our power of adequately comprehending, but still personal in his position towards us, since He and we are outside each other. The relations between us being thus personal, can also be moral. There

are duties which we may owe Him. It therefore becomes of consequence to inquire into

3. The Attributes of God.

Various classifications of these are made. That which it seems most proper for natural theology to adopt is determined by the general characteristics of power, intelligence, and moral aim, which are assumed to have been disclosed in establishing the existence of God. If we are constrained to believe in a being disposed and able to give existence to such a universe as we know and infer Him from, we are also constrained to ascribe to Him all qualities necessary to the constitution of such a universe.

First, It appears that He must have power, omnipotence for the performance of whatever demands to be done. Under this head appear to come three attributes—eternity, spirituality, and omnipresence. (*a*) He must be eternal. His existence being necessary to account for all contingent existence, cannot be thought of as ever out of existence, but as beginningless, endless, eternal. (*b*) He must be spiritual. If the position that matter is contingent be correct, that which caused matter must be non-material, otherwise it would itself be contingent, and require a cause. What spirit or the non-material is, we know by reference to our consciousness of the antithesis between ourselves and the physical universe. (*c*) He must be omnipresent. If He is the sustainer of all existence, He must be in efficient relationship to every part of it.

Second, Intelligence in its designer is demanded by the constitution of the universe. In this respect, God must have the two attributes of omniscience and wisdom. (*a*) He must be omniscient. In the intelligent regulation of our own limited sphere of action, we are conscious of the necessity and possibility of grasping a considerable number of conceptions at once. In a controller of the universe we are compelled to imagine a degree of this power able to cope with the whole area of being. (*b*) He must be wise. Adequate information alone is not sufficient for successful control. There must be the ability to use the information so as to produce desirable effects. This is the function of wisdom as apart from mere knowledge. The conditions of existence are held to be such as to require the ascription to God of this quality of wisdom.

Third, The state and history of the world seem to evince a moral purpose in its divine administrator. In view of this conclusion, it is usual to ascribe to God the attributes of goodness, love, holiness, and righteousness. (*a*) He must be good. Goodness is willingness to communicate what is in one's own power to retain. The world abounds in proofs of the presence of a bountiful power. (*b*) He must be loving. Love is delight in the attachment and happiness of personal beings. The existence of sentient and rational beings, and the provision made for their enjoyment, is held to be proof that this quality of love must exist in the Supreme Disposer. Certain appearances not consistent with this idea are explained on the hypothesis of discipline, temporary distress as conducting to higher and permanent well-being. Others spring from sin, which is not of God's making. (*c*) He must be holy. Consciousness testifies to free-will, and free-will implies the ability to sin. Our own knowledge of sin qualifies us for declaring whether anything of that nature is mixed up with the government of the world. Experience demands the declaration that no sin is apparent in the acts of God, that He is holy. (*d*) He must be righteous. History is to be interpreted as a development of justice. Certainly it is mingled with abuse and crime, which often seem to escape; but, resting in the ultimate *datum* of free-will as affirmed by conscience, we must attribute these to the sins of man, not to the authorship of God; while the ceaseless striving of the historical forces to rectify wrongs, to punish evil, and reward excellence, declares it to be the Supreme design to vindicate and establish righteousness, and calls for a future where the temporary inequalities of the present may be fully redressed.

To these single attributes may be added the universally applicable attribute of immutability, belief in which is demanded by the experience which the human race has gained of the stable character of the universe, and the unity of purpose pervading its history, as well as by the insurmountable difficulty of conceiving a change in the essential nature or aims of existence. Belief in such attributes and their possessor leads necessarily, except where prevented by sinful free-will, to certain states of feeling and forms of action; to hope and tranquillity in view of the divine beneficence; to the performance of duty in view of the divine righteousness; and in view of sin, and the extent of human ignorance, to a willingness and desire to examine the credentials of any statement that comes presenting probable claims to be a revelation.

ETHICS,

Or Moral Philosophy, has been defined to be 'that science which teaches men their duty, and the reasons of it.' The details of duty are usually presented in a series of rules directing men how to act in the various emergencies of life; and as these rules are, in Christian countries, drawn, for the most part, from the precepts of Sacred Scripture, they are held to carry their own reason along with them, as being the expressed will of the Ruler of the universe. Nevertheless, the sacred writers themselves, while delivering their precepts in the name of Heaven, are constantly appealing to their inherent reasonableness, as if they had a claim to be obeyed in the very nature of things, and as if men, if they would only attend to them, would see and feel them to be right, though they had no such authority. 'Why do not ye of yourselves judge what is right?' The Gentiles, we are also told, 'which have not the [written] law, are a law unto themselves.'

Now, as we have been inquiring what ground there is, independently of revelation, for belief in

the existence and attributes of God, it seems a natural sequel to examine, whether morality also has not an independent foundation in nature; in other words, to examine on what grounds of reason, and without reference to any supernaturally revealed will, men have, in all ages and countries, judged some actions to be right, and others wrong, and have felt an obligation to do the one, and refrain from the other. This, which forms the theoretical part, or philosophy, of morals, we can afford to consider only in the briefest manner —merely noticing a few of the leading questions that fall to be considered.

Have we a Moral Sense?—This question meets us on the threshold, and divides speculative moralists into two schools. One school hold that we have such a sense—a sense that discerns between right and wrong, as the eye does between black and white, or the nerves of sensation between hot and cold. The same thing is implied in such phrases as—'the instinctive love of virtue and hatred of vice,' and 'the intuitive perception of right and wrong.' Against this view it is argued, that if our moral perceptions were made through a special faculty, men would uniformly, in all ages and countries, approve certain actions, and disapprove certain others. But this is far from being the case. There is scarcely, as has been remarked, a single vice which, in some age or country of the world, has not been countenanced by public opinion. In one country, it is esteemed an office of piety in children to sustain their aged parents; in another, to despatch them out of the way. Theft, which is punished by most laws, by the laws of Sparta was not unfrequently rewarded. Among the Jews, polygamy was quite reputable, and was at least tolerated by the Mosaic law; among Christian nations, it is punished as a crime. In short, moral approbation seems to follow the fashions and institutions of the country we live in, and to depend on the notions instilled into us by education, and on other circumstances, many of them, it may be, accidental. Those that argue thus are far from denying the reality of the distinction among actions as right or wrong, or from holding that it depends on the arbitrary opinions of men. On the contrary, they maintain as strongly as their opponents that some actions are in themselves right, and others in themselves wrong, independently of what may be thought of them. They only deny that men are born with the faculty of instinctively or intuitively discerning this difference in actions; and hold that they must learn it, as they learn the qualities of other things in the universe, by experience. According to this view, it is the experience of the consequences of actions, accumulating from age to age, that has worked into the general mind of the civilised races sentiments, more or less deep, of approbation of some actions, and of reprobation of others. This experience is handed down from generation to generation; and every individual as he grows up imbibes the general views and feelings independently of his own experience.

Not that these sentiments are always well founded. Men make often great mistakes as to the sources of what they enjoy and suffer, attributing particular effects to any causes but the right one; hence those frequent contradictions between the moral maxims of different nations, to which we have already alluded. It required far-seeing thinkers and rulers, speaking often in the name of Heaven, and commanding the general attention to that will of the Creator which the mass of men could not or would not read as He had written it on His works—it required all this to open men's eyes to their short-sighted judgments, overcome their selfishness and indifference, and lead them, often unwittingly and unwillingly, to make trial of ways of acting more in accordance with the laws of well-being. The result of a long succession of efforts of this kind is, that many of the early errors and prejudices of moral judgment have been eliminated, and that among civilised nations everywhere there is a decided concurrence of opinion and sentiment regarding most of the leading points of human conduct. This account of the origin of our moral judgments, by shewing the natural tendency of experience and knowledge to correct them, has the great advantage of encouraging all efforts for the intellectual cultivation of the race, and of opening up a prospect of endless improvement. If, on the other hand, these judgments are of the nature of instinct or intuition, it is difficult to conceive how they are to be improved, or how any science of morals is possible.

The difficulties attending the doctrine of an innate moral sense, when that doctrine is rigorously followed out, are so great, that its advocates have always qualified it by admitting the necessity of enlightening the conscience by religious and moral teaching. The individual conscience is allowed to be a standard of morals only by virtue of its representing or reflecting 'the common conscience of mankind, by which benevolence, justice, truth, purity, and wisdom, are recognised as the supreme law of man's being.' But this only brings us back to the point from which we started. How were those current maxims of morality forming the common conscience of mankind formed? They cannot be admitted to be matter of mere taste or feeling in the race, any more than in individual men; and the only account that can be given of them is, that they have been learned in the manner of experimental truths.

Moral End—Chief Good.—Every practical science proposes some end, or aim, and then addresses itself to the ways and means of attaining that end. Thus, navigation is a practical science with a distinct and well-defined aim—namely, to cross the seas with speed and safety; and a treatise on navigation consists of a body of knowledge so arranged as to shew the way to this end. The first step, then, in a scientific system of morals, is to define the end to be aimed at. It seems agreed on all hands that the end of all moral rules is the *chief good* of mankind; but this conception is by far too general and vague to be of much use; and one of the chief obstacles in the way of putting morality on a satisfactory scientific foundation, is the difficulty of fixing more definitely in what that chief good consists.

It will be admitted that the chief good of an individual man must embrace, among other things, his preservation and health, with the means and circumstances necessary to develop and give full scope for the exercise of all his faculties and affections; for thus only can an animated being derive full satisfaction from his existence. On the assumption, then, that well-being is the legitimate

end of morality, a set of rules or directions how to act, so as to secure the above conditions, would form part at least of a system of moral duties.

That this is the real nature of the generally received moral duties—'the cardinal virtues,' as they are called—will appear on examination. They are generally brought under the heads of Order, Truth, Justice, Benevolence, and Temperance.

Order.—The duty of order rests on the fact that man is a social being. It is only in association with his fellows that the individual human being can rightly protect his life and secure what is necessary for his bodily wants and comforts. And what is more, it is only in society that he finds scope for the exercise of all his higher and distinctive faculties and feelings; nay, the very presence of his fellow-men is of itself a source of gratification to him. This association implies organisation—the assignment of various functions to the several members, with subordination, and an acknowledged authority or head to direct the general purposes of the body. Whoever seeks to impair this organisation, or deserts the post assigned him, is universally felt to be endangering the very existence of the whole structure, and with it, endangering all the security, quiet, and happiness bound up in it. It is this strong feeling, this primary social instinct, that leads men to do what is otherwise a very distasteful thing—namely, to restrain their individual wills and impulses, where these interfere with the right working of the social organism. The very mutineers that have murdered one captain, proceed immediately to elect another, and bind themselves to obey him—so strongly is the necessity felt of submitting to the restraints of authority, if we would enjoy the benefits of association.

Truth.—Next to order, comes the duty of truth, as an essential condition of the well-being of man. If no faith could be placed in promises or contracts, society would be impossible; the human race would be reduced to the condition of the wild beasts, where each one trusts only itself. There is an all-pervading conviction that no form of association can exist without truth among the members, towards one another at least; hence the world-old proverb, that 'there is honour even among thieves.' Not only is truth essential in matters of importance; hardly any case of integrity is indifferent, because of the tendency of the smallest unveracity to excite distrust in greater matters. To depart from strict truth on trifling occasions has this further evil consequence, that it makes it more difficult for the individual to adhere to truth on great occasions; for the strength of a man's character depends upon his having formed firm habits of acting upon general rules or principles. This consideration is applicable to most, if not all cases, where what is acknowledged to be a virtuous action has yet no apparent direct utility. That the obligation to speak truth does ultimately rest on its utility, is conclusively shewn by the fact, that where utility ceases, and positive harmfulness sets in, all men unite in disowning the obligation. Thus, no one thinks it unjustifiable to deceive a madman, or an enemy in war, or to practise reserve in the statement of opinions.

This power in circumstances to determine the moral quality of an action is not confined to the case of truth; it holds good of all duties. Even the most sacred of all obligations, that of not taking away life, ceases when the continuance of an individual life is inconsistent with the safety of society.

Justice, another of the cardinal virtues, is no less founded on its necessity to the very existence of society—a necessity which we might illustrate in a similar manner, did our space permit.

Benevolence or humanity, at least to the extent of being ready to rescue a fellow-man from perishing, and to alleviate the cases of distress that come under one's eye, is also a necessary condition of men living in society. So liable is human life to accidents and calamities, that, were these calls not responded to, society, if it did not absolutely dissolve, would lose at least half the advantages it really offers. Hence a man without ordinary humanity is felt to be a monster, and unfit to be a member of a community. We are not considering at present the feeling of sympathy from which benevolent actions spring, and which, in a well-constituted mind, is its own motive and reward, leaving little for the sense of duty to do, and finding its own pleasure in a thousand kind actions, the omission of which no one could have blamed. The moral element in such actions we will consider presently, and from another aspect of the subject. The question is now of that sense of obligation on the one hand, and of rightful claim on the other, that attends some of the calls of humanity; and the position we would maintain is, that the obligation and the right rest on the conviction, grown in the course of ages into a strong public sentiment, that if the calls were generally disregarded, life would lose half its value.

Temperance.—This virtue has reference chiefly to the mode of gratifying the bodily appetites and propensities; and embraces all those rules and regulations necessary for maintaining the system in health and enjoyment. How essential such regulations are for the preservation and well-being of men, would be among the earliest discoveries made, and on their necessity rests the obligation to attend to them. The consequences of neglecting those rules, although ultimately they affect society at large, so that every one has an interest in his neighbour's temperance, yet fall directly and chiefly on the individual himself. Hence duties of this kind are often called *personal* duties; while order, truth, justice, and benevolence, arising directly out of our relations to other men, are *social* duties. The duties that we owe directly to ourselves are also spoken of as duties of *prudence*, in contradistinction to *moral* duties, as if the term moral applied only to actions between man and man. This appears, however, to be an unnecessary narrowing of the meaning of the word 'moral.' At all events, duty to self and duty to others have a fundamental element in common, as we shall try presently to shew.

The duties already spoken of are essential to the preservation of the individual and the continued existence of society, and have therefore the highest degree of obligation. They constitute what is called *primary* morality. Society exacts them of all its members, and so far as they can be exactly defined, they are embodied in express laws, and the violation of them is visited with

punishment. The very appropriate term *jural*, has been applied to the class of duties and rights which are made the subjects of express enactment. These, however, are far from affording scope for the whole moral nature of man. Not content with such acts of humanity as it would be a reproach to neglect, the more benevolent natures feel prompted to widen the sphere of their action, to go out of their way in search of objects for their beneficence, and to labour in every way to add to the existing sum of human happiness. Not content, again, with merely giving every one what is rightfully his own, generosity prompts to many spontaneous acts of self-sacrifice. In short, the virtues are carried beyond the limits of the necessary, until they often arrive at the noble and sublime. Persons capable of acting in this way, do so because they feel a moral call—a constraint, if not from without, yet from within; and even those who in the same circumstances would act otherwise, yet feel constrained, as on-lookers, to approve and admire. Now, in the case of this secondary morality, no less than in that of the primary, the ground of the obligation rests, we believe, on the utility of the actions; they all conduce to the more complete well-being and happiness both of the actor and of all concerned. It not unfrequently happens, that a course of action, long looked upon as virtuous, and held in high repute, is discovered to be productive, not of good consequences, but the contrary; in such a case, the sentiments of society regarding that course of action are changed, and the character of being a virtue departs from it.

This theory as to the foundation of moral obligation, appears to many to give a low and grovelling aspect to virtue; and they apply to it the terms 'utilitarian' and 'the happiness principle,' by way of stigma. Duty they hold to consist in the pursuit of the *right*, and not in the pursuit of the *useful;* but what right is, as distinct from the useful, has never yet been made clear. The objections felt to the utility or happiness principle derive their force from taking a narrow view of utility, and considering it as equivalent to low, selfish interest; while the pursuit of happiness as an end is spoken of with contempt, being almost invariably confounded with low pleasure or the gratification of the merely animal propensities. When happiness is taken in its right meaning, as that state of enjoyment which arises from the highest gratification of man's nature as a whole, we are unable to conceive any higher object that could be set up as an end; and, what is more, though another and higher end were proposed, we cannot conceive human nature pursuing any but the one now mentioned. But the best way, perhaps, of making these objections and some others disappear will be to consider the internal impulses or motives from which human actions proceed, and what is implied in such terms as Ought, Self-love, Selfishness, Disinterestedness.

Motives of Action.

Pleasure and Pain.—Ought.—In order to detect the moral element in human conduct, we must begin with those instinctive actions that are connected with the preservation of the individual life. Not that the preservation of life is the motive of these acts. In the act of eating, no animal, no child thinks of keeping itself alive and in health thereby; no more does any healthy man. All such acts are prompted or guided by one or both of two motives—*pleasure* and *pain*. Whatever gives pain, is avoided or repelled, and that, not from the thought that it endangers life, but simply because it gives pain. Whatever, on the other hand, relieves the cravings of hunger or any other appetite, and in doing so affords gratification to the senses, is sought. The exercise of the various active faculties of body and mind is also attended with pleasure, and under the promptings of this stimulus, such exercise is indulged in. All this is common to man with the lower animals, and thus far no consideration of a moral nature is discernible; the word *ought* would be out of place in such cases.

But it is soon discovered that it is not safe to indulge every impulse of this kind. Some pleasures are found to cost too dear—that is, they bring painful consequences in their train; some pains, again, if submitted to, ward off greater pains, or secure more than counterbalancing pleasure. And here begins a struggle between two parts of man's nature; between the impulses of sense, urging him to seize on a present pleasure, and that reason which, 'looking before and after,' can depict an overbalancing pain, or the loss of a higher pleasure, awaiting him in the future as the consequence. The intellectual capacity of thus bringing the idea of absent and future things into comparison with things present, is the foundation of man's moral nature—makes it possible for him to be a moral being; and the judgment which dictates that the lower gratification, though present, must yield to the higher, though absent—which utters the solemn voice '*I ought*,' is that moral nature in activity—it is an act of conscience. If, consulting the ease of to-day, he omit doing something which to-morrow he will be compelled to do, and with twice the amount of labour, he feels moral indignation against himself, as having been his own enemy. This humble virtue of prudence—this enlightened self-love, as it has been called—contains the same essential element as the most exalted social virtue; it is grounded in a conflict between two promptings or impulses, the one arising from immediate sense, the other out of ideas of reason, and in the universal feeling that the latter ought to outweigh the former. That this is the essential element in social morality also, appears thus:

The happiness of a man is not made up solely of those gratifications of which he is capable in his own person. Through sympathy, he can enjoy the enjoyments of others, and suffer in their sufferings. In the young, this faculty is extremely imperfect. Children are at first bound up in self, and think only of their own enjoyments. It is only gradually, and chiefly through the exercise of special affection for individuals connected with them in family relation, that they learn to sympathise with human feeling in general. It has been well observed that the man or woman who has once experienced the passion of love, which forcibly draws the individual out of self, and makes a second self of another, is ever after more capable of sympathising with everything that lives and feels.

The individual has thus his capacity for joy and sorrow increased. His very consciousness and sensibilities are virtually extended beyond

himself into the consciousness and sensibilities of others, and he cannot, if he would, forget how these will be affected by his actions; for a jar of pain or a tingle of joy in their nerves, will, through the sympathetic bond, vibrate in his own frame. This capacity of having present with us the feelings of others, and of being affected by them, is necessary as a foundation on which to rest the obligation of having regard to the happiness of others in our actions. If we wanted the intellectual and emotional faculties involved in sympathy, no teaching, no injunction of authority, no calculation of merely individual interests, could beget the response which social duty finds more or less in the human breast. As it is, the maxim of doing to others as we would have them do to us, or of putting our neighbour's happiness on the same footing as our own, is universally assented to as the very voice of reason and of nature.

As in the case of actions involving the happiness of the individual, so in those that involve the happiness of others, there is always a conflict or a comparison between two impulses; and it is out of this relation that the moral quality of the action arises in both cases. A prudential virtue consists in weighing a present pleasure or pain with the idea of a future pleasure or pain, and in holding the balance fairly between our present self and our future self; a social virtue consists in weighing a gratification or a pain in our own persons, with a gratification or a pain in the persons of others, and in allowing the latter the same consideration as if it were our own. To give way to the impulse of the moment, and snatch a present gratification, which we know will cost too dear, is weakness and *folly*—a sin against self. To seek our own personal gratification at the expense or to the neglect of the feelings of others, is weakness and *selfishness*—a sin against our neighbour. Both sins consist essentially in allowing what is bodily present to triumph over what is present—if present at all—only in idea and to reason; in short, the sensuous and narrow part of man's nature, which he has in common with the lower animals, is made to overbear those distinctive intellectual and emotional faculties which constitute him a man, and which instinctively claim superiority. The essence of human dignity and virtue would seem to consist in giving the ideal and rational part of man the rule over the lower impulses.

If all men had perfect knowledge, and perfect human sympathies, there would be no need for laws of morality in the usual sense. We should see, and feel, and will the right thing, without thinking of any law. The first impulse would be the right one, and there being no conflict, such words as *ought*, *obligation*, *duty*, would become meaningless. A man in this condition would have attained 'the perfect law of liberty,' which is represented by St Paul as the consummation of the sanctified nature. Such a beau-idéal of human nature is doubtless sufficiently utopian as regards the actual condition of men in general. Yet we see approaches made to this moral freedom. Some men, with respect to some duties at least, are constitutionally virtuous; what it costs others a struggle to do, they do spontaneously, and with no inclination to do otherwise. Of such virtue we are apt to say that it is without *merit*—so prominent in our notion of duty is the element of contest or struggle. Yet that virtue is really more perfect in proportion to the absence of conflict, appears from the fact, that a consistent course of duty, though begun in struggle, has a tendency to end in being easy and spontaneous. Duty is thus virtue in an imperfect state, while it is yet difficult and requires support.

From this point of view, rules or laws of conduct are aids from without—supplements to the individual's knowledge and moral strength. The experience of the longest life would go but a short way to teach a man how to make the most of his individual existence. His life would be lost before he had learned how to preserve it. But the experience of generations has been handed down in the form of history and of prudential maxims, which, like charts, warn him of the sunken rocks on which others have made shipwreck. He finds from his own experience that it is safer to follow these general rules than to trust to his own judgment, disturbed by passion at the very moment he ought to decide. In cool reason he promises to himself to follow them; and when he feels tempted to depart from them, he 'appeals from Philip drunk to Philip sober.' In like manner, the laws and maxims of social morality are the results of ages of experience, teaching how the individual ought to act so as to secure the greatest happiness of the whole society. The experience of the evil results to all, when individuals transgress these laws, begets a strong sentiment in their favour, and of resentment against transgressors. All without exception partake of this feeling, for even the selfish dislike others that are selfish; and when an individual is tempted by his selfishness to do what will injure others, this sentiment reacts upon himself; he cannot help reprobating his own conduct. This echo of public opinion which is heard more or less loudly in the breast of every man, comes to the aid of the more generous impulses of his nature, when struggling with those of selfishness; and although often too feeble to secure the victory, it does not fail to protest and make itself a source of permanent uneasiness—it is the social conscience speaking in the individual. Few are aware how much of their moral strength they thus derive from without; and how principles of action that seemed innate and strong, break down and disappear when the outward support is withdrawn.

Selfishness—Disinterestedness.—To make happiness the end of virtue, reduces it, we are told, to a system of 'refined selfishness.' Now, if to seek gratification in any form be selfishness, then virtue is the highest form of selfishness, for it is to seek the utmost gratification of which human nature is capable; it is the art of making the most of human life in this respect. In fact, throughout the above reasoning we have assumed, and indeed every one that reasons about human conduct does, either expressly or tacitly, assume, that conscious and sentient beings necessarily seek pleasure, and avoid pain. In other words, they act, and can act, from no other motive than some impulse or requirement of their nature, the non-gratification of which would leave them uneasy and unhappy; it being understood, of course, that under impulses and requirements of their nature are included, not merely those of the

senses and lower passions, but those more imperious requirements which take their rise in the more refined emotions and in the region of the ideas and of reason. The prudential virtues are clearly and avowedly founded on the pleasure-and-pain principle. The man who has a portion of food that must last him for two days, resists the inclination to eat it all the first day, solely because he knows he will have more enjoyment and less suffering the one way than the other, and, under that conviction, the eating of the last half would not give him satisfaction even at the moment. In the social virtues, however—many of which seem to consist in the abnegation of our own pleasure, and the courting of pain—it is thought we must admit other grounds. As before observed, we cannot conceive a conscious being acting on any other; nor do any other seem to be required. In everything, 'happiness is our being's end and aim.' Even when most forgetting ourselves, and seeming most absorbed in seeking the good of others, we are virtually and directly gratifying ourselves. The mother who puts the morsel of food past her own mouth into that of her famishing child, does that which gratifies herself the most. She had felt his hunger more than her own—to such intensity does sympathy in many instances go—and to allay it was more imperative and more satisfying to her whole nature. Do we destroy the beauty and disinterestedness of the action by thus representing it? No, we only render her conduct intelligible, conceivable. Her action is no less one of self-sacrifice. *Self* is her own narrow personal sensations, which she forgets, to live and feel in another's. Selfishness consists in seeking happiness which is confined to our own personal consciousness; disinterestedness consists in seeking our own happiness in the happiness of others. Disinterested actions, in the sense of actions having no relation to the happiness of the actor, are inconceivable; were our own happiness not involved, we should not act at all. Theories of virtue which strive to exclude all consideration of the actor's happiness from his motives, are always logically incoherent, and mostly consist of sentimental declamation. The repugnance felt by many to the happiness principle, arises from their confounding the being actuated by the desire of happiness, with selfishness. Now, selfishness is the most hateful of all sins. Of all sins against our neighbour it is the very essence. And even sins against ourselves may in one sense be called selfish. For a sin against one's self consists, as we have seen, in allowing the passions of the present to triumph over the consideration of the future; and what is this but the narrow man of *now* treating the enlarged man of all time as a stranger, and sacrificing him to his selfish impulses? Selfishness, then, is justly held in abhorrence; not, however, because it is the seeking of our own happiness, but because it is the seeking of that happiness in wrong objects. But, by an abuse of language, it is often allowed to stand for seeking our own happiness in general; and hence the dislike felt by many to allow the desire for happiness to be considered as entering into the motive of what are called generous actions.

The happiness principle, too, is sometimes expounded by its advocates in a way that makes it both false and odious. They represent humane and generous actions as proceeding upon a calculation of ulterior consequences to the actor. If we were to act less generously to others, it is argued, others would act less generously to us, and we should on the whole be losers. Now, anything done for the good of another from such a calculation of the returns to be expected, can have no title to being called a generous action; it is essentially selfish, for the pleasure in view is some advantage to be enjoyed by the actor personally. The only healthy impulse from which a good action can proceed is the direct one, lying in the gratification afforded by the action itself. If I am truly benevolent, I bestow a gift upon my neighbour, thinking of no ulterior consequences to myself, and only of the happiness it will afford him, but deriving at the same time more enjoyment from the thought of his happiness, than the use of the gift in my own person would have afforded.

Paley defines virtue to be 'the doing good to mankind, in obedience to the will of God, and for the sake of everlasting happiness.' This is perhaps the most repulsive light in which the happiness principle could be put. It is pure selfishness in the real sense of that word; and the removing of the happiness sought into another life only makes the self-seeking more intense and unmitigated.

In all the points remarked on, we have strictly confined ourselves, it will be observed, to considerations respecting this life, and to the knowledge men acquire by the exercise of their natural faculties; because the object was to shew, that as an inhabitant of this world man is subject to moral laws which make themselves felt by him, and which he both may and does learn to read, more or less imperfectly, without the aid of revelation. To treat of morality viewing man as an immortal being and the subject of direct instruction from Heaven, belongs to revealed theology. But even a system of theological morality is only an extension of that natural morality which we have been considering, and must rest upon it as a foundation. The soundest and most enlightened defenders of revealed religion rest the proof of its truth on the testimony that it finds in man's natural moral perceptions; and precepts given with a special view to the life that is to come, are enforced on the plea that they secure also the happiness of this life. Supposing it, however, granted that it is possible for the human race to discover the rules of conduct necessary for their happiness, it by no means follows that a revelation is not necessary. The discovery of right conduct is confessedly slow, the work of ages, and what is to become of the race in the meantime? And what is perhaps of more importance, even when man does know his duty, his moral force is weak compared with his impulsive feelings, so that he often does the thing he would not. Who will deny the desirableness that light from above should shine upon the dark paths of duty, and that man's frail purpose should be strengthened by the admonitions of a voice speaking with supreme authority?

HISTORY OF THE BIBLE.

THE origin, nature, and authority of the books which constitute the Scriptures of the Old and New Testament, are questions of paramount importance for all Christendom, we may say for all the world. To these questions, various and conflicting answers have been, and continue to be given. What may be called the traditional view, or that which has always been held by nearly the whole Christian community, is familiar enough; but it may here be stated afresh, in order to contrast it with that to which critical inquiry has led an increasing number of scholars in modern times. According to the prevailing belief, then, the Bible is a miscellany made up of 66 tracts, written by about 40 different authors, the latest of whom is divided from the earliest by an interval of 2000 years; whilst there is a not less striking diversity in their locality and general condition—Moses, whom Bacon calls 'God's first pen,' writing in the Arabian desert, for the immediate benefit of the Jews whom he had redeemed from Egypt, and was leading into Palestine; and John writing in a rugged isle of the Ægean Sea, where he was the captive of a potentate not less unjust and cruel than any Pharaoh. The other sacred penmen were placed in equally diverse circumstances, and exhibited as great a disparity of rank and occupation. Some portions of the Bible are composed by David, the warrior-king, and by his magnificent son and successor; and others by men filling the humblest spheres of life—Amos the herdsman, Peter the fisherman, and Matthew the despised sub-collector of customs. And yet the forty authors, so unlike each other in rank, education, and quality of intellect, and living apart in the wide intervals of which the two extremes embrace a period of 2000 years, write poems, histories, prophecies, and doctrinal and didactic pieces on morality and religion, distinguished by a marvellously perfect harmony in facts, views, sentiment, and spirit. Dealing in the utmost variety of manner, and for many different purposes, not with the trite themes and the familiar notions of contemporary literature, but with that vast and previously unknown circle of truth which is attached to a pure theology, and comprehends the creation, the fall of man, Jehovah's manifestations to, and covenant with, certain families, and then with a peculiar people, to prepare for the whole world's ransom and regeneration, there is a complete agreement whenever the writers—starting from different points, and following their several aims—have entered within that circle; the briefest or most incidental allusion, in biographies or histories, to the central verities, tallying perfectly with their full development in any of the doctrinal portions of Scripture. Moral and religious truth, instead of being presented in the 66 sacred tracts in a carefully articulated body, has not only its members scattered over the whole field of Scripture, but they are also exhibited in all the different stages of development, in the Mosaic embryo as well as in the Christian maturity and energy; yet they easily adjust themselves into a harmonious scheme. The constituents of Christianity, and their relation to God and man, had been expressly indicated by prophecy, and by a complete system of prefiguration expanding over and around Hebrew saints like a starry night. According to the view of the Bible, the past and the present is *time on the two sides of Christ;* the Jewish dispensation looking forward to his 'day,' and its dial having gone backward ever since. All the particulars of the Hebrew revelation were consonant with, but preliminary and subordinate to, the Gospel.

The newer view held by many as resulting from critical investigation will be set forth in the course of the article. We are not, however, to be understood as advocating this view; we merely wish to make our readers aware that such a view has commended itself to a large number of learned and serious men, whose lives have been spent in the study of oriental literature. Modern scholarship has come to the task of investigating the history of the Scriptures, equipped with acquirements that till of late were unattainable. Accurate and copious acquaintance with the Phœnician, Ethiopic, Chaldee, Syriac, and Arabic languages, and with the literature of these tongues, has thrown new lights on the Hebrew language and literary forms. The largely extended resources of Greek scholarship have been brought to bear on the interpretation and study of the New Testament. The laws of critical method, as developed and applied with success to the profane literature, have been applied to our sacred books with a freedom formerly unknown. And the new study of Biblical theology has made it possible to understand in a new fashion the agreements and differences of the Old and New Testaments, and of the various books of each, one with another. Accordingly, discoveries have been made in regard to the composition and character of the Hebrew documents that were unknown to former ages. Many have, in consequence, thought themselves compelled to modify their original beliefs concerning the nature and extent of the inspiration claimed for the writers of the Old Testament; but while seeking to separate what is human and changeable from what is divine and everlasting, they may and do firmly believe that there is in the Old Testament as well as the New a revelation from God, divine in origin and absolutely authoritative in character, a revelation of God's will that can never perish, and must continue to strengthen and establish faith in God as long as the world endures.

THE HEBREW SCRIPTURES.

The word BIBLE is derived from the Greek *biblia* (Lat. *libelli*), 'little books,' and was first applied by Chrysostom in the 4th century to that collection of sacred writings recognised generally by Christians as the documents of a divinely

revealed religion. His words are: 'Provide yourselves with *Biblia*, the medicine of the soul; but if you desire no other, at least procure the *new*, the Epistles, the Acts, and the Gospels.' Both as regards language and contents, they are divided into two parts—the Old and the New Testament, or rather the Old and New Covenant; for the word *testamentum* is only a translation into the later Latinity of the 2d century of the Greek *diatheke*, 'covenant.' The history of the Old Testament is connected with that of the New by a series of writings not received by Protestants as canonical, and collectively styled the Apocrypha, which we shall consider separately.

The Old Testament is a collection of 39 books, written mainly in Hebrew, but also partly in Chaldee, and containing all the remains of Hebrew-Chaldaic literature down to at least the 3d century B.C. By an artificial arrangement under the letters of the Hebrew alphabet, the number of books has been limited to 22. These writings were spoken of in the time of Christ as 'Scripture,' 'Holy Scripture,' or more specifically with regard to their principal contents, as 'the Law and the Prophets.' Sometimes the Psalms and the remaining holy writings (*Hagiographa*) are distinctively noticed. The *usus loquendi* of the New Testament (Matt. xi. 13; xxii. 40; Acts xiii. 15; Luke xxiv. 44, &c.) is evidence of this. The Law comprised the Pentateuch, or the first five books. The Prophets were subdivided into earlier and later: the former including the books of Joshua, Judges, Samuel, and Kings; and the latter containing the three great prophets, Isaiah, Jeremiah, and Ezekiel, to whom the Christians, in accordance with the Alexandrine translation, add Daniel and the 'minor' prophets. The third division of the Old Testament embraced the Hagiographa, consisting of the books of Job, Proverbs, Psalms, the Song of Solomon, Ecclesiastes, Ruth, Lamentations, and Esther; together with the books of Daniel, Ezra, Nehemiah, and 1 and 2 Chronicles. With regard to the order of these several books, the Septuagint, the Fathers of the Church, and Luther on one side differ from the Jews; again, among the Jews, the Talmudists differ from the Masoretes; while a difference is also found between the Spanish and German manuscripts. Hence have sprung the different arrangements of the books of the Old Testament.

Questions concerning the correct classification of the divine oracles have become subsidiary, if not insignificant, in the presence of that criticism which for more than a century has been incessantly assailing the ancient theory of their origin. Our limits hinder us from doing more than presenting a general sketch of its results. First of all, we may state the tradition of the Jews themselves regarding their canon: they affirmed that the various books of the Old Testament were *originally* written wholly or chiefly by the persons whose names are affixed to them, except *Judges* and *Ruth*, which were executed by Samuel; *Esther*, which was the composition of Mordecai; *Kings* and *Chronicles*, done by Ezra and Jeremiah; and *Job*, which was probably the work of Moses; but that these original manuscripts having perished in the destruction of the first temple, when Nebuchadnezzar took Jerusalem, the members of the great synagogue—which included Ezra, Nehemiah, Haggai, Zechariah, Malachi, and afterwards, Simon the Just—fifty years after the building of the second temple, acting in accordance with a divine commission, re-wrote the Old Testament, or, rather, made a recension of other existing copies, to which were subsequently added the books of Ezra and Nehemiah. Thus the canon was completed. There might be slight variations on points of detail, but this was in the main the 'fixed belief' of the Jews for at least three centuries before Christ. It passed over with many other Jewish notions into the Christian Church, but was there handled with greater freedom by the early Fathers, whose various origin, culture, and prepossessions naturally led to wide diversities of opinion. But when the Græco-Roman civilisation with its educated intelligence passed away, the Jewish belief regarding the Old Testament, which was probably that of Paul and the other apostles, and which had always been the popular and orthodox belief in the church, obtained absolute ascendency. Though here and there, between the fall of the Roman Empire and the dawn of the Reformation, faint murmurs of doubt arose, they are scarcely audible in the silence of catholic assent.

It is hardly necessary to notice the partial and fragmentary suspicions regarding the canon of the Old Testament that accompanied the rise of Protestantism, as they did not rest on a scientific basis. Luther's contempt for the book of Esther, which he declared, on account of its 'heathenish extravagance,' to be 'more worthy than all of being excluded from the canon,' is perhaps as justifiable as the fond admiration of the Jewish commentators, who ranked it next to the Pentateuch, and explained the absence of all recognition of God by the hypothesis, that it was originally a part of the Persian chronicles executed by Mordecai, who omitted the sacred name because it was designed for the heathen; but neither opinion deserves serious consideration, for the reasons assigned.

The new criticism turns, not on the discussion of the canonicity of any book or its claims to inspiration, but on questions of composition, authorship, and date. These questions have for the most part never been matters of faith; current views as to the authorship of many of the books of the Bible rest solely on ancient tradition, which, till recent times, neither had been examined nor could have been. The solution of these problems, though having a very manifest bearing on theology, is itself purely a matter of scholarship; the question as to inspiration is necessarily for theology to discuss, and is posterior to those concerning the time at which a book was written, and the materials from which it was drawn. The modern movement centred long in the question as to the author of the Pentateuch. Hobbes, the Malmesbury philosopher, pointed out in 1653 the difficulties in the way of assuming Moses to be the author, and emphasised the citations in the Pentateuch 'from another more ancient book entitled the Book of the Wars of the Lord.' Spinoza's *Tractatus Theologico-Politicus* discusses the Hebrew canon with new freedom. Père Simon and Clericus both brought accurate learning to bear on the investigation. And an epoch in Biblical criticism is marked by the ingenious hypothesis of Astruc, a Belgian physician, that the use of the names Elohim and Jehovah in

Genesis, gives a clue to the two distinct documents of which the first book of Moses is composed. Since his time, a controversy has raged, of which the end is still far off. Germany was long the great battle-field of the combatants; but the war has now extended to England, Holland, and America.

As regards the Pentateuch, hardly any unprejudiced scholar would now maintain the ancient belief that it is, as a whole, the composition of Moses, or, in the form in which it exists, that it is the work of a contemporary of the Hebrew legislator. Opinion, indeed, differs on the question of the extent to which the writer or compiler of the book availed himself of materials that Moses or others may have collected, and many think that the minutiæ of the sacerdotal law were probably an expansion and development of the simpler ritual of the wilderness. That it must have been at least redacted since the time of Moses, is shewn by numerous passages which indicate a later date than the conquest of Palestine—*e.g.* 'And the Canaanite was then in the land' (Gen. xii. 6); 'And the Canaanite and the Perizzite dwelled then in the land' (Gen. xiii. 7); 'And these are the kings that reigned in the land of Edom, *before there reigned any king over the children of Israel*' (Gen. xxxvi. 31); 'That the land spue not you out also, when ye defile it, *as it spued out the nations that were before you*' (Lev. xviii. 28). The evidence of the post-Mosaic origin of *some* parts of the Pentateuch may thus be said to lie on the surface, and is perceptible even by the unlearned reader; but a knowledge of the Hebrew tongue is necessary to appreciate the value of that criticism which has found in the book traces of various documents. Some scholars assume four; two are almost universally admitted, and are generally spoken of as the Elohistic and Jehovistic documents, from the names of the Deity which are constantly used in certain sections of Genesis. The former is believed to be the older document, and it always occurs in connection with certain distinctive peculiarities of thought and expression that mark an independent author. The two are not strictly coincident. Thus, for example, in the beginning of Genesis, we find what appear to be two different accounts of the history of the creation: in the one, God is always Elohim; in the other, Jehovah. The same is to be said with regard to the account of the Deluge, and several incidents in the lives of the Patriarchs; the descriptions of the tabernacle; the priestly vestments; the story of the manna as given in Exodus and Numbers; the account of the appointment of the council of the seventy elders in the same books; &c. The Elohist's narration of the primitive patriarchal history is short, simple, and free from poetical rhetoric. The Jehovist's account is more elaborate, and dwells at greater length on the leading heroes and principal events. The Jehovist is penetrated with the later theocratic spirit, and the theology of the prophets. He treats the national history and laws from a didactic point of view. Moreover, the Elohist generally speaks of the Divine Being as the national God of Israel, the other nations and their affairs being of no account. To the Jehovist, on the other hand, Jehovah is the God of the whole earth (Gen. xxiv. 3); all nations are to be blessed in the seed of Abraham (Gen. xxii. 18): Israel is to be a 'kingdom of priests' (Exod. xix. 6) to bring the Gentiles to God. The view now in most favour with critics is that there were *two* Elohists, one prior, the other posterior to the Jehovist.

The documents being thus considered not to have proceeded from Moses alone, or from any one person or age, have, in consequence, become exposed to all kinds of critical analysis, and their historic, scientific, and moral statements have been repeatedly challenged. Comparative theology, for example, throws some doubts on the exclusively Hebrew origin of the story of Paradise. It is supposed to be Aryan as well as Semitic; or perhaps it goes back to that remote past when the distinctions between the two families of mankind were less sharply defined than they afterwards became. The controversy regarding the account of creation is more familiar to ordinary readers, but arose from a misconception as to the nature and design of the account. Whether or not the results of modern criticism regarding the origin of the book are received, nobody should seek for scientific notions in a cosmogony belonging to the first ages of the world. The story of the antediluvians, of the Deluge, of the Tower of Babel, and other wonders recorded in Genesis, are found to present numerous points of similarity to the Indian, Persian, or Chaldæan versions of the same stories, together with such variations as mark a distinct national tradition. The received chronology, as ordinarily understood, is also questioned. Six thousand years for the history of the world, is now almost universally felt to be inadequate to account for the diversities that exist among mankind, assuming the Biblical doctrine of the unity of the race to be true; and in addition, proof is held to have been dug up from the bowels of the earth that man has been in existence here for a much longer period. The narrative of the exodus of the children of Israel from Egypt has been subjected to a microscopic criticism by Bishop Colenso, who has set forth what he regards as the most serious difficulties of the account. It is argued that the later developments of sacerdotal legislation have been thrown back to the Mosaic period, for the purpose of investing them with greater sanctity and authority. This would not indeed be done deliberately or all at once, but by degrees; and as each particular ordinance was shaped in obedience to the religious precepts of the great deliverer, it would come to be considered as springing from him who was the origin and soul of the nation.

The preceding sketch of the mode in which criticism has dealt with the Pentateuch, will be sufficient to shew the reader the scope and method of modern critical inquiry, and it will, therefore, not be necessary to exhibit the line of analysis pursued in regard to the other books. Briefly, the results are these: The *Book of Joshua* contains passages, such as the allusion to Judah and Israel as distinct (xi. 21), which point to an age later than that of Solomon, and the grammatical forms confirm this view. *Judges* has a thoroughly antique character, and the documents from which the compiler drew are mostly anterior to the monarchy; but there are references which are later—*e.g.* 'There was no king in Israel in those days' (xvii. 6; xviii. 1; xix. 1; xxi. 25). Its history is romantic and picturesque, but little or no

mention is made of priests. *Ruth* could not have been written before the close of David's reign, if so early. The genealogy carried down to him shews the theocratic significance he had acquired, and the expression, 'Now this was the manner in former time,' &c. (iv. 7), indicates a considerable change in the manners and customs of the people. The *Books of Samuel* (originally forming one work) are compiled from distinct and independent sources—*e.g.* there are two divergent accounts of David's introduction to Saul (xvi. 14–23, compared with xvii. 55–58). The repeated mention of Judah and Israel points to a period later than the separation of the monarchy as the date of the final redaction; but as the language is remarkably pure, and quite free from late forms and Chaldaisms, the compilation must be much older than the Exile. The *Books of Kings* also formed originally but one work. It belongs to the period of the Captivity, and was probably executed in Babylon. The sources from which the editor or author drew are various, and of different dates. Some are as old as the time of Solomon; others, such as the histories of Elijah and Elisha, must be among the latest. The spirit of the work is *theocratico-prophetic* in a high degree. The compiler of *Chronicles* goes over much the same ground, and refers in the same way to the sources from which he drew, but he is not so genuinely historical, and the Levitical tendency is strong. The work is essentially *ecclesiastical;* 'the priests are everywhere in the foreground, the prophets in the distance.' The history is brought down to the close of the Exile, but the genealogical register (1 Chron. iii. 19–24) carries us on to the 4th or 3d century B.C.; and the orthography, style, and language are very late, and very impure. *Ezra* is mainly the composition of the Chronist, and *Nehemiah* partly the work of Nehemiah himself, and partly of the Chronist. *Esther* belongs to the times of the Seleucidæ and Ptolemies, and is marked by the absence both of a religious and a theocratic spirit. The work is even held by some to be a translation from the Persian. The Jews are spoken of in the third person. Mordecai is 'Mordecai, the Jew' (ii. 5). God is not once mentioned. *Job* is a great dramatic poem with elaborate rhythmical forms. The prologue, epilogue, and the passage containing the speeches of Elihu (xxxii.–xxxvii.), are held by many to be by a different hand from the body of the main poem. Even that cannot be earlier than the time of Solomon, on account of the reference to the gold of Ophir (xxii. 24), and few critics consider it older than the 7th or 8th century B.C. Indeed, the whole language is so highly artificial, as well as artistic, that it could only have been composed in a cultivated age of Hebrew history. The author was a Hebrew of large and catholic spirit, on whom the mystery of existence and the evils of life pressed heavily, but who was sustained by a noble faith in the righteousness of God. The characters are considered mostly imaginative creations, but the central figure, Job himself, may be a historic personage, ideally treated, like the Hamlet of Shakspeare. The collection of pious lyrics known as the *Psalms* was probably made shortly after the return from the Captivity. They are of various ages, from the time of Moses down to Nehemiah, and contain the quintessence of the national religion and ethics. The language bears distinct traces of the different periods, and of the different characters and dispositions of the authors. Every emotion finds expression, from the pure, deep, tender trust in God, manifested by the hunted outlaw of the wilderness (Ps. xxiii.), to the vengeful passion of the outraged exile who exulted in the hope that the brains of Babylonian infants would yet be dashed against the stones (Ps. cxxxvii.). *Proverbs* is also a collection—'an anthology of gnomes and sentences, the fruit of reflections on the Mosaic law, and on the divine guidance of the Israelites.' Internal evidence is unfavourable to the theory of its Solomonian authorship. Diction and style differ in different parts. Some of the sayings are likely enough those of the royal sage, but parts of the work are not older than the 6th century B.C. *Ecclesiastes* could not have been written by Solomon, or he would not have said, 'I *was* king over Israel in Jerusalem' (i. 12); the social condition of the country as described in the work does not suit the reign of that monarch; the language is post-exilian. It most resembles that of Esther and Daniel, and is probably a composition of the 4th century B.C., when Judea presented a gloomy aspect, and men were becoming sceptical in spite of their religion. The work is not hopeful, but contains many fine passages breathing a spirit of pious resignation. The *Song of Solomon* is not the work of the king himself, but is held to belong to the next age. Its mystic or allegoric character is a Jewish theory to explain or apologise for its reception into the canon. Its application to the spiritual relation between Christ and the Church seems to most modern interpreters to be far fetched.

The *prophetical* writings constitute a special department of Hebrew literature, the interpretation of which is one of the most delicate and difficult operations of criticism. The once universal belief was that their authors were not only infallibly guided by God, but inspired, word by word, to address their countrymen in regard to things present and to come; so that when the phrase occurs, 'Thus *saith* the Lord,' or, 'The *word* of the Lord came unto me,' it was to be understood that the Lord actually used, or constrained the prophet to use, the language which follows. Many Biblical scholars, on the other hand, content themselves with the view that the prophets were men who were intensely and even passionately sincere, and to whom distrust of the Eternal, or worldliness, or disloyalty to the national faith, or any other form of hollowness, was supremely hateful. They accordingly do not search for precise dogmas and circumstantial facts in those thoughts that breathe, and words that burn; they neither demand minute accuracy from fiery orators, nor hazard the character of the writers on the fulfilment of specific predictions. Above all, the newer view of prophecy, common to almost all modern expositors, declines to hold—as was once universally held—that the most important element of prophecy lies in prediction. It is admitted that the prophecies, which in their written form are probably much abridged, were addressed to the prophets' contemporaries, not to future ages, and consist for the most part of rebukes and warnings against sins then common, of exhortations to acknowledged duty, and of

encouragement drawn from the certain fulfilment of God's gracious promises. This view permits those who hold it to look with greater equanimity on presumed errors in the prophetical authors, or in the traditional interpretations of their idealistic imagery; as also on the still more significant discovery, that the alleged authorship is sometimes doubtful. Thus, while the first thirty-nine chapters of the book of *Isaiah* are generally supposed to be the work of the contemporary of Hezekiah, the remaining chapters (xl.–lxvi.) are regarded as the composition of one who had seen the miseries of the Exile, and who knew the desolations of Judah. Cyrus is mentioned by name (xlv. 1), and an intimate knowledge is exhibited of his career. The style, both in thought and language, of the 'younger' Isaiah is entirely unlike that of the older; even in the English version this is apparent. The text of *Jeremiah* is in a state of great disorder. The last chapter is a later appendix, and the final editor of the whole work is unknown. The *Lamentations of Jeremiah* display the same literary characteristics as the larger work, and are the production of the same mind. *Ezekiel* was not, even among the Jews, universally supposed to be the work of the writer whose name it bears. The Talmud says it was the composition of the Great Synagogue; while the internal differences are so marked, that modern criticism would bring down parts of the prophetic vision to the Persian period, and even later. The last nine chapters, describing with great minuteness everything concerning the temple to be, and the priesthood, the division of the Holy Land, the dimensions of the Holy City, and the like, are not prophetic in tone, but priestly; they are the details thought out by an organising caste who are shaping anew the conditions of national life. The book of *Daniel*, not admitted by the Jews into the prophetical series proper, is radically unlike the other prophecies. The precise details regarding events long after Daniel's time, are singularly in contrast with the 'prophetic perspective' of earlier prophets. Both the Hebrew and the Chaldee are very corrupt; *Greek* words occur—*e.g. symphonia* (iii. 5), translated 'dulcimer' in the authorised version; there are not a few historical difficulties in connection with the statements made about Nebuchadnezzar, Belshazzar, Darius the Mede; its angelology is post-exilian. The work in its present form is perhaps not earlier than times of foreign oppression by Antiochus Epiphanes, and the Maccabee wars. It is unnecessary to touch upon all the minor prophets separately. But *Zechariah* is now very commonly assumed to consist of two main parts (i. to viii. and ix. to xiv.) of which the latter is by an author or authors living at a much later time than the earlier prophet, to whose work, in spite of characteristic differences, these oracles have been appended. The book of *Jonah* is often taken to resemble Job in containing a poetical invention of incidents for didactic purposes, but grouped around a venerable historical name.

It is sufficiently manifest that very many of the conclusions above recorded cannot be supported by demonstrative evidence. Like all arguments of the kind, they rest on probability alone. To complete the sketch, it may be well to give a summary view of the newer conceptions as to the development of the Hebrew canonical literature.

The first beginnings of the existing collection of Old Testament Scriptures are to be sought for in the time of Moses and the age immediately after him. In Solomon's time (the 10th century B.C.), the first four books of Moses and the connected book of Joshua were compiled from three or more sources: to the time of the later kings are to be traced the books of Judges and Samuel. In the 8th century B.C., the earlier oracles of the prophets were written down; in Josiah's time the Pentateuch was completed; and the books of Kings, compiled from more ancient materials, date from the Babylonian exile. So that by this time the first canon of the Jews, the Torah, was complete; together with the first part of the second canon, the 'prior prophets.' The second part, comprising the 'posterior prophets' or prophets proper, was begun after the Exile, and finished probably before 200 B.C. Last of all comes the third canon, or Hagiographa. It includes Chronicles, dating from about 200 B.C.; Daniel, from near the middle of the 2d century; Psalms, ancient and modern; and the Proverbs and Job, both probably of the 8th century B.C. All the three divisions of the Old Testament are spoken of in the book of Sirach (130 B.C.); and though doubts as to the standing of Ecclesiastes and Esther continued to crop up, the Old Testament canon, as we have it, seems to have been completely established in the time of Josephus.

VERSIONS.

We now proceed to notice those versions of the Old Testament in whole or part that are still extant. First comes the *Samaritan Pentateuch.*

The Samaritan Pentateuch.

We are told (2 Kings xvii. 2, 24) that after the king of Assyria had carried away the ten tribes of Israel into captivity (737 B.C.), he sent some of his own subjects as colonists into the desolate country, where none but the aged and poor of the Israelites had been left. The Assyrians and the Israelites, it is usually said, soon became a mixed people, henceforth known as *Samaritans.* There is no actual evidence of this coalescence, and it is not asserted in Scripture, but it is intrinsically probable, and is therefore generally assumed by all shades of Biblical critics. The origin and age of the Pentateuch possessed by this mixed race is still matter of dispute. Some are of opinion that it came into their hands as a natural inheritance from the Jewish people, whom they succeeded at the time of the Babylonish exile. Josephus (*Ant.* xi. 8, ss. 2, 4) states that it was brought to them by Manasse, when the Samaritan sanctuary on Mount Gerizim was founded; others suppose that the Israelitish priest sent by the king of Assyria (2 Kings, xvii. 27, 28) to instruct the new settlers in the religion of the country, brought it with him. It has even been conjectured that it is a late and faulty recension of the Hebrew text, into which glosses from the Septuagint have been introduced; and in confirmation of this view, it is pointed out that the anthropomorphisms and anthropopathisms of the original have been carefully expunged.

There are very few references to the work in early times. If we except some vague allusions

here and there in the Church Fathers (Origen, Jerome, Eusebius), and one or two more distinct but less generally known Talmudical utterances respecting it, no information was possessed about it till the year 1616, when Pietro della Valle acquired a complete codex from the Samaritans in Damascus. Since then, the number of manuscripts with and without translations (in Arabic) has considerably increased in European libraries.

The manuscripts are written in the Samaritan character, a kind of ancient Hebrew writing, probably in use before and partly after the Babylonish exile, and vary in size from octavo to folio. None of the manuscripts that have reached Europe is older than the 10th century. The *Samaritan Pentateuch* was first edited by J. Morinus in the Paris *Polyglott* (1632) from *one* codex, and was re-edited by Blayney in the square Hebrew characters, at Oxford (1790). The first publication of this strange document marks a certain epoch in modern Biblical investigation; for incredible as it now appears, it was placed by Morinus and his followers far above the received Hebrew text, which was said to have been corrupted from it. As reasons for this, its superior 'lucidity and harmony' were adduced, and its agreement with the Septuagint in many places. This opinion was zealously cherished and fiercely combated for two centuries, when the first proper and scientific investigation (by Gesenius) set it at rest, once for all, among the learned world at least. The boasted superiority *en bloc*, gradually dwindled down to two or three passages in which the Samaritan reading seemed preferable, and even these have now been disposed of in favour of the authorised Masoretic text. A chronological peculiarity deserves special mention—namely, that in the Samaritan Pentateuch, no one in the antediluvian times begets his first son after the age of a hundred and fifty, either the father's or the son's age being altered in proportion; after the Deluge, however, the opposite method is followed of adding fifty or a hundred years to the father's years before the begetting of a son.

The Septuagint.

The most ancient Greek version of the Old Testament that has come down to us, and the one that was commonly in use among the Jews at the time of Christ, is named the *Septuagint*. Its origin is shrouded in deep obscurity. But the myth concerning it is well known, and was received by the church as a piece of genuine history down to the 17th century. It is contained in a letter purporting to be written by a Greek, Aristeas, to his brother, Philocrates, during the reign of Ptolemy Philadelphus, king of Egypt (284–247 B.C.), and is to the following effect: Demetrius Phalereus, librarian to Ptolemy, while engaged in drawing up a general collection of laws, ascertained that those of the Jews were peculiarly interesting, and expressed to his sovereign a wish to have a copy of them. Ptolemy immediately took steps to procure one. First of all, he set free more than 100,000 Jewish captives, whom his father had carried into Egypt, though their ransom cost him a sum estimated at nearly *three millions sterling*. Then he wrote a letter to Eleazar, the high-priest, praying him to send a copy of the Jewish Scriptures, together with *seventy-two* learned men (hence the Latin name *Septuaginta* = 70, six from each of the twelve tribes, who could translate Hebrew into Greek. This letter, along with magnificent presents, was conveyed to Jerusalem by two ambassadors, Andreas and Aristeas. A favourable reception was given to the embassy by Eleazar, who delivered up a copy of the Scriptures in letters of gold, and selected for the work of translation seventy-two of the wisest and most erudite men in all Palestine. On their arrival in Alexandria, they were entertained for seven successive days at splendid feasts, the king himself entering into free conversation with his guests, and propounding many abstruse questions for their solution. Their answers inspired everybody with admiration of their sagacity. At the close of the festivities, they were conducted by Demetrius, for the sake of quiet, to the isle of Pharos, which was conveniently near. There they worked hard for the greater part of the day, returning to Alexandria in the evening; and at length, in exactly as many days as there were translators, namely, seventy-two, the version was finished. It was then read by Demetrius, in the presence of the principal Jews residing in Alexandria, who praised its fidelity, and imprecated curses on the heads of any who should dare to alter a word. Then the king, after publicly expressing his admiration of the wisdom of Moses, ordered the work to be religiously preserved in the Alexandrian Library, and loading the translators with gifts, permitted them to return to Jerusalem. He also granted to the Alexandrian Jews the privilege of transcribing the work for their own use.

This is the substance of Aristeas's letter, which is still extant, and no one who has paid any attention to the peculiar traits of *fabricated* narratives, can doubt for a moment that we have here a choice specimen of the class. The author professes to be a heathen, while his letter is in reality steeped in Jewish prejudices. The attitude of Ptolemy towards the Jews is a patriotic figment; his liberation of the captives and his gorgeous presents to the Temple are things unknown to history; his desire for an equal number of translators from each of the twelve tribes is a ludicrous homage to a vanished tribal system: the convivial entertainments in Alexandria are merely vulgar attempts to glorify the translators. Every scholar, indeed, now admits that the letter is a forgery, executed for the purpose of exalting the credit of the version, which, in reality, was made by different men at different times, and which, instead of being remarkable for its uniform excellence, displays all the various degrees of merit, from a painful literality, to the most arbitrary license. Yet, on the other hand, the forgery is itself ancient, and therefore some grains of historic fact may perhaps lie hidden in the bushel of falsehood, though we are now incapable of making them out. Philo, who was a contemporary of Christ, repeats the story in his *Life of Moses* with some variations. He says nothing about Demetrius Phalereus or Aristeas, but he mentions the deputation to Jerusalem, and the execution of the work in the isle of Pharos. He also represents the translators (whose number he does not specify) as producing each a separate version, and adds, that when all were compared, they were found to agree so exactly that it proved the translators to be inspired. But Philo was himself igno-

rant of Hebrew, and therefore likely to believe any wondrous tale about the merits of the Septuagint. Josephus, a little later, is familiar with the letter of Aristeas, which he substantially reproduces in his *Antiquities*. Much earlier, however, than either of these is the evidence of Aristobulus, who flourished in the beginning of the 2d century B.C. Unfortunately, this evidence is not beyond dispute. It is only preserved at second-hand in Clement of Alexandria and Eusebius, and at best is rather obscure. The chief point of difference in the statement of Aristobulus from that of the pseudo-Aristeas is, that he assigns the translation to the reign of Ptolemy 'Soter,' father of 'Philadelphus.' There is also a passage in the prologue to the apocryphal book called *Jesus, the Son of Sirach*, or *Ecclesiasticus*, which seems to imply that a Greek version of the Old Testament then (2d century B.C.) existed. But it gives no support to the Aristean myth. The later testimony of the Church Fathers, Epiphanius, Eusebius, Jerome, &c. is entirely without weight. It is merely Aristeas over again, with such modifications as they chose to make in the original narrative.

What, then, was probably the origin of the Septuagint? First of all, it should be noted that Aristeas, Aristobulus, Philo, Josephus, and the Talmudists—the *real* authorities—speak only of the translation of the Law—*i.e.* the Pentateuch—while the Church Fathers, who are no authorities at all, mention the entire Old Testament. It may be allowed, on the authority of Aristobulus, that, in the reign of one of the Ptolemies, a version of the Pentateuch was made for the benefit of the large Jewish community resident in Alexandria, to whom Hebrew had become unknown or unfamiliar. That the translators, however, were not Palestinian but Egyptian Jews, appears equally clear, both from the state of the text from which the translation must have been made, and from the intimate acquaintance with Egyptian manners and customs which it evinces. This text differs considerably from our received text, but agrees in many instances with the Samaritan. We have seen that no value whatever can be attached to the number 'seventy-two,' which is found in the Aristean figment; but a close examination of the Greek has led to the conclusion, that several hands were employed on the version of the Pentateuch. It is not necessary to discuss the probable dates of the translation of the remaining books of the Old Testament: for the most part, there are no external data to go upon; and even the internal are slight, and only appreciable by scholars. But it is generally assumed that the passage (previously referred to) from the prologue to *Ecclesiasticus* proves the whole to have been completed before 130 B.C. In some instances, it would appear as if the translation had been made before the non-pentateuchal books were united with the others into one canon. This seems particularly evident in the case of the book of Jeremiah, which, in the translation, appears in a more primitive form than in the state in which we possess it now. In a less degree, the same discrepancy appears in Job, the Proverbs, Daniel, and Esther; of these, however, our canon probably contains the original form, while the Septuagint shews later variants. Among the most successful versions are those of parts of the Pentateuch, especially Leviticus and Deuteronomy, Proverbs, and Ezekiel. But, on the whole, there is noticeable throughout the Septuagint a want of mastery over both Hebrew and Greek, a striving after minute fidelity in one part, and an unbridled arbitrariness in another; everywhere we see tropical expressions freely changed, anthropomorphic ideas toned down or left out altogether, and words that were objectionable to the refined taste of Alexandria quietly ignored.

The Septuagint was held in the very highest repute among the Alexandrine Jews, while the Palestinians looked upon it as a dangerous innovation, and even kept the day of its completion as a day of mourning. Gradually, however, it also found its way into Palestine, and at the time of the composition of the New Testament, it seems almost to have superseded the original—at least, the writers quote almost invariably from it: out of a sum-total of 225 quotations, 190 are expressly taken from the Septuagint. Christ himself frequently uses it even where it departs considerably from the Hebrew. For some centuries after his time, it was read and interpreted in the synagogues, until the increasing knowledge of the original, fostered by the numerous Jewish academies and schools (Hebrew, like Latin, being first thoroughly studied after it had become a *dead* language), and by the frequent disputations with the early Christians, brought more faithful and literal translations into use, such as those of Aquila (2d century A.D.), a Jewish proselyte of Sinope, in Asia Minor, and Theodotion (2d century A.D.), an Ebionite Christian; and gradually the Septuagint was wholly discarded in the synagogue. The Christian Church, however, long considered it equal in authority and inspiration to the Hebrew text itself, and such is the opinion of the Greek Church even at the present day. Though itself only a translation, it gave birth to a numerous family. The Itala, the Syriac, the Ethiopic, the Coptic, Armenian, Georgian, Slavonian, &c. owe their origin to this far-famed version. The wide diffusion of the Septuagint among both the Hellenistic Jews and the churches, the absence of anything like a fixed text, the pious desire to insert peculiar explanations of obscure passages, the ignorance of copyists, and many other causes, combined to render the manuscripts not a little corrupt, and in some cases past mending. Nor were the endeavours of Origen, in his *Hexapla* or *six*-fold edition of the Old Testament, permanently successful in restoring a proper text. His noble labour of thirty years is almost entirely lost. Only fragments have come down to us, the original having perished when Cæsarea was sacked by the Arabs in the 7th century.

The Old Syriac Version.

There is another version of the Scriptures which ranks with the Samaritan Pentateuch and the Septuagint, though less ancient than either—the old Syriac translation, called the *Peshito*, a word which is commonly, but erroneously, rendered by 'simple' or 'faithful,' while it properly means the 'explained' or 'translated.' Among the Syrian churches it is held in the greatest veneration, being to them what the *Vulgate* is to the Roman, or the *Authorised Version* to the English churches. There are numerous traditions regarding its origin. Thus, the translation of the Old

Testament is supposed to date from the time of Solomon and Hiram; or to have been done by Asa, the priest; or, again, that it belongs to the time of the apostle Thaddæus (Adæus), and Abgar, the king of Osroene, in the 1st century. To the same period is also supposed to belong the translation of the New Testament which is ascribed to Achæus, a disciple of Thaddeus, the first Edessian bishop and martyr. Recent investigation has not as yet come to any nearer result than to place the latter vaguely in the 2d, and the former in the 3d century, and to make Judaic Christians the authors of both. Ephraem Syrus, who wrote in the 4th century, certainly speaks of the Peshito as '*our* version,' and finds it already necessary to explain some of its terms, which had become obsolete. The version of the Old Testament was made direct from the Hebrew, and by men imbued with the Palestinian mode of explanation. It is extremely faithful, and astonishingly free from any of those paraphrastic tendencies which pervade more or less all the Targums or Aramaic versions. Its renderings are mostly very happy, and coincide in many places with those of the Septuagint, a circumstance that has given rise to the erroneous supposition that the latter itself had been drawn upon.

THE APOCRYPHA.

This is perhaps the proper place to notice the apocryphal literature of both Testaments. No one can fail to be struck with the contrast which the Old Testament Apocrypha presents in tone and character to the canonical writings, *Esther* alone excepted. The very best portions of it, such as *The Wisdom of Jesus, Son of Sirach*, are destitute of that living authoritative power of religious conviction which belongs to men who have stood, as it were, face to face with God, and to whom the things that are unseen and eternal are more real than the things that are seen and temporal. The term apocryphal originally meant *secret* or *concealed*, and was rendered current by the Jews of Alexandria. In the earliest churches, it was applied with very different significations to a variety of writings. Sometimes it was given to those whose authorship and original form were unknown; sometimes to writings containing a hidden meaning; sometimes to those whose public use was not thought advisable. In this last signification, it has been customary, since the time of Jerome, to apply the term to a number of writings which the Septuagint had circulated amongst the Christians, and which were sometimes considered as an appendage to the Old Testament, and sometimes as a portion of it. The Greek Church, at the Council of Laodicea (360 A.D.), excluded them from the canon; the Latin Church, on the other hand, always highly favoured them; and, finally, the Council of Trent (1545–63) placed them on an equality with the rest of the Old Testament. The Church of England uses them in part for edification, but not for the 'establishment of doctrine.' All other Protestant churches in England and America reject their use in public worship. But it was once customary to bind up the Apocrypha between the authorised versions of the Old and New Testaments, though this has now ceased, and, as a consequence, this curious, interesting, and instructive part of Jewish literature is now known only to scholars. The Old Testament Apocrypha consists of fourteen books: 1. First Esdras; 2. Second Esdras; 3. Tobit; 4. Judith; 5. The parts of Esther not found in Hebrew or Chaldee; 6. The Wisdom of Solomon; 7. The Wisdom of Jesus, Son of Sirach, or Ecclesiasticus; 8. Baruch; 9. The Song of the Three Holy Children; 10. The History of Susanna; 11. The History of the Destruction of Bel and the Dragon; 12. The Prayer of Manasses, King of Judah; 13. First Maccabees; 14. Second Maccabees. The precise origin of all these writings cannot be ascertained. Some of them were to all appearance originally written in Hebrew—especially Ecclesiasticus and the First Book of the Maccabees; and these seem to be contemporary with some of the later Psalms. Second Maccabees and Judith belong also apparently to the time of the Maccabees; and Tobit and Baruch were also probably first written in Hebrew or Chaldee, yet, like the rest of the Apocrypha, which were certainly written in Greek, all are now extant only in the Greek text. None of them was received into the Jewish canon; and though they were all found in the Septuagint used by the Christians, it is doubtful if some of them were acknowledged even by the Greek-speaking Jews. To the books ordinarily called Apocrypha may fairly be added the Psalms of Solomon, written a short time before Christ; and the Book of Enoch and the so-called Fourth Book of Esdras, though not found in the Greek Bible, seem partly at least to have been known to the writers of the New Testament. Some of the Apocrypha bear traces of a Palestinian, others of an Egypto-Alexandrine, and others again of a Chaldaico-Persian origin or influence. Most, if not all, bear internal evidence of having been composed in the 1st and 2d centuries B.C.

The Old Testament Apocrypha supplies us with most interesting materials for insight into the development of Jewish theology, of religious and national faith, during the centuries immediately before Christ.

It is in connection with the New Testament Apocrypha that the latter word came to have ultimately attached to it the signification of 'spurious' or 'false.' The Apocrypha of the New Testament may be arranged under three heads: 1. The writings comprising the *Apocryphal Gospels*, which consist of twenty-two separate documents, ten in Greek and twelve in Latin. They concern themselves with the history of Joseph and of the Virgin Mary before the birth of Christ, with the infancy of Christ, and with the history of Pilate. The most important of the set are the *Protevangelium of James*, the *Gospel of Thomas*, and the *Acts of Pilate*, which are perhaps the *origines* of all the apocryphal traditions. That many of the stories found in these were current in the 2d century is abundantly proved, but we have no evidence that any of the books known as Apocryphal Gospels were then in existence, or are older than the 4th century. 2. The *Apocryphal Acts of the Apostles*, consisting of thirteen documents originally written in Greek, but found also in a Latin compilation probably of the 6th century. They are distinguished from the Apocryphal Gospels by having less of miracle and more of didactic discourse. The more important of the collection are *The Acts of Peter and Paul*, *The Acts of Barnabas*,

The Acts of Philip, *The Acts of Andrew*, *The Acts of Bartholomew*, and *The Acts of John*. It is difficult to ascertain their age. Some are probably of earlier date than the Apocryphal Gospels, but the original MSS. are lost, and we only possess them in late transcripts of the middle ages. 3. The *Apocryphal Apocalypses*, consisting of seven documents, four of which are called apocalypses by their authors. There is great and perplexing variety in the MSS. That called *The Apocalypse of Moses* relates rather to the Old Testament than to the New; so does *The Apocalypse of Esdras*, which is a weak imitation of the Fourth Book of Esdras. The others are *The Apocalypse of Paul*, *The Apocalypse of John*, and *The Assumption of Mary* in three forms. These, too, only exist in late MSS. of the middle ages, and it is, of course, not quite certain that they are the same in form as the works bearing the same name referred to in the writings of the Fathers. The New Testament Apocrypha is not without interest or instruction for us. It throws a flood of light upon the workings of the early Christian consciousness and modes of thought, and it also enables us to appreciate the vast superiority of those Scriptures which have obtained canonical authority.—See Tischendorf's *Prolegomena* to the Apocryphal Literature of the New Testament (Leipsic, 1873); and Clark's *Ante-Nicene Christian Library*, vol. 16 (Edinburgh, 1870).

Of very much greater importance for the history of the New Testament canon is another series of ancient Christian writings, which in various regions continued for a long time to be used in the churches in the same way as the books of the New Testament. The most important of them are the so-called *Gospel of the Hebrews* (apparently closely related to the gospel of Matthew, and used by Jewish-Christian sects); the apparently very similar *Gospel of Peter;* the *Apostolic Constitutions;* and almost the whole of the *Apostolic Fathers*. Of these (the two epistles of Clement of Rome, that of Barnabas, that of Ignatius, that of Polycarp, and the Shepherd of Hermas) the *Shepherd*, *Clement's* epistles, and the epistle of *Barnabas*, are sometimes found in old MSS. of the Bible; but, though remaining most valuable monuments of primitive Christianity, they were gradually separated from the canon of the New Testament. The *antilegomena* (discussed below) finally recognised as part of the canon, occupy a position intermediate between apocryphal writings and the books universally acknowledged by the Church.

NEW TESTAMENT SCRIPTURES.

In touching upon the canonical literature of the New Testament, it may be necessary to make some preliminary remarks upon the relation in which it stands to that of the Old. A long-prevalent opinion identified the two so entirely as to find the latest developments of New Testament theology quite plainly revealed in the words of the Old Testament Scripture, and hardly recognised a real spiritual growth between Moses and Paul; Christianity seemed at most to be but an expansion of Judaism. Now the orthodox expositor gives free scope to the truth of a vast development between Old and New Testament times. Even those who most earnestly believe that priestly symbolism and prophetic vision infallibly shadowed forth the religion of Christ, admit with freedom that they did so but obscurely and incompletely. On the other hand, they allow that all true religion is essentially one, and whenever a patriarch, or priest, or psalmist, or prophet rose above the materialism or the formalism of his age, and entered into the inner sanctuary of truth, he stood upon the same spiritual platform, and breathed the same divine air as Christ and the apostles. The lives of Abraham and Moses, the lyrics of David and Asaph, the rapturous hopes of Isaiah, were a perpetual inspiration to their countrymen, keeping alive, in the darkest hours, the flame of heavenly faith and valour, and giving birth, in pious hearts, to new and nobler thoughts. The men who figure in the New Testament, and the men who wrote it, were nurtured upon the older literature; but the world had changed since the days of Malachi, and a vast future had opened up before the spiritual vision of the Galilean saint and sage, in the presence of which national religions appeared mean, and the earth became an undivided home of the great family of man. This universalism of faith and love was ever and again finding a momentary expression in ancient psalm or prophecy, but it now became, for the first time, the fixed foundation of a majestic creed; and although it may have been narrowed by smaller natures in the course of inevitable controversy, it remains for ever the glorious inheritance of Christendom.

It must be admitted that the same difficulties, though in a lesser degree, shew themselves in regard to the origin and authorship of the New Testament literature, that met us when we were considering the Old. We do not know for certain that the writings in every case proceeded from the men whose names they bear, or belong to the age to which they are assigned, or have come down to us in the precise form they originally bore. The first three gospels are asserted by some to be the outcome of a lengthened period of traditionary growth. Of the two gospels ordinarily attributed to apostles, that bearing in its title to be by Matthew is regarded as by another hand, and the fourth gospel is assigned on various grounds to dates ranging from 110 A.D. to after the middle of that century. Several of the epistles accepted by the catholic church as Pauline, are declared to be by one whose style of thought differed entirely from that of the apostle of the Gentiles. The second epistle of Peter, in particular, is asserted to be pseudonymous.

NEW TESTAMENT CANON.

This canon is a collection of writings containing the history and doctrines of Christianity, and may be divided into three chief sections: 1. The historical books, or the four gospels, and the Acts of the Apostles. 2. The didactic and pastoral writings, which include the Epistles of Paul to the Romans, Corinthians, Galatians, Ephesians, Philippians, Colossians, Thessalonians, Timothy, Titus, Philemon, the Hebrews, the two Epistles of Peter, the three Epistles of John, the Epistles of James and Jude. 3. The prophetical section, consisting only of one book, the Apocalypse, or Revelation of St John the Divine. The primitive Christians referred for proof of doctrine, &c. only,

so far as we are aware, to the Old Testament, and quotations from it by the apostolic Fathers are numerous enough; but we find few clear and certain references to the didactic portions of the New Testament. The Christians continued simply to appeal on all disputed points to the Scriptures, which had long been the treasure of the people of God, and which were still accessible to all believers. The generation which immediately succeeded that of the apostles did not consider the apostolic writings of equal importance *as writings* with the sacred books of the Old Testament. Besides, most of the epistles were of little use in controversy, for the earliest heretics denied the apostleship of St Paul; while both parties admitted the authority of the Septuagint, and found in it their common weapons of argument. Nevertheless, we occasionally find references to the didactic portions of the New Testament, such as those to Romans, 1 Corinthians, Ephesians, Hebrews, and James, in Clemens Romanus; to 1 Corinthians and Ephesians, in Ignatius; to Romans, 1 Corinthians, 2 Corinthians, Galatians, Philippians, 1 Timothy, 2 Timothy, 1 Peter, and 1 John, in Polycarp. Still more uncertain are the references of the apostolical Fathers to the gospels. The notices found in Barnabas, Clemens Romanus, Ignatius, and Polycarp are only sufficient to indicate that all the great facts of Christ's life were known to the churches, and that the doctrinal significance of these had begun to be realised. They do not, however, demonstrate the existence of written gospels, but they prove that Christianity rests on a historic basis. Their silence in relation to the written gospels now constituting a portion of the canon of the New Testament, is at first sight singular; but when we reflect that the facts of the Saviour's life and teaching were apparently quite familiar to the churches—so familiar, indeed, that no explanation was needed in alluding to them—we see that the necessity of the apostolic Fathers quoting from the Evangelists ceases. It is contended that any specific quotations would have been a work of supererogation; whereas, in the case of the didactic epistles, which were written originally for the benefit of particular churches, and conditioned by their special circumstances, and the contents of which, therefore, could not be so well or widely known, quotations or allusions might more naturally be looked for. But evidence of this *negative* character for the existence of the evangelical records, however probable, is very uncertain, and its uncertainty is increased by the use made of writings which, at a later period, were rejected as apocryphal. First, in the second half of the 2d century, more distinct references to the gospels are found in Papias (died 163), in Justin Martyr (died 165), in his pupil Tatian (died 176), in Athenagoras (died 180), and in Theophilus, who wrote about the year 180. None of these writers, however, names the authors from whom he quotes, though Papias—the earliest, but not the most trustworthy of them—bears direct and minute testimony to the existence of gospels by St Matthew, St Mark, St John, the catholic epistles, and the Apocalypse, whence it has been concluded that the authenticity of the apostolic memoirs was not then settled, and perhaps not even investigated; but anonymous quotation seems to have been a characteristic carelessness of the time, for of this kind are 117 of Justin Martyr's references to the Old Testament. The great fact on which a constructive Christian criticism leans in regard to the evidence of these writers is, that they do not speak of the gospels or apostolic memoirs as things which had only recently made their appearance, but as well known and long established. Justin even states that the 'apostolic memoirs' were regularly read in the churches for the edification of believers—a fact which clearly indicates their superior sanctity and universal reception.

Nevertheless, the idea of a universally acknowledged New Testament canon is not discernible in the church in Justin Martyr's time. There is no positive evidence in favour of its existence; but this is not to be wondered at, for the consciousness of freedom in the Holy Spirit, which penetrated the Christians of the 1st century; the opposition of the Judaising and anti-Judaising parties—which does unquestionably appear to have existed, though not in that exaggerated form in which it is apprehended by the Tübingen school; the still living tradition of the apostles; the difficulty of diffusing apostolic writings sent only to particular churches; the absence of criticism; the vacillation in determining the point where the apostolic men ceased; the use in the worship of God of the Old Testament, and, in particular churches, of casual Christian writings not now looked upon as canonical: all these causes together operated in hindering, till the middle of the 2d century, a formal collection of New Testament writings of any compass or critical value, though it seems quite clear that they existed separately, and were regarded as the most authoritative records of the new dispensation. The earliest trace of such a collection (the ten Pauline epistles without the pastoral epistles) appears after the middle of the 2d century, in opposition to that Gnostic perversion of primitive Christianity which had been introduced by Marcion of Pontus. The *Muratorian Canon* in the West, and the *Peshito* in the East, both belonging to this period, which has been called the 'Age of the Apologists,' furnish important evidence in regard to the New Testament Canon, for both refer to nearly every book now received as authoritative, the exceptions being, in the former, the Epistle of James, the Epistle to the Hebrews, and 2 Peter; in the latter, Jude, 2 Peter, 2 and 3 John, and the Apocalypse. In the close of the 2d, and in the beginning of the 3d century, Irenæus, Clemens Alexandrinus, and Tertullian bear testimony to the recognition of the four gospels, the Acts of the Apostles, the thirteen Pauline epistles, the 1st Epistle of Peter, the 1st Epistle of John, and the Apocalypse, as canonical writings. But they do even more than bear testimony to their recognition—they appeal to antiquity for proof of the authenticity of the books which they used as Christian Scriptures. On this point, Tertullian is especially precise, and his most convincing argument on behalf of the 'surety of the gospels' is, that 'the very heretics bear witness to them.' They did not, it is admitted, acknowledge the whole of the New Testament canon, but this is explicable on the hypothesis, which is justified by investigation, that the portions rejected were those that seemed alien to their own opinions. Two distinct

collections of writings are now noticed—the *Instrumentum Evangelicum*, containing the four gospels; and the *Instrumentum Apostolicum*, containing the Acts of the Apostles, along with the Pauline and other epistles. Respecting several parts of the New Testament canon, differences of opinion prevailed in early times, nor was the war of criticism closed until the 6th century, for considerable difference of opinion existed in regard to the value of the testimony of the early apologetic authors. Origen doubted the authority of the Epistle to the Hebrews, of the Epistle of James, of Jude, of the 2d of Peter, and the 2d and 3d of John; while, at the same time, he was disposed to recognise as canonical certain apocryphal scriptures, such as those of Hermas and Barnabas, which were decidedly rejected by the Church. The Apocalypse was treated as a dubious part of the canon down to the 7th century. The learned and circumspect Father, Eusebius, in the 4th century, in a passage of his *Church History*, distinguishes three classes of New Testament Scriptures: 1. Universally received Scriptures (*homologoumena*)—the four gospels, the Acts of the Apostles, the fourteen Pauline epistles, the 1st Epistle of John, the 1st of Peter, and, with a certain reservation, the Apocalypse of John. 2. Scriptures not universally received, or not received at all. These he calls 'disputed' (*antilegomena*), and subdivides them into such as were generally known and approved by most—namely, the epistles of James, Jude, 2 Peter, 2 and 3 John; and such as were 'spurious' (*notha*)—namely, the Acts of Paul, the Shepherd, the Apocalypse of Peter, the Epistle of Barnabas, the Institutes of the Apostles, and the Gospel of the Hebrews. 3. Heretical forgeries, such as the gospels of Peter and Thomas, which Eusebius pronounces to be 'altogether absurd and impious.'

The Western Church, which was more conservative and less critical than the Eastern Church, completed the canon with greater rapidity. Although the eastern Council of Laodicea (360-364), in determining the canon of the New Testament, excluded the Apocalypse, the western synods of Hippo-Regius (393), Carthage (397), the Roman bishop, Innocent I. (in the beginning of the 5th century), and the *Concilium Romanum* under Gelasius I. (494), recognised the entire canon of the New Testament as we find it in the present day. The doubts entertained by individuals respecting some parts of the canon had become exceptional and unimportant at the close of the 7th century. Owing to the want of Greek scholarship, as also, perhaps, to the growing idea of an infallible church papacy, there was no criticism worthy of the name during the middle ages. Doubts, therefore, respecting the Epistle to the Hebrews and the Epistles of James and Jude were first revived, after a long quietude, at the time of the Reformation. Luther himself ventured to declare the Epistle to the Hebrews and the Apocalypse 'apocryphal;' and the Epistle of James he pronounced 'an epistle of mere straw, having nothing of the gospel about it.' But in both cases he proceeded, not on critical, but on purely dogmatic grounds. The spirit of orthodox inactivity which ruled the Protestant Church from the latter part of the 16th to the middle of the 18th century, had a deadening effect on true Biblical criticism. This was first revived by a liberal Catholic writer, Richard Simon (died 1712), who first conceived the plan of 'an historico-critical introduction' to the Bible. Afterwards, the labours of Lowth, Semler, Herder, Griesbach, Michaelis, Eichhorn, and others, gave a new impulse to scriptural exegesis. In Germany, we may name among writers on the conservative and orthodox side, the Catholic divines Jahn and Hug, with the Protestant writers, Hengstenberg, Hävernick, Guerike, Delitzsch, and Caspari: on the other side, Berthold, De Wette, Credner, Reuss; and since the publication of the *Life of Jesus* by Strauss, the 'New Tübingen school,' with F. C. Baur at its head, has questioned the authenticity and apostolical antiquity of all the New Testament scriptures, except the four larger Epistles of Paul—to the Romans, the Corinthians (1st and 2d), and the Galatians.

But, as might have been expected, the effects of the strife could not always remain confined to Germany. They have been felt more or less over all Protestant countries; and even Catholic France, which has no theology to contend for, shews the influence of the new movement. Renan's *Vie de Jésus* produced a vivid sensation, and has been followed by a series of works on the apostolic age. In England, during the 18th century, several valuable apologetic works had been published, such as Lardner's *Credibility of the Gospel History*, and Paley's *Horæ Paulinæ*. In the early part of the 19th century appeared Horne's *Introduction to the Study of the Scriptures*, which has been frequently reprinted. Since then, Tregelles, Davidson, Westcott, and numerous other scholars, have entered the field; and it is not too much to affirm that there exists at this moment a keener spirit of impartial inquiry, as regards the foundations of Biblical criticism, than Britain has ever previously witnessed.

PRINTED EDITIONS OF THE TEXT.

Old Testament.—The earliest printed editions of the Hebrew Bible bear a close resemblance to the manuscripts. 'They are without titles at the commencement, have appendices, are printed on parchment with broad margin, and large ill-shaped type, the *initial* letters being commonly ornamented either with wood-cut engravings or by the pen. These letters, however, are often absent. With vowels, the editions in question are very imperfectly supplied. Separate parts of the Bible were first printed.' The Psalms appeared in 1477, probably at Bologna; the Pentateuch at Bologna in 1482; the Prophets in 1486; the Hagiographa in 1487. To most of these were subjoined the rabbinical commentary of Kimchi. The whole of the Old Testament appeared in small folio at Soncino, 1488, and appears to have been followed by the edition of Brescia (1494), which was used by Luther in his translation of the Old Testament. The *Biblia Polyglotta Complutensia* (1514–1517), the *Biblia Rabbinica* of Bomberg, edited by Rabbi Jacob-Ben-Chayim (Venice, 1525–1526), which has been adopted in most of the subsequent editions—the Antwerp *Biblia Polyglotta* (8 vols. 1569–1572), also the editions by Hutterus (Hamburg, 1587, and frequently reprinted), Buxtorf (Basel, 1611), and especially that by Jos. Athias (Amsterdam, 1661–1667)—all these are celebrated, and have supplied

the basis of later editions by Simon, Hahn, Theile, and others. The controversy regarding the purity of the Masoretic text in the 17th century led to an extensive examination of Hebrew manuscripts in the next century. Kennicott collated 630—258 throughout, the rest in part; De Rossi, 751, of which all but 17 were collated for the first time. Many still remain uncollated. The result of this elaborate investigation has been to convince scholars that the Masoretic text is substantially correct.

At first, there were no intervening spaces between Hebrew words; afterwards, small intervals appear to have been occasionally allowed. With the introduction of the *square* character, the use of small interstices to separate words became general. The Talmud prescribes how much space should be between words in sacred manuscripts designed for the synagogue. Various divisions according to the sense were also introduced at an early period. In the Pentateuch there were two, termed respectively *open* and *closed*. The former were intended to mark a change in the matter of the text; the latter, slight changes in the sense. Of these, the Pentateuch contained 669, named *perashioth* (sections). This division is probably as old, or nearly so, as the practice of reading the Law. It is found in the Talmud, while the division into 54 *great perashioth* is first found in the Masora, and is not observed in the rolls of the synagogues. The poetical books were also subjected, from a very early period, to a stichometrical division, according to the peculiarities of Hebrew versification. In order to facilitate the reading and understanding of the prose books, a division into logical periods was also made. Our present division of the Old Testament into chapters is a later invention, and, though accepted by the Jews, is of Christian origin; it may be dated as far back as the 13th century, some assigning it to Cardinal Hugo, others to Stephen Langton, Archbishop of Canterbury. It was first employed in a concordance to the Vulgate, whence it was borrowed by Rabbin Nathan in the 15th century, who made a similar concordance to the Hebrew Bible. Nathan's divisions are found in Bomberg's Hebrew Bible of 1518. Verses were first introduced into editions of the Hebrew Bible by Athias of Amsterdam, 1661, but were employed in the Vulgate as early as 1558. The first *English Bible* divided into verses was published at Geneva in 1560.

New Testament.—The original manuscripts of the New Testament were probably all written on papyrus, the cheapest, but least durable material that could be obtained for the purpose. It was therefore impossible, considering the constant handling to which the documents must have been subjected by the eager converts, that they could have lasted for any length of time. We know, indeed, that a very large number of copies were in existence from an early period. Norton states the number at about 40,000. The text of these, however, did not always agree. Variations originated, to a considerable extent, from the same causes as operated in the case of the Old Testament, namely, imperfect vision or hearing, misunderstanding, carelessness, or an uncritical judgment on the part of transcribers; but it is natural to suppose that, on account of the greater freedom of spirit and thought which characterised primitive Christianity, compared with Judaism, a latitude of conviction in regard to the value of the *letter* of Scripture also influenced the churches. Modern criticism reckons no less than 80,000 variations in the existing manuscripts. Of these manuscripts, upwards of 1400 are known to scholars, and have been collated, and no essential discrepancy has been detected.

Some slight attempts seem to have been made, during the early history of the Church, to obtain a correct text. One Lucian, a presbyter of Antioch, and Hesychius, an Egyptian bishop, are said by Jerome to have undertaken a recension of the New Testament, and both Origen and Jerome himself were of considerable service in this respect. It is to modern criticism, however, that we owe almost everything in regard to the regulation of the text. Bengel and Semler first started the idea of arranging the manuscripts of the New Testament into *families* or *classes*. After these came Griesbach, who, following out the idea, propounded his famous threefold division of the manuscripts into Western, Alexandrian, and Byzantine. The first two he considers the oldest; the third, a corrupt mixture of both. Griesbach himself preferred the Alexandrian: he believed that the Byzantine transcribers had taken great liberties with the text, and held that a few Alexandrian manuscripts outweighed, in critical value, a large number of the other. The accuracy of Griesbach's division has subsequently been questioned by many eminent German scholars, among whom may be mentioned Hug, Matthiä, Scholz, and Eichhorn, each of whom has in turn favoured the world with a theory of his own in regard to the probable value of the various families of manuscripts. Recently, Lachmann has applied, with excessive strictness, a principle first hinted by Bentley, namely, that no weight ought to be attached to any manuscripts except those written in the old or uncial character. The chief advocate for the application of this principle in England is Tregelles; but it is rejected by the vast majority of biblical scholars, for the simple reason, that a manuscript of the 10th or 11th century, if faithful to that from which it is copied (a thing not impossible), may exhibit a really older and purer text than one of the 4th or 5th century. The exact value of each manuscript is still a matter of dispute; but a great deal has been done to place the knowledge of the various lines of evidence within the reach of all scholars. Especially, Tischendorf has carefully examined the most important of the uncial manuscripts, and published them separately, somewhat after the fashion of a fac-simile. He has also published a fac-simile of the *Codex Sinaiticus*, which he found in a monastery on Mount Sinai in 1859.

The whole of the New Testament was first printed in the Complutensian Polyglott, 1514. From 1516 to 1535, five editions appeared at Basel, under the care of Erasmus, but without any great pretensions to critical accuracy. The subsequent numerous editions were, for the most part, either founded on the editions of Erasmus or on the Complutensian, or on a collation of both. Among these editions we may mention that by Colonäi (Paris, 1534), by Bogard (Paris, 1543), the third by the elder Stephens (1550), and that by the younger Stephens (Geneva, 1569). Beza was the first who, by several collations

founded on the third edition by Stephens, made any considerable progress in the critical treatment of the text, and thus supplied a basis for the present received text (*textus receptus*), which was first printed by Stephens with the Vulgate and critical annotations at Geneva, 1565; afterwards was frequently reprinted by Elzevir (Leyden, 1624) and others. Other editors are Walton, Fell, and Mill, in England in the 17th century; the Germans Bengel, Wetstein, Semler, and Griesbach, in the 18th century; and in this century, Scholz, Rink, Lachmann, Buttman, and Tischendorf, in Germany; and in England, Tregelles, Scrivener, and Westcott and Hort (in 1881).

Among the manuscripts of the New Testament, the oldest are not traced back further than the 4th century, and are written in the so-called *uncial* characters. The modern manuscripts, dating from the 10th century downwards, are distinguished by the *cursive* characters in which they are written. The most important manuscripts are the *Codex Sinaiticus* (at St Petersburg), the *C. Alexandrinus* (in the British Museum), *C. Vaticanus* (in the Vatican at Rome), *C. Ephræmi* (in the Imperial Library at Paris), and *C. Cantabrigiensis*, or *C. Bezæ* (given by Beza to the university of Cambridge). The best authorities refer the *Sinaiticus* and the *Vaticanus* to the middle of the 4th century; *Alexandrinus* and *Ephræmi* to the 5th century; and *Bezæ* to the 6th century. The 7th century furnishes but a few fragments. The MSS. of the 9th and 10th centuries are as numerous as all the earlier ones put together. The *cursive* MSS. are about 1000 in number, and date from the 10th to the 16th centuries.

BIBLE VERSIONS OR TRANSLATIONS.

These may be divided into ancient and modern. The *ancient translations* of the Old Testament are noticed under the sections *Septuagint*, *Old Syriac Version*, and the *Samaritan Pentateuch*. As has been mentioned, the Peshito contains also a Syriac translation of the Greek New Testament. The *Old Latin* version of the Old and New Testament seems to have originated in Africa, and seems probably to have comprised several distinct translations, the Old Testament being done from the LXX. Towards the close of the 4th century a revision was undertaken by St Jerome, and finally the greater part of the Old Testament was translated by him from the Hebrew. This version became ultimately known as the *Vulgate*, though its text was corrupted by the influence of the older version. The Vulgate was declared the authorised version of the Catholic Church by the Council of Trent in 1546, and its text was carefully revised in 1593 under Pope Clement VIII.

Modern Translations.—During the middle ages various poetical versions—such as the Gospel History by Otfried von Weissenburg, and the version of Job and of the Psalms by Notker-Labeo (980)—served a very important object. In 1170, Petrus Waldus caused the New Testament to be translated into the Provençal dialect by Etienne d'Anse. There were translations under Louis the Pious (1227) and Charles the Wise (1380), the Bible Histories (*Bible ystorieus*) by Guyars of Moulins (1286), the Spanish version under Alfonso V. in the 13th century, the English by Wickliffe, and the Bohemian version of John Huss. After the invention of printing—especially after the latter part of the 15th century—the harbingers of a new ecclesiastical era appeared in numerous republications of the translated Bible—the Bohemian (Prague, 1448); the Italian, by the Benedictine Nic. Malherbi (1471); the French, by Des Moulins (1477–1546); the Dutch (Delf, 1477); the Spanish (1478–1515); but, above all, in the seventeen German translations before Luther, of which five were printed before 1477, and the remainder during 1477–1518 (and three in Low-German).

Luther's translation of the Bible is universally esteemed by the best German scholars as a masterpiece of genial interpretation. The New Testament was finished in the Wartburg, and appeared in September 1522. In the following year, the five books of Moses appeared; and, in 1534, the remaining part of the Old Testament canon was completed along with the Apocrypha. With wonderful rapidity, this translation was circulated throughout Germany. In the course of forty years, one bookseller, Hans Luft of Wittenberg, sold 100,000 copies—an astonishing number, when we consider the price of books in the 16th century. It was reprinted thirty-eight times in Germany before 1559, and meanwhile, the New Testament had been separately printed in seventy-two editions. Numerous other translations in Dutch, Swedish, &c. were based upon the work of Luther.

English Translations of the Bible.—The first of modern English translators of the Bible was William Tyndale, whose sympathy with the opinions of the German reformers compelled him to seek refuge on the continent. Before 1526, he had completed an English translation of the New Testament, which appeared both in quarto and duodecimo. In the beginning of 1526, the volumes were secretly conveyed into England. Of the admirable character of his translation, we have a sufficient testimony in this fact, that in our present version a very large portion of the New Testament is taken almost *verbatim* from Tyndale's Testament. In 1530, he published the Pentateuch, and in the following year, the Book of Jonah. The first English version of the whole Bible was that published by Miles Coverdale, a friend of Tyndale. It is dated 1535, and dedicated to Henry VIII., but where printed, is unknown. The next English Bible issued was called *Matthew's Bible*, from the circumstance that the editor assumed the name of Thomas Matthew, but was simply Tyndale's version revised by his friend John Rogers, who also translated those books in the Old Testament which Tyndale had not been able to overtake. It was finished in 1537, and Cranmer obtained for it the patronage of Henry. In April 1539 appeared the *Great Bible*, usually called Cranmer's, because he wrote a preface to it. It was a large volume, for use in churches. The text was Tyndale's revised. In 1557 appeared the famous *Geneva Bible*, so called because the translation was executed there by several English divines, who had fled from the persecutions of Mary. Among these may be mentioned Gilby and Whittingham. This edition—the first printed in Roman letter and divided into verses—was accompanied by notes, which shewed a strong leaning to the

views of Calvin and Beza. It was, in consequence, long the favourite version of the English Puritans and the Scotch Presbyterians. In 1568, the *Bishops' Bible* was published at London. The text of this was compared with the original by eight bishops, and several other scholars of reputation, who appended their initials to their respective tasks; the whole being under the superintendence of Matthew Parker, Archbishop of Canterbury. In 1582 appeared at Rheims, in France, an English version of the New Testament, prepared by several Roman Catholic exiles; and in 1609–1610, a similar version of the Old Testament at Douay. Both were taken from the Vulgate, and form the standard English Scriptures of the Roman Catholics, being generally known as the *Douay Bible*.

We now come to the version which has been in common use for more than 250 years, generally called *King James's Bible*. At the Hampton Court Conference in January 1604, Dr Rainolds, an eminent Puritan, suggested a new translation as a great national want. Arrangements were at once made for carrying out the project. In July, the king wrote a letter, intimating the appointment of 54 scholars for the preparation of the version. Of these 54, only 47 undertook the work. These were divided into six companies, two of which were to meet at Westminster, two at Cambridge, and two at Oxford. The *first* company at Westminster translated the Pentateuch and the historical books to the end of 2d Kings; the *first* at Cambridge, from the beginning of Chronicles to the end of Canticles; and the *first* at Oxford undertook the remaining books of the Old Testament canon. The second company at Westminster translated the apostolic epistles; the second at Cambridge, the Apocrypha; and the second at Oxford, the gospels, the Acts of the Apostles, and the Apocalypse. According to Selden, 'they then met together, and one read the translation, the rest holding in their hands some Bible, either of the learned tongues, or French, Spanish, Italian, &c. If they found any fault, they spoke; if not, he read on.' When a portion was finished by one of the company, it was sent to all the others in succession for their deliberative examination; and whenever a difference of opinion was elicited, reference was made to a committee. The final revision of the whole was conducted in London by two delegates from each of the six companies. The work of translation and revision occupied from 1607 to 1610. The superiority of the authorised version soon proved itself; for though there were several rivals in the field, and no steps were taken to secure for it a preference, it quickly gained the foremost place, and in the course of forty years from its publication, all others had quietly succumbed to it; it became, and has ever since remained, *the English Bible*.

Nevertheless, it has long been felt that the authorised version, noble as it is, had defects which modern scholarship might fairly be called on to remove; especially in regard to precise accuracy of translation and the interpretation of obscure passages. The English bishops recommended that a revision of the existing translation should be undertaken; and in 1870 Convocation appointed a committee for the purpose, comprising amongst its number many of the most distinguished Biblical scholars of various denominations. The first meeting of the Committee of Revision was held in Westminster Abbey, 22d June 1870; and their translation of the New Testament was published in 1881. The numerous recent translations of the Scriptures into languages beyond the pale of Christendom, have been executed chiefly under the auspices of Missionary and Bible Societies.

As to the *contents* of the Bible, its one grand object, under whatever form it may appear in the various books, is to give an account of this world, both in its origin and government, as the work of an Almighty Creator, always and everywhere present; and especially to exhibit the relation of man to this Creator, and, in consequence of that relation, in what manner, and with what hopes he ought to live and die—subjects undeniably the most momentous that can occupy human thought. The sacred books of other religions have all an analogous aim; to account, namely, for the origin of all things, and to explain the nature and human relations of that something *divine*, which it is an instinct of the human mind to conceive as actuating and controlling all that moves. But so different—so immeasurably superior to all other sacred books, is the Bible, in the conception it unfolds of the divine nature as one personal God, exercising towards men the love and care of a parent to his offspring, and in the system of human duties springing therefrom, that on this consideration alone it deserves a measure of human reverence and trust, that can be accorded by an enlightened intelligence to no other religious composition. The doctrines of Christ give a spiritual unity to the whole history and literature of the Hebrew people. If the statements which have been placed before the reader militate against the long-cherished notions concerning the origin and nature of the canon, and if old views as to the nature of inspiration should have to be modified, it will still remain as a thing credible and true, that the Founder of our religion gathered up in his own person, and unfolded in his teaching, the sublimest truths of religion. To Him, in a higher than a mechanical sense, the Law and the Prophets pointed. We can take up, and even emphasise the language of the apostolic theologians, and declare with unfeigned sincerity, that He is the brightness of his Father's glory, and the express image of his person.

THE CHRISTIAN CHURCH.

The Church is, according to the broad Scriptural view, the organisation or company of genuine Christians, established for the promotion of each other's edification, and for the propagation of Christianity; and thus including Christ's followers of all ranks, countries, and ages, it now forms a vast spiritual kingdom, which contrasts strikingly with the 120 disciples gathered in an 'upper room' in Jerusalem. Even in reference to its denominational subdivisions, several of these have had a most imposing external history, and still exercise a mighty influence in the world.

The original Church was constituted at Jerusalem on the day of Pentecost, when three thousand persons were converted to the new faith. They are represented as 'continuing steadfastly in the apostles' doctrine and fellowship, in breaking of bread, and in prayer'—language which denotes the organisation, the ordinances, and the

regular life of a church. Persecution, however, soon arose out of the hatred with which the Jewish Christians were regarded by the influential men of their own nation. This season of trial for the young Church lasted five years, and only ended when the persecutors themselves were in open quarrel with the Roman governors. It is probable that the persecution in the capital had dispersed not a few of the Christians, and led to the formation of churches in the distant provinces of Judea. Immediately after, the first Gentile Church was founded, and its seat was Antioch, where Paul began his labours as an apostle, and whence he took frequent missionary excursions into the adjacent countries. The Church in this important city had the same rank among Gentile associations which the Church at Jerusalem enjoyed among those of Palestine. The Church at Rome, which had enjoyed the labours and witnessed the martyrdom of Paul, became involved in a cruel persecution; the Emperor Nero having charged the Christians with the crime of setting fire to the city, though he was himself supposed to be the incendiary. It is on this occasion that the Roman historians take the first notice of the Christians; and it is abundantly evident that the latter were only known to the former through the reports of bitter enemies.

When the doom of Jerusalem was impending, many of the Christians are supposed to have taken timely refuge in Pella, a village beyond Jordan. Wherever the power of the Roman empire extended, Christianity followed, in spite of deadly persecution. A few years after the apostolic age, the sect was numerous in Bithynia, in Asia Minor; though Pliny, the Roman governor, as he explains in a letter to Trajan, questioned with threats the Christians about their religion, and when they would not recant, ordered them to be led to execution. In the West, a still more unrelenting persecution raged against them in the reigns of successive emperors; and when the imperial cruelty occasionally relaxed a little, a bloodthirsty populace hunted down the Christians, who yet multiplied everywhere, and gained accessions from every rank.

According to Mosheim, the government of the primitive churches was somewhat as follows: The assembly of the people chose their own rulers and teachers, or received them by a free and authoritative consent, when recommended by others. They rejected or confirmed, by their suffrages, the laws proposed by their rulers to the assembly; excommunicated unworthy members; restored the penitent; passed judgment on subjects of controversy that arose in their community; and exercised supreme authority. The rulers of the church were either *presbyters* or *bishops*—two titles applied in the New Testament to the same order of men. Their particular functions might vary; for, while some of them confined their labours to teaching, others edified the church by *ruling;* and hence the distinction between *teaching* and *ruling* presbyters. Three or four presbyters, men of remarkable piety and wisdom, ruled the small congregations, nor did they need any president to maintain concord. But the number of the presbyters increasing with that of the churches, and the work of the ministry growing more weighty, by additional duties, these new circumstances required new regulations. It was judged necessary that one man of distinguished wisdom should preside in the council of presbyters, to distribute to his colleagues their tasks, and to be a centre of union to the whole society. This person was at first styled the *angel* of the church to which he belonged; but afterwards *bishop*. A bishop, during the first and second centuries, had only the care of one Christian assembly, which was generally small enough to be contained in a private house; there he acted, not so much with the authority of a master, as with the diligence of a servant. He instructed, conducted public worship, attended the sick, and inquired into the circumstances and supplies of the poor. He charged, indeed, the presbyters with the performance of those duties which the multiplicity of his own engagements rendered it impossible for him to fulfil, but had not the power to decide anything without the consent of presbyters and people. The jurisdiction of the bishops was not long confined to these limits. The bishops in the cities had, either by their own ministry, or by that of their presbyters, erected new churches in neighbouring towns and villages; and these, continuing under the inspection of the bishops, grew into ecclesiastical provinces, which were afterwards called *dioceses*. As a city bishop could not extend his ministry to all the churches which he had planted, he appointed suffragans or deputies to instruct and govern them; and those deputies—called *chorepiscopi* (country bishops)—were inferior to the bishops, but superior to the presbyters.

A slight acquaintance with human nature will lead us to see how easy it was for city bishops—who, in the superintendence of their churches, were the apostles' successors—to arrogate not a little of the power which belonged exclusively to the apostles, as inspired and divinely appointed servants of Christ. It was but natural, also, that their lordly tendencies should be confirmed by the wealth and splendour to which Constantine exalted them when he became the convert and the patron of Christianity. The great body of the church members, too, would almost willingly surrender their power and independence to dignitaries who held such a high rank in the empire. In fact, the organisation that the church assumed was almost a copy of that of the civil society in the midst of which it arose. It was almost inevitable that it should be so; nor can we agree with those who, taking their stand on what they conceive to have been the apostolic practice, and altogether forgetting those laws which a wider survey of history shews us to pervade all human societies whatever, hold the ecclesiastical system which gradually developed itself into a papal head for the Western Church, and a patriarchal head for the Eastern, to have been nothing but abuse and corruption. Certain it is that most of the errors which corrupted primitive Christianity were developed long before the period of ecclesiastical domination. The body of doctrine now in the Greek Church existed there long before the time of the patriarchate; and the dogmas of the Church of Rome which Protestants denounce, had their place long before the papal power. But even the medieval institutions and practices of the Church of Rome are not to be blindly and extravagantly assailed. 'Their monasteries were mission-stations, which resembled ours in being dispensaries for the

sick, alms-houses for the poor, and nurseries of learning.

Down to the Reformation, church history is divided between the Western or Roman, and the Eastern or Greek Churches. These churches still include within their pale by far the greater part of Christendom. The five principal strongholds of Christianity, in primitive times, were Jerusalem, Antioch, Alexandria, Constantinople, and Rome; and in them resided the five bishops who had the oversight of the Church's affairs. The Church in the imperial capital had, from natural causes, an early importance; it was the most opulent society, and its first bishops and presbyters were men of the highest character. Hence, though the Church at Antioch had been the mother-church of the Gentiles, and that at Jerusalem the earliest of all the churches, the Church of Rome claimed and received a certain pre-eminence. In the East, Alexandria was next to Rome in influence, but soon had to yield the primacy to Constantinople, which, though the youngest of the patriarchates, yet in 381 ranked second only to Rome. To be second, however, was not enough; and the fact of the Emperor Constantine having adorned it, and taken up his residence in it, was but one out of many circumstances which led Constantinople to claim equality with Rome, and fostered jealousies between the rival sees. The great Arian heresy sprang up in the East, but the famous Nicene Council denounced and punished it; and from that council the Bishop of Rome was absent through old age. Afterwards, the Arians gained an ascendency in the East, whilst the West continued orthodox, and this led to a suspension of communion between the two churches. The breach widened, and for a century and a half they disputed about the limits of their respective jurisdictions. At length, towards the close of the 5th century, the Patriarch of Constantinople was excommunicated by his Roman brother; and as the former was supported by his three brethren in the East, the rupture was serious. In the 8th century occurred the *filioque* dispute about the Holy Spirit's 'procession,' and this was followed by the iconoclastic controversy, during which the bishops of Rome not only excommunicated their eastern brethren, but also renounced their allegiance to the Emperor of Constantinople. The rupture between the two churches became final in the 9th century, succeeding ages down to the present having only added new elements of alienation. The Germanic invasions which broke the imperial power in the West, had greatly increased the authority of the Roman bishops or popes; and though Southern and Central Italy still professed subjection to the Greek emperor and to the *exarchs* who represented him, the ecclesiastics were fast monopolising civil functions and political influence. On the emperor authorising his exarch to enforce in the West the decree against all images which he had carried out in the East, the Latin people rose up in resistance, and the popes, as their champions, went the length of renouncing all allegiance to the imperial rule. The Italian territories which thus threw off the imperial yoke, were, after having been seized by the Lombards, who aspired to extend their sovereignty from Northern to Central and Southern Italy, recovered by the king of the Franks, and given up by him to the popes themselves (in 756); and thus was laid the foundation of the temporal power of the papacy. The ecclesiastical primacy of the Roman prelates had long been admitted in many quarters far and near, and it was now boldly exalted into universal supremacy. Nicholas I. (858–867) is regarded as the first Roman pontiff who realised the long-cherished hope of undisputed spiritual pre-eminence and domination in the West. The Greek or Eastern Churches repudiated both the theory and the fact of papal supremacy; and they continued to do so, and to differ from several dogmas and ceremonies of the Romish Church, even when the encroachments of the Mohammedan faith and arms had curtailed the Greek Empire, and taken possession of all the holy places in the East. Nor did the various crusades from the Western nations, undertaken at a stupendous cost of treasure and blood, to recover the sacred territory, conciliate the Eastern Church. The capture of Constantinople (1453) by the Ottoman Turks, and the departure of the last shadow of Roman majesty in the East—for previously every province had been torn out of the grasp of Cæsar's descendants—did not induce the trembling Church in the East to strike a league with her exalted sister in the West. She has since pursued her own way, held her own tenets—which, whilst anti-Roman, are still more anti-Protestant—and invariably refused to listen to negotiations for a union with the Church of Rome. When, in 1848, Pio Nono called upon the Greek patriarchs to enter within the see of St Peter, they indignantly declined, and predicted the 'destruction of popery.' In the West, however, from the 9th century down to the close of the 15th, Rome and the pope had been omnipotent; and from the chair of St Peter radiated to the ends of Christendom a sovereignty vaster, more potent and awful than the old 'mistress of the world' had ever wielded—a sovereignty to which the dogmas, ceremonies, and institutions of the Roman Church were admirably consonant. All our readers are familiar with Martin Luther and the work of reformation which he originated, its bold and rapid spread, and its grand success in the intellectual, moral, and spiritual regeneration of Europe, and in the career of material progress on which the nations entered. The Protestant epoch in Germany is fixed in 1521; in Switzerland and Geneva, in 1535; in Sweden and Denmark, in 1566; in England, in 1547; and in Scotland, in 1560. Protestantism took a comparatively slight hold of France, Spain, Portugal, Austria, and Italy; and in these countries Romanism has an ascendency all but unchallenged. The Church of Rome still includes within its pale one half of Christendom, the other half being divided between the Greek Church and the various denominations of Protestants. One counterbalancing fact lies in the Protestantism of Britain and America—not to speak of Germany—the two nations that are first in the van of universal progress.

CHRISTIAN CHURCHES.

TO the account of the Sacred Scriptures, given in No. 77, is appended a sketch of the spread of the Christian religion over the world, of its establishment as the religion of the Roman Empire, of the split between the Eastern and Western Churches, and the main features of their history down to the Reformation. In the present paper, we purpose giving some account of the chief divisions of Christendom as they now exist. They fall into three groups: the CHURCH OF ROME, the PROTESTANT CHURCHES, and the GREEK or EASTERN CHURCH.

CHURCH OF ROME.

The Church of Rome, or Roman Catholic Church, is that community of Christians throughout the world who recognise the spiritual supremacy of the pope or bishop of Rome, and are united together by the profession of the same faith, and the participation of the same sacraments. The most striking and palpable ground of division between Rome on the one side, and the Greek, Russian, and oriental communions on the other, lies in the claim of supremacy in spiritual jurisdiction on the part of the Roman bishop. This claim rests on the belief, in the minds of Roman Catholics, that Christ conferred on Peter 'a primacy of jurisdiction' over his Church; that Peter fixed his see at Rome, and died bishop of that Church (a position which some Protestant historians have called in question altogether); and thus, that the bishops of Rome, as successors of Peter, have also succeeded to his prerogatives of supremacy. Roman Catholic historians trace, to this acknowledged supremacy of the see of Peter, numerous references to Rome on matters of doctrine or discipline: appeals from other Churches, even from the great Churches of Alexandria, Antioch, and Constantinople; depositions and nominations of bishops, examination and condemnation of heresies, of which the first five centuries, especially the 4th and 5th, present examples, but in which Protestant historians only recognise the natural result of the political and social superiority of Rome as the capital of the Roman Empire. The abandonment of Italy by the emperors to its fate under the invasion of the barbarians, led to the establishment of the temporal sovereignty of the popes. The total disruption of the Western Empire, and the consequent social disorganisation of Europe, combined, with the spiritual authority of the Roman bishop, to bring about the general recognition of his authority throughout the kingdoms of Europe as an arbiter in the temporal relations of sovereigns with their subjects, and of sovereigns towards each other. The temporary withdrawal of the papal residence from Rome to Avignon, brought with it, from various causes, not the least of which was the weakening of the prestige of the 'see of Peter,' a notable diminution of at least the temporal power of the popes, which was still further weakened by the long Western Schism, by the conflicts of the rival pontiffs, and the scandals which arose therefrom; and the origin and progress of the modern political institutions, which then began to break upon the world, so modified the public relations of church and state, as by degrees to undo the condition of society in which the temporal power had its foundation. The great revolution of the 16th century completed the process; and when the popes seriously addressed themselves to the defence of the doctrinal system which was the foundation of their authority, it was no longer in the character of arbiters of the temporal destinies of the world, but of simple disputants in the arena of theological science, in which their adversaries could command, equally with themselves, the means of appealing to the intelligence and to the religious sympathies of men.

Nor was the revolution with which the popes thus found themselves face to face without its influence in the external history of the Roman Church. The defections consequent on the Reformation, at first numerous and formidable, received a check. The great Council of Trent did more to systematise, to define, and to present in popular form the doctrinal belief of Rome, than had been accomplished by the united efforts of the schoolmen of the three centuries which preceded the Reformation. The latter half of the 16th century was a period of new life in the Roman Church. The holding of local synods, the establishment of episcopal seminaries, the organisation of schools, and other provision for religious instruction—above all, the foundation of religious orders of both sexes—had the effect of arresting the progress of Protestantism in many countries.

The local distribution of the rival churches in the world has not been materially altered since the Reformation. But in her relations to the state, the Roman Church has since passed through critical struggles. In most of the European kingdoms these relations have been regulated by concordat, or by some similar mutual agreement, till very lately. In recent years, through the unification of Italy, causing the loss of the States of the Church, and the occupation of Rome by the king of Italy, the pope has been wholly stripped of the temporal power; while important modifications of privileges previously enjoyed by the Church, have been made in Germany, Austria, Switzerland, and Spain.

According to the Roman Catholic system, the Church is not only the custodian of the divine oracles, but also their authoritative interpreter. The Old and New Testament Scriptures, the Apocrypha, and the traditions of the Church, are her standards; but, as she is held to enjoy the gift of infallibility, she is in a position freely to judge, without falling into error, of all things and circumstances as they arise, in so far as these may seem to her to affect faith, morality, and

general discipline. A difference of opinion used to exist as to *where* in the Church the infallibility resides, a difference illustrated in the history of the Gallican controversy. The French or Gallican clergy, supported by the civil power, maintained that the consent of the bishops, tacit or expressed, is necessary to constitute a judgment infallible; while the Ultramontanes, or high papal party, alleged that the deliverances of the pope given *ex cathedrâ* have in themselves that character; but by the decision of a late Council, held in Rome in 1870, the Ultramontane view on this point has become the authorised doctrine of the Roman Catholic Church.

The Church of Rome holds the doctrines of the Creed commonly called Apostolic; the Seven Sacraments—Baptism, Confirmation, the Eucharist, Penance, Extreme Unction, Order, and Matrimony; the necessity and efficacy of the propitiatory sacrifice of the Mass for the living and the dead; Transubstantiation, or the conversion of the bread and wine in the Eucharist into the veritable body and blood of Christ; the doctrine of Purgatory; the efficacy of the doings of the living in behalf of the dead; the invocation of saints; their intercession for us; that their relics should be honoured; the use and veneration of the images of Christ, of 'the mother of God, ever Virgin,' and of the saints; the power of indulgences; the Immaculate Conception of the Virgin; all the decrees and canons of the Council of Trent relating to the Fall, original sin, justification, &c.; the supremacy of the pope; and the universal necessity of this Catholic faith in order to salvation.

The Church of Rome seeks to hold a medium between the extreme asceticism of the Eastern Church and its almost total absence in the Protestant churches. Her members observe every Friday as a fast from flesh; and six weeks at Lent, in memory of the Saviour's fast in the wilderness, are devoted to abstinence. The celibacy of the clergy is strictly maintained.

The Roman Church is famous for her hierarchical system of rule and her magnificent organisations, which extend like a network over the world. Roman Catholic countries are divided by the church into provinces, which are governed by archbishops, and are subdivided into bishoprics, each subject to its own bishop. In Protestant or unbelieving communities, the spiritual affairs of the Catholic Church are directed by bishops *in partibus Infidelium*, or titular bishops, who are styled vicars of the pope, or vicars-apostolic. In addition to Roman Catholics, strictly so called, the Church of Rome includes not a few individuals and churches that are not of the Roman or Latin rite, to which number belong Greeks, Slavonians, &c. who, while retaining their own national liturgy and language, acknowledge the supremacy of the Roman pontiff. Prominent among them is the *United Greek Church*, numbering more than 4 millions in Austria, which follows the Greek rite, but recognises the Roman government.

Since 1870, a movement has taken place within the Church under the name of Old Catholic, according to which, the decisions of the Council of 1870 relating to the infallibility of the pope are repudiated. This movement is principally confined to Germany and Switzerland.

The papal office is elective, and the present electoral body is the College of Cardinals, who are ecclesiastical princes appointed by the pope, having the title of 'Eminence.' Preparatory to election, the cardinals meet in 'conclave,' communication with the outer world being interrupted until the election is made. The candidate must be of mature age. Two-thirds of the cardinals must agree on a candidate, who shall be pope. France, Spain, and Austria used to have a veto on one candidate, a privilege which they exercised through one of their cardinals.

The worship of the Roman Catholic Church is highly gorgeous and imposing. A chief part of the service is musical, and the execution in all churches of importance is of superior quality. The service throughout the world is conducted in the Latin tongue.

The seat of the Roman Catholic religion during the principal part of its history may be said, on the whole, to be identical with that of the Western Roman Empire, extending over nearly the whole of Europe—Russia, Turkey, Greece, and part of Austria excepted. It has been transplanted to those regions which have been colonised by European nations, particularly North and South America.

The total number of Roman Catholics of all nations is estimated at about 185 millions. The hierarchy throughout the world comprises over a thousand archbishops and bishops; 12 of the archbishops have the title of Patriarch. There are 10 million Roman Catholics in English-speaking communities throughout the world.

PROTESTANTISM—THE CHURCHES OF THE REFORMATION.

As the fundamental principles of the Church of Rome are the authority of the Church and the supremacy of the pope; so Protestantism is radically based on the liberty of the individual conscience, the right of private judgment, and the supreme authority of the Holy Scriptures. The term Protestant was first applied to the adherents of Luther, from their protesting against the decree passed by the Catholic states at the second Diet of Speyer in 1529. This decree enjoined those states which had adopted the Reformation, among other things, to use and explain the Scriptures only as they had hitherto been used and explained in the Church. The principles of the Protest were: That the Catholic Church cannot be the judge of the Reformed Churches, which are no longer in communion with her; that the authority of the Bible is supreme, and above that of councils and bishops; and that the Bible is not to be interpreted and used according to tradition, or use and wont, but to be explained by means of itself, its own language and connection. This is reckoned substantially a protest for the individual and the nation against the encroachments of a great central corporation claiming universal authority. Protestantism arose as the assertion of individual liberty and of national independence. Although, therefore, denoting a set of definite fundamental principles essentially antagonistic to Roman Catholicism, the term is comprehensive of various churches, holding on many points widely divergent views. These churches are classified under the generic heads of *Lutheran* and *Reformed*.

In consequence of the secular spirit predominating in the high ecclesiastical circles at the commencement of the 16th century, the sale of indulgences, and the abuses connected with it, and, in general, the prevalence of corruption, a powerful reaction in favour of primitive faith and purity of manners took place over a considerable part of Europe, which found able and zealous exponents in Luther in Germany, Zwingli in Switzerland, Calvin and Farel in France, Cranmer and Latimer in England, and John Knox in Scotland. Political circumstances combined with religious aspirations in bringing about the establishment of churches, independent of the Roman hierarchy, in Germany, part of Switzerland, England, Scotland, Denmark, Sweden, and, after a fierce struggle, in the Netherlands. The new doctrines had made a powerful impression in France as well as in Italy and Spain; but the turn of events, and the policy of the government, became ultimately unfavourable to them in France; while in Italy and Spain, they were extinguished by the vigilance and terrors of the Inquisition.

The Confessions of the churches of the Reformation, drawn up soon after secession from Rome, exhibit, amid some diversities, a remarkable amount of agreement on the whole in the essential elements of Christian faith and practice. Embracing the substance of the Apostolic Creed and of the doctrinal decisions of the first four general councils, they agree, in the main, on the one hand, regarding the Godhead, the incarnation, the atonement, justification, holiness, a general judgment, and eternal life; and, on the other, in renouncing transubstantiation, the propitiatory sacrifice of the Mass, purgatory, Mariolatry, the invocation of saints, the worship of images, and the government and claims of the Roman pontiff. These Confessions are, indeed, more at one than the churches of whose faith they are the received symbols.

Soon after separation from the Church of Rome, a dispute arose between Luther and Zwingli regarding the Lord's Supper—the former maintaining the real presence, but rejecting transubstantiation; the latter holding, that the elements of bread and wine in the sacrament are simply signs of spiritual blessings. Luther's tenacity in holding to his doctrine on this subject, which is called Consubstantiation, led to a division in the Reformation ranks: those agreeing with him being called Lutherans; and the other sections being termed the Reformed Churches, usually known on the continent of Europe as the Calvinistic Churches, from the predominating influence of Calvin.

The *Lutheran Church*—which prevails in a great part of Germany, is the national religion of Denmark, Sweden, and Norway, and exists in Holland, France, Poland, &c.—has passed through several phases since the days of Luther. Extremely sacramentarian after his death, it strove subsequently against pietism and rationalism. When, in Prussia, by the influence of the government, a union was formed, in 1817, between the Lutheran and Reformed Churches, under the name of the *United Evangelical Church*, a strenuous opposition was made by the party who were then first known as *Old Lutherans*, who have come to be distinguished by an excessive attachment to things at first left in the church as *indifferent*, such as images and pictures in places of worship, clerical vestments, the form of exorcism in baptism, &c. While Luther himself held by the Augustinian doctrines of grace, many of the churches called by his name have adopted Arminianism, as, for instance, those of Norway and Sweden, where, however, a reaction has lately appeared. Two movements of supreme interest and importance have obtained special development within the Lutheran Church—the *rationalistic*, which regards the Scriptures not as being, but as containing the 'Word of God,' which, in further stages, eliminates the supernatural element out of the Scriptures, looks upon the books of both Testaments simply as historical products, reduces Christianity itself to a development of the religious in human nature, and ends occasionally in substantial pantheism or materialism; and the *critical*, which consists in the application of literary and scientific methods to the interpretation of the sacred records, and which has been found very frequently to ally itself to rationalism. Of late, the tide is believed to have somewhat turned in favour of the doctrines of Luther himself, which are distinctively termed *evangelical*, as opposed to rationalistic sentiments, on the one hand, and to Romanistic views, on the other.

In its constitution, the Lutheran Church is generally *unepiscopal*. In countries in which bishops exist, as in Denmark and Sweden, their powers are so limited as to give no hierarchical supremacy. Where Lutheranism is the national religion, the sovereign is recognised as the supreme bishop, and the church is governed by consistories appointed by him, and composed both of clergymen and laymen. The members of congregations possess almost no rights.

The United Evangelical Church of Prussia and the German States has about 14 millions of adherents; the whole number of Lutherans is more than 30 millions.

As Germany is the seat of Lutheranism, so Great Britain, the United States of America, and the British colonies are to be regarded as the headquarters of the Reformed religion, which, as a still more severely scriptural system, took shape at Geneva, and through the constant intercourse between the Reformers of Switzerland, France, and England, was adopted by the framers of the articles of the Church of England. It was introduced into Scotland under the auspices of John Knox, the companion and friend of Calvin. Among the Reformed Churches, besides those of England and Scotland, are the Protestant Church of France, that of Holland and Belgium, many German Churches, the once flourishing Protestant Church of Poland, &c. with those in America and elsewhere which have sprung from them. The most important controversy in the Reformed Churches is that which relates to Arminianism, so called from Arminius, its author (1560–1609), which was condemned by the General Synod of Dort (1618–1619). This controversy is similar to, although it travels somewhat beyond, that which was waged between Pelagius and Augustine in the beginning of the 5th century. Arminians and Calvinists differ concerning the doctrines of human nature, the atonement, efficacious grace, and the divine decree; Arminians giving prominence to the human element, and the Calvinists to the divine, in the way of salvation. The Scottish

Churches, the large and increasing bodies of Presbyterians in America and Australasia, the great proportion of the Baptist body, the Independents, and a considerable section of the Church of England, &c. are Calvinistic; while another section of the Church of England, a portion of the Baptist denomination, and, to some extent, the Wesleyan body, are Arminian.

THE ESTABLISHED CHURCH OF ENGLAND.

In the middle of the 14th century, Wicliffe assailed the papal indulgences and transubstantiation, and generally began to disseminate in England those doctrines which, after his death, continued to leaven the country, and which, on the rupture of Henry VIII. with the pope, triumphed in the Anglican Reformation. In 1535, the English parliament passed an Act wholly abolishing the papal authority within the realm. The power of the king became supreme. Under the guidance and influence of Cromwell and Cranmer, Bibles were placed in the churches, the youth of the nation were taught the Creed, the Ten Commandments, and the Lord's Prayer; images were removed from the altar; and there were put forth, the Book of Homilies in 1540, the New Communion Service and Catechism in 1548, the first Book of Common Prayer in 1549, and in 1553 the Forty-two Articles, which were subsequently revised by Archbishop Parker, reduced to Thirty-nine, and agreed upon by the archbishops and bishops of both provinces and the whole clergy in the Convocation held at London in the 4th year of Elizabeth, 1562. These Articles, along with the Book of Common Prayer, still constitute the authorised standards of the Church of England, which, as distinguished from Rome, rejects tradition as a rule of faith; bases all her teachings on the Old and New Testaments; recognises but two sacraments—Baptism and the Lord's Supper; denies the doctrine of transubstantiation and the propitiatory sacrifice of the Mass; forbids the adoration of the Virgin, saints, and angels, and the reverence of relics and images; and repudiates the Roman doctrines of purgatory and the spiritual supremacy of the pope.—Since her institution as a church separate from Rome, the Anglican establishment has passed through several grave crises. Menaced by Popery on the one hand, and Puritanism on the other, each of which succeeded for a brief period in even suspending her corporate existence, the former under Queen Mary, the latter under Cromwell, she has also witnessed two important secessions from her pale—that of the Nonconformists in 1662, when 2000 clergymen abandoned her connection rather than submit to the conditions of the Act of Uniformity, newly passed, which required unfeigned assent to all and everything contained in the Book of Common Prayer; and, subsequently, owing to the prevalent religious torpor and inactivity, that of the numerous and influential body into which the Wesleyan Methodists have grown.

In 1801, the Act of Union came into effect, which united the Churches of England and Ireland in all matters of doctrine, worship, and discipline. The connection again ceased on the 1st of January 1871, when the Episcopal Church of Ireland became disestablished by an act of the imperial legislature.

Several serious controversies have taken place in the Church of England within the last forty years. The Tractarian movement, the Gorham controversy, the development of Broad Churchism, together with some recent decisions in the ecclesiastical courts, have agitated the Church, and somewhat affected her position. The Tractarian controversy was occasioned by some tracts which began to be published at Oxford in 1833, the object of which was to revive something of the spirit of Catholic antiquity, and reform the Church system in accordance with that design. The Gorham controversy originated in the refusal of the Bishop of Exeter to institute the Rev. Cornelius Gorham to the vicarage of Brampford-Speke, on the ground of his holding unsound views as to the efficacy of the sacrament of Baptism. The Court of Arches (1849) decided that baptismal regeneration is the doctrine of the Church of England. Mr Gorham appealed to the judicial committee of the Privy-council, which, while disclaiming jurisdiction in matters of faith, and giving no decision on the doctrinal questions involved, reversed the judgment of the Court of Arches, on the ground, that differences of opinion on various points left open are quite consistent both with the views of the framers of the Articles and with the prevalent custom in the Church of England.

That Church is at present divided into three sections tolerably well defined—what are known as the High Church party, the Broad Church party, and the Evangelical or Low Church party. The High Church party insist on the authority of the Church and priesthood, the efficacy of sacraments when rightly received, the necessity of apostolical succession in the matter of orders, and in their general teaching they take the Prayer-book as the exponent of Scripture. They are scrupulous in observing the rubrics, and have done much to revive the practice of daily prayer in the churches and the observance of festivals. Order, unity, antiquity, and catholicity are what they profess to have in view. There have been numerous secessions from their ranks to Romanism, and a disposition has been manifested by some of their number to introduce into the Anglican Church the confessional, monasticism, and the objective presence in the sacrament of the Supper.

The judgment given in favour of Bennet in the Supreme Court of Appeal (June 8, 1872), caused considerable agitation, under the impression that something very like transubstantiation is tolerated in the Church of England. The Broad Church party, including the Arnold School and the followers of Maurice, are distinguished by a more than customary liberalism in the interpretation of the Scriptures and the Church standards; depreciate doctrinal teaching as well as, to some extent, the differences between Christianity and other systems of faith, culture, and morals; and earnestly advocate the idea of a comprehensive national Church, embracing nearly every variety of belief and form of worship. The Evangelical or Low Church party occupy a position midway between the other two, and strongly maintain the distinguishing doctrines of the Reformation, and those views concerning the atonement, the Spirit's work, justification, &c. which are ordinarily termed evangelical; personal religion and direct personal

devotion to the Redeemer, in opposition to ritualism; and the sanctifying and saving efficacy of a personal faith in Christ, in opposition to Broad Churchism.

Convocation consists of two chambers, termed the Upper and Lower Houses. The Upper House is composed of the archbishop and the bishops of the province; and the Lower House, of the clergy of the second order. Meetings of Convocation, long in abeyance, have been lately resumed, particularly in the province of Canterbury; and among other things, Convocation has resolved on a new and revised translation of the Holy Scriptures, which is now being executed by a committee of their appointment, including distinguished and learned representatives from other leading Protestant Churches.

The position of the Church of England as respects its Convocation is anomalous. As essentially interwoven with the state, the Church possesses no independent action; its articles, liturgy, organisation as to benefices, &c. are all regulated by parliament, while its discipline falls within the scope of the ecclesiastical courts, the affairs of which are carried on by laymen, being a class of tribunals apart from the ministering clergy. The Church, therefore, in its distinctive capacity, is left little to do in the way of jurisdiction.

The number of benefices in the Church of England, which has 2 archbishops and 26 bishops, is now about 13,000, and the clergy of all classes are estimated at 23,000. A large proportion of the church property is managed by the Ecclesiastical Commissioners, appointed in 1836, who pay fixed incomes to the prelates of from £15,000 (to the Archbishop of Canterbury) to £2000. The deans, numbering 30, have incomes of from £3000 to £700, £1000 being the general average. The bishops are assisted by 71 archdeacons, who, for the most part, also hold other preferments, and who have under them 610 rural deans. The revenue from tithes received by the clergy is about £2,500,000, and the income from church property is about £5,000,000. The Church of England has over 50 bishops and about 2500 clergy in the colonies. The amount contributed to missions by Church of England societies in 1871 was £324,782.

The Anglican Church embraces in her communion the Episcopal Churches of Ireland and Scotland, all the colonial Episcopal Churches, and the American Episcopal Church. All but the latter use the English Book of Common Prayer: in America, this has been slightly altered.

The Act disestablishing the *Episcopal Church of Ireland* came into operation on the 1st January 1871. Existing interests were provided for. The private benefactions left to the church were retained to the amount of £500,000, together with the national historical edifices, including several venerable cathedrals. The government is exercised by the Irish Church Representative Body, which comprises the two archbishops and ten bishops, and 36 elected and twelve other members, for the greater part laymen. The number of benefices is 1548, and of curates 622. The Church population is about 683,295. There are two archbishops and ten bishops. The whole number of Episcopalians in English-speaking communities is estimated at 17,050,000.

THE ESTABLISHED CHURCH OF SCOTLAND.

At the commencement of the 15th century, Scotland was involved in the errors and corruptions then prevalent throughout Christendom, and, in ignorance and immorality, the Scottish clergy were amongst the worst in Europe. The opinions of Huss and Wicliffe having found their way into the country, were taught in several places, particularly in the south-western counties, where the followers of the latter went under the name of the Lollards of Kyle. When, a century later, by means of intercourse with the continent, the views of Luther became known in Scotland, and produced an impression, deepened by the martyrdom of Patrick Hamilton and George Wishart, the persecution to which the recipients of the Reformed opinions were subjected by the bishops, aroused and fanned the spirit of independence inherent in the Scottish breast, so that, on the return of John Knox from Geneva, in 1559, he found a fitting soil in which to deposit the new seed, and a ready response in the hearts of the people to his bold projects. Encouraged by the strength of their party, the accession of Queen Elizabeth, and the return of Knox, the Reformed section of the nation—known as the 'Congregation'—having triumphed in open warfare, obtained a complete ascendency in the parliament that met at Edinburgh in 1560, which passed several acts, abolishing the jurisdiction of the pope, proscribing the Mass, and ratifying a Confession of Faith, drawn up by Knox and his associates. This Confession embraced all the essential articles in the ancient creeds, and though substantially the same as that afterwards compiled at Westminster, was considerably more liberal. The First Book of Discipline followed, setting forth the government and discipline of the Church. Three principal orders of office-bearers were established—ministers, elders, and deacons—chosen by the several congregations, and publicly ordained by the ministers and elders of the Church. A temporary order of superintendents, having power to plant churches and appoint ministers, was instituted. The legislation and judicial power was vested in a General Assembly, which met once or twice in the year, and which consisted of ministers, superintendents, and representative elders. A simple form of worship was adopted, and the Sabbath only set apart for religious services.

On the accession of James VI. to the throne of England, he conceived a strong predilection for that form of religion which he found existing in the southern part of the island, with a correspondingly violent antipathy to Presbyterianism; and he endeavoured by various means to effect a change in Scotland. The attempt to revive prelacy succeeded for a short time. Bishops were again promoted to the several sees. But a new struggle, headed by Andrew Melville, the disciple of Beza, ended in the adoption by the General Assembly (1581) of a still more stringent system of Presbyterianism, embodied in the Second Book of Discipline. Charles I. endeavoured to introduce into the Scottish Church a Book of Canons and a Liturgy framed on the model of those of England; but the popular indignation, which found vent in the National Covenant, presented

an effectual barrier, and brought about the total abolition of Episcopacy. Fearful of the re-introduction of popery, the great body of the nation made common cause with the parliament of England in withstanding the policy of Charles I., and, by a combined hostility to popery, aimed at securing a uniformity of Protestant religion and worship throughout the kingdom; a design which formed the *raison d'être* of the Assembly that met at Westminster in 1643. This body, composed for the most part of Englishmen, but with delegates from the Scottish Church, elaborated that Confession of Faith and those other documents which form the standards of the Church of Scotland, and of the different Presbyterian Churches in Great Britain, the United States of America, and the British colonies, to the present day. This Confession constitutes the most formal expression of Augustinian and Calvinistic doctrines in existence. With the restoration of the monarchy under Charles II. came the attempted restoration, once more, of Episcopacy in Scotland. But the national conscience could not be coerced. On the accession of William and Mary, prelacy was abolished, and Presbyterianism re-established, the Westminster Confession ratified, and patronage done away. At the close of 1690, a General Assembly was held, composed, as before, of ministers and elders from the various presbyteries, presided over by a minister elected by the members, as Moderator, and having the presence of a lay commissioner, representing the crown. With the exception of some years in the reign of William, the Assembly has continued to meet annually ever since, and to transact business, when not in session, by a Commission named by itself for the purpose. At the union of England and Scotland in 1707, a special statute was passed for the security of the Protestant religion and Presbyterian form of church government in the latter country.

The most important controversy which has agitated the Church of Scotland is that which relates to patronage. In 1712, an Act was passed by the British parliament which restored to patrons in Scotland the right of presentation to benefices. This Act caused great discontent at the time, and it has occasioned several considerable secessions from the Established Church of Scotland, the principal being the Disruption of 1843. In 1834, under the influence of Chalmers, the 'Veto Act,' giving the people the right of rejection, though not of call, was passed by the General Assembly. The Court of Session refused to homologate this Act, and subsequent collisions between the civil and ecclesiastical courts led to the Disruption of 1843.

Of late years, the law of patronage, though seldom enforced, yet alongside of popular elections in the other Presbyterian Churches of the country, and in those churches, now amounting to a large proportion of its best charges, built by its own members, has put the Established Church to serious inconvenience. By a recent decision of the General Assembly, that Church resolved to seek its repeal. A bill with that object was introduced into the House of Lords on May 18, 1874. This bill vests the election of ministers in the communicants and adherents of the parish church. The number of ministers in the Established Church is about 1300, and the number of churches 1250. The amount raised by the Church for her various objects, as reported to the General Assembly of 1874, for the previous year, was £278,488, exclusive of a munificent donation of half a million by Mr Baird of Auchmeddan. Within the last 20 years, 150 churches have been endowed, at a cost of £500,000.

THE SCOTTISH EPISCOPAL CHURCH.

At the Revolution Settlement, the leading Episcopal clergy, and, on the death of Queen Anne, both clergy and laity, in Scotland were Jacobites; a fact which, in addition to the general recollection of the mode in which the Stuarts sought to force prelacy upon the country, was unfavourable to Scottish Episcopacy. The succession of bishops was, however, kept up by new consecrations. Liturgical forms similar to, and generally identical with, those in the English Prayer-book were introduced. Though the Episcopalians took no open part in the insurrection of 1745, as they did in that of 1715, yet their sympathies were known to be with the House of Stuart, and the government carried through parliament some acts which had the effect of suppressing public worship in the Episcopal communion for many years. On the accession of George III. these statutes ceased to be enforced; but they were only repealed in 1792. The Act which gave this relief imposed restrictions on their clergy officiating in England, and prohibited their holding benefices in the English Church. In 1804, the Thirty-nine Articles, and in 1863, the Prayer-book, of the Church of England were adopted by the Scottish Episcopal Church. The restrictions imposed by the Act of 1792 were modified by an Act passed in 1840; and in 1864 they were entirely removed, with the reservation of the right to bishops in England and Ireland to refuse institution to a Scottish clergyman on his first presentation to a benefice, but not after he should have once held such benefice. The dioceses of the Scottish Episcopal Church are: Moray, Aberdeen, Brechin, Argyll, St Andrews, Edinburgh, and Glasgow. The bishops are chosen by the clergy of the diocese, and by representatives of the lay communicants. One of the bishops, under the name of Primus, chosen by the other bishops, presides at all meetings of the bishops, and has certain other privileges, but possesses no metropolitan authority. The highest judicial body is the Episcopal College, composed of all the bishops. The highest legislative body is a General Synod, composed of two houses, the one of the bishops, and the other of the deans and the representatives of the clergy. The number of churches in the Scottish Episcopal Church is 178; and of clergy, 196.

THE FREE CHURCH OF SCOTLAND.

The standards and Presbyterian constitution of the Free Church do not differ from those of the Established Church. In both, government is by Kirk-sessions, Presbyteries, Synods, and General Assembly, ascending in regular gradation, the higher court having the right of review in cases of appeal, and the legislative power residing in the supreme court, or General Assembly. All the laws in force prior to the Disruption are acknowledged by the Free Church, except in so far as they

have since been repealed. There is, however, a not inconsiderable difference of opinion in these two Churches respecting the interpretation of their common standards as bearing on the doctrine of the province of the civil magistrate in religious affairs. While both are agreed in asserting, generally, the headship of Christ and the co-ordinate jurisdiction of church and state, as these are embodied in the standards, the Free Church maintains that the existing relations of church and state, in the case of the Establishment, are inconsistent with the perfect freedom of the Church in the conduct and management of its own affairs. The legislative and administrative freedom of the Church regarding spiritual matters, and the people's right of call, were the main elements of dispute in the 'Ten Years' Conflict,' which terminated in the formation of the Free Church. It is held by Free Churchmen that in the enforcement of the rights given to patrons by the Act passed in 1712, when Jacobite counsels prevailed in the court of Queen Anne, during the 18th century, and a considerable part of the 19th, no direct invasion of the ecclesiastical province took place on the part of the civil courts and of the civil power; the presentation of the patron was regarded as simply conveying a civil right to the benefice or emoluments; and that the Court of Session, *in requiring ecclesiastical action to follow presentation*, took new ground, tantamount to an unwarrantable interference with the liberty of the Church. In August 1842, the House of Lords affirmed a decree of the Court of Session, which required the presbytery of Auchterarder to take the ordinary steps towards the settlement of the presentee to Auchterarder, without regard to the dissent of the parishioners. An application to parliament, in the form of a 'Claim of Right' from the evangelical majority for an Act such as would have reconciled the duties of their position according to the law of the land, in the Church by law established, with what they believed to be their duty towards Christ and according to His law, was rejected; and it now seemed to them that the only course open was to retire from their position by the sacrifice of the emoluments and benefits of an establishment. Accordingly, in 1843, 474 ministers renounced their connection with the Establishment, and along with them a great body of its elders and members.

The Free Church forthwith addressed itself to the important work of organisation. An immense enthusiasm pervaded its members, by whose unprecedented liberality a Sustentation Fund, furnishing an equal dividend to all the ministers of the Church, was successfully launched; churches and manses were erected in all parts of Scotland; the support of all the missionaries who had belonged to the Church of Scotland, and who now joined the Free Church, was undertaken from the first; and when it was found that the question affected the position of parish schoolmasters, an 'Education Scheme' was framed and carried out. Colleges for the training of ministers were founded in the cities of Aberdeen, Edinburgh, and Glasgow. The Free Church movement reacting upon the Establishment, and profoundly influencing other churches both at home and abroad, lent an immense impetus to the work of church extension in Scotland, as well as to evangelistic and missionary enterprise in other countries. The movement affected the colonial no less than the missionary field, though, in this case, not with like results. The divisions which it wrought in the colonies have, however, since been almost entirely healed. The Presbyterians of the colony of Victoria realising that in their new circumstances the Scottish differences occasioned by state connection had no practical bearing on their case, took the initiative in union, the advantages of which soon became so obvious, that various Presbyterian bodies in the other colonies have since formed united churches. An effort to bring about a union between the Free Church and the United Presbyterian Church of late, failed through the opposition of a minority in the Free Church.

In the first year of the Disruption, the sum of £367,000 was raised by the Free Church, whose Sustentation Fund now amounts to £152,112 a year. The total sums raised for the various objects of the Free Church of Scotland, for the year ending 31st March 1874, amounted to £511,000. The equal dividend is £150 a year, the number of ministers who receive it being 826. Of these, 600 also share in a general surplus fund. The whole number of ministers is upwards of 937, and the congregations number more than 954.

UNITED PRESBYTERIAN CHURCH.

The United Presbyterian Church, one of the three larger religious denominations in Scotland, was constituted in 1847 by the amalgamation of the Secession and Relief Churches.

The Secession Church was the earliest outcome of dissatisfaction in the Church of Scotland with what was regarded by the Covenanting element within its pale as those compromises attendant on the Revolution, by which, for example, hundreds of Episcopalian curates were allowed to retain their parishes, in which they had been stationed, on subscribing the Confession of Faith; and great numbers of laymen became office-bearers in a church whose strict adherents they had but lately hunted to death. The enforcement of the law of patronage was the occasion of the secession of Ebenezer Erskine and a few other ministers, who, by means of little Christian societies, which were everywhere formed, and gradually supplied with pastors, succeeded in making an impression on the religious life of the country. In 1747, the small but increasing body divided on the question of the consistency of a Seceder taking the burgess-oath, the party condemning the religious clause constituting the *General Associate Synod*, or, popularly, the *Anti-burgher Synod;* the party tolerating it, the *Associate* or *Burgher Synod.* Each of these was subsequently divided, and two other trivial denominations were formed, the *Old Anti-burghers* (1806) and *Old Light Burghers* (1799). The Burghers and Anti-burghers were again united in 1820, when their congregations, which numbered 32 at the breach (1747), amounted to 262. The chief controversies in which the Secession Church was engaged are the *Voluntary Controversy*, conducted with leading divines of the Established Church (1829-1834), and the *Atonement Controversy.* At the date of union with the Relief Church in 1847, the Secession had a staff of 60 missionaries.

The *Relief Church* was founded by Thomas Gillespie, who, having signalised himself in refusing to proceed with a settlement obnoxious to the people, was, in consequence, deposed by the General Assembly. Joined by Mr Thomas Boston, son of the great Boston, in 1758, and by the congregation of Colinsburgh in 1761, the Relief body grew pretty much after the manner of the Secession; but holding the principle of 'free communion,' the party was for a long time fiercely assailed by the Seceders and Reformed Presbyterians.

At the union in 1847, the Relief numbered 113, and the Secession 384 congregations. The United Presbyterian Church, thus commencing with 497 churches and 140,000 members, has had a career of great prosperity. It adheres to the Westminster standards, with the modification—'it being always understood, that we do not approve of anything in these documents which teaches, or may be supposed to teach, compulsory, or persecuting, and intolerant principles in religion.' The supreme court is called a Synod; and the body has a Theological Hall and Library in Edinburgh, and a staff of professors. The system of training is, however, somewhat different from that of the Established and Free Churches. The distinguishing characteristic of the United Presbyterian Church at present, as compared with other Presbyterian Churches, is its voluntaryism, according to which it is held that the interests of Christianity are best subserved by the total separation of the Church from the state.

The United Presbyterian Church has upwards of 611 churches and of 601 ministers. In the year ending May 1873, the sum of £325,000 was raised by this body for its different religious purposes.

REFORMED PRESBYTERIAN CHURCH.

This Church was formed after the Revolution by a small party of Presbyterians who objected to the settlement then made in church and state, and holding to the binding obligation of the Solemn League and Covenant, advocated the civil and ecclesiastical polity that prevailed in Scotland from 1638 to 1649, and became popularly known as Cameronians, or followers of Richard Cameron. For 16 years they remained without any minister; and it was not till 1743 that their first presbytery, with three ministers, was formed. In 1712, the members of the body renewed the Covenants; a mode of confirming their faith which they have employed from time to time. In the recent union negotiations, the Reformed Presbyterian Church has shewn itself more liberal than was generally imagined, having expressed its satisfaction with the articles of union.

The Reformed Presbyterian Church has 44 churches and 40 ministers in Scotland; and under a different jurisdiction, but with the same principles, 32 churches and 32 ministers in Ireland.

The Presbyterianism existing in England and Ireland is also of Scottish origin, rather than indigenous to either of the other countries The successors of the numerous Presbyterians in England at the time of the Westminster Assembly adopted Unitarian sentiments. At present, there are three Presbyterian Churches represented in England, all of Scottish planting; that branch, numbering 20 churches, 20 ministers, and 10 chaplains, connected with the Established Church of Scotland; the *Presbyterian Church in England*, having 132 churches and 130 ministers, which, though possessed of self-government, formerly stood in special relations to the Free Church of Scotland; and that branch, nearly as numerous, connected with the United Presbyterian Church. The Presbyterian Church in England has a college in London, and 8 presbyteries, of which those of Lancashire and London are the principal. A union between this body and the portion of the United Presbyterian Church in England, both of which have made signal progress in England (150 per cent.) during the last 20 years, was attempted, but failed in consequence of an adverse decision of the United Presbyterian Synod (1874).

The *Presbyterian Church in Ireland* is a self-governed body, entirely similar to the leading Presbyterian Churches in Scotland, with 560 congregations, 628 ministers, and 123,000 communicants. Formerly in the possession of a grant from the state, called the *regium donum*, it has now a Sustentation Fund, and during the year ending May 1873, raised for all purposes £125,419.

The whole number of Presbyterians throughout the world, exclusive of the German Protestant Churches, which are substantially Presbyterian, is more than 14 millions, the United States alone containing 3 millions; while the number of English-speaking Presbyterian congregations over the world is estimated at about 12,000, representing 10 million Presbyterians.

EVANGELICAL UNION.

This body, otherwise called Morisonians, was constituted in Scotland in 1843, by the Rev. James Morison of Kilmarnock and other ministers (whose doctrinal views had been condemned by the Secession Church, to which they belonged), and by the congregations adhering to them. They were soon afterwards joined by a number of ministers and congregations, holding like religious views, that previously belonged to the Congregational Union. Their doctrinal opinions are highly Pelagian and Arminian. They hold that Christ died for all men equally, that all have equal grace and ability to believe the gospel, &c. Their church government is independent, and their number is 10,000.

GLASSITES.

This sect arose in Scotland in 1730, when John Glas, a minister near Dundee, was deposed by the General Assembly of the Church of Scotland, on account of views contrary to the standards of the Church. He maintained that all national establishments of religion are inconsistent with the true nature of the Church of Christ, and that faith is 'a bare belief of the bare truth.' A number of small congregations were soon formed on Glassite principles, in Scotland, England, and America, which were better known as Sandemanians, from a follower of Glas, Robert Sandeman. Their number has diminished greatly of late years, although their religious views continue to be disseminated under other names. In 1851, there were only six Glassite churches in Scotland,

none of which contained very many members, and six Sandemanian churches in England. They deem it unlawful to join in prayer with any one who is not a brother or sister in Christ, they observe the Lord's Supper weekly, maintain *love-feasts*, and, in general, hold by the most literal interpretation of Scripture rules.

BEREANS.

The *Bereans* were so named from the prominence given by them to the Bible alone in religious matters, in allusion to Acts xvii. 11. The founder of the Bereans was the Rev. John Barclay, a native of Perthshire (1734–1798). The sect is now almost extinct.

INDEPENDENTS.

The Independents or Congregationalists, as a distinctive denomination, were founded in England by Robert Brown about the year 1583. Their distinguishing tenets relate to church government, on which they are opposed both to the Presbyterian and Episcopalian forms, and may be regarded as standing at the farthest remove consistent with corporate existence from that system of organisation which has found its fullest embodiment in Romanism. The essential element of Congregationalism is, that any community or congregation of Christians has a right to the regulation of its own ecclesiastical discipline and form of worship, independent of any other community; each congregation forming in itself a Church, a word which, it is held by Independents, is always employed in the Bible to signify either a single congregation or its place of meeting, the aggregate of Christian communities being, according to them, denoted by the plural 'churches.' They require not only intellectual assent to the historical narrative of Christianity, but personal religion in those who are admitted to a congregation. Any man whom a congregation may think qualified to edify them is eligible for the ministry. Ordination, which is considered merely an affair of order, is performed by the ministers of neighbouring churches. Independents hold that the Church is a purely spiritual institution, and has no head but Christ. Forming a minority of 5 out of the 70 or 80 members who composed the Westminster Assembly, the Independents, who were backed by the influence of Cromwell, held a great meeting in 1658, at which a declaration was drawn up precisely the same as that of the Westminster Assembly, except that the chapter in favour of the Presbyterian form of church government was omitted, and another substituted in favour of Congregationalism. Along with other Nonconformists, the Independents suffered greatly by the passing of the Act of Uniformity in 1662. The Revolution and the Act of Toleration (1689) brought them relief. Attempts at union between them and the Presbyterians followed, and in 1691 heads of agreement were drawn up. At length, in 1730, Presbyterians, Baptists, and Independents were united under the name of the Three Denominations, which held conferences, ultimately disturbed by the withdrawal of the Presbyterians. Considerable accessions were made to the Independents through the religious movements determined by the Wesleys and Whitefield; it now forms, next to the Wesleyan Methodists, the largest dissenting body in England, and it is also numerous in America. Besides the illustrious Protector, the Independents can boast of such names as Owen, Pye Smith, John Angell James, and Raffles.

Independency established itself in Scotland towards the close of last century, under the influence of Haldane, who, along with Aikman, made a preaching tour as far north as the Orkney Islands. Other itinerant preachers followed; and between 1798 and 1807, 85 churches were formed, and pastors ordained. A controversy on the *elder's office* seriously impeded and weakened the Congregational cause for a time, but the formation, in 1811, of the Glasgow Theological Academy (now removed to Edinburgh) did much to restore its vigour.

In America, the progress of the Independent body—founded at Plymouth, New England, by John Robinson in 1620—was temporarily marked by the spread of Antinomian and Unitarian doctrines. Antinomianism was condemned by a synod convened in New England. In 1785, a separation took place between the Unitarian and Trinitarian Congregationalists. Harvard College is Unitarian. 'Congregationalism,' according to Dr Schaff, 'is the ruling sect of the six north-eastern states.'

The Independents require no subscription to any human standard of doctrine, and yet there exists, on the whole, very considerable harmony in their teaching, which is in the main orthodox and Calvinistic. It might, at first sight, appear likely that the perfect independence of each congregation would render their working together harmoniously a matter of great difficulty; but experience has shewn the contrary. No great secessions have at any time taken place from their ranks, and there is a striking agreement between their modern faith and principles and those which were recognised at the first rise of their system. The 'Congregational Union of England and Wales' was formed in 1831, and consists of a Conference of delegates, lay and clerical, from the various churches, who assemble twice a year for consultation upon general Church affairs, and to unite in such combined exertions as will not interfere with their principles. It is distinctively provided, however, in the constitution of this Conference, that it shall never become a court of appeal. In some parts of America, the Independents have permanent assemblies, termed 'advisory bodies,' for the purpose of taking into consideration, and giving counsel on, cases of difficulty submitted to them. The question of the desirableness of a greater approximation to the Presbyterian system was brought before the English Conference a few years ago, but without any positive result in that direction.

The Congregational Union numbers 78 associations at home and in the colonies, with 3609 churches, and 2716 ministers and missionaries. It has been estimated that there are 7 million Congregationalists in all English-speaking communities.

METHODISTS.

Originally applied by a student of Christ-Church to the brothers Wesley, and several other young men, then members of the different colleges of

Oxford, who were in the habit of assembling together on particular nights of the week chiefly for religious conversation, the term Methodist was selected in allusion to the exact and methodical manner in which they performed the various engagements which a sense of Christian duty induced them to undertake, such as meeting together for the purpose of studying Scripture, visiting the poor, and prisoners in Oxford jail, at *regular* intervals. Subsequently, it came to be applied to the followers of Wesley and his coadjutors, when these had acquired the magnitude of a new sect. In 1735, John Wesley was induced to go out to Georgia with General Oglethorpe, to preach to the Indians and colonists. His intercourse with Moravians, who were his fellow-passengers to America, and afterwards his fellow-labourers in the colony, tended to stimulate his religious zeal. Having returned to England in about two years, he maintained an intimate connection with the Moravians in London, and on May 24, 1738, at a meeting of a Society in Aldersgate Street, he experienced such a change, that, notwithstanding all his previous zeal, he ever afterwards regarded this as the time of his conversion. After visiting the Moravian Brethren in Germany for a short time, he became associated with his former college-companion, Whitefield, and following his example, commenced, in 1739, the practice of open-air preaching. In 1740, he separated himself from the Moravians. In the course of Wesley's endeavours to initiate and carry on an efficient scheme of evangelisation, that system of Methodism was developed, which, though like some other important schemes, extemporised to suit the occasion and the exigences of existing circumstances, exhibits a theoretically complete and masterly organisation. By-and-by, 'societies,' consisting of persons anxious to know about salvation, were formed in different parts of England, where the evangelistic labours of the Wesleys had awakened in many minds 'a desire to flee from the wrath to come, and be saved from their sins'—the only condition required of any for admission into these societies, which Wesley subdivided into classes, under the superintendence of leaders, whose duties were partly religious and partly financial. For preaching purposes, the societies were aggregated into 'circuits,' each circuit now generally including a town, and a rural circle of ten or fifteen miles, and having two, three, or four ministers appointed to it, one of whom is styled the 'superintendent.' Here they labour for at least one year, and not more than three. Still larger associations are the 'districts,' composed of from ten to twenty circuits. General 'circuit meetings,' composed of ministers, stewards, leaders of classes, lay preachers, &c. are held quarterly, and 'district meetings' once a year. The supreme Methodist assembly is the 'Conference,' which is exclusively clerical, and which now consists of 100 ministers, mostly seniors, who hold their office according to arrangements prescribed in a Deed of Declaration executed by John Wesley himself, and enrolled in Chancery. But the representatives elected at the district meetings sit and vote usually as one body, the 100 confirming their decisions.

Wesleyan Methodists claim to be considered *orthodox*, *Protestant*, and *evangelical*. They accept the *Articles* of the English Church, but believing these Articles to have been framed on a basis of *comprehension*, they consider themselves at liberty to accept them in an Arminian sense. They are not, however, out-and-out Arminians. While rejecting the Calvinistic doctrine of predestination, which they conceive to be incompatible with the universality of the atonement, as held by them, they maintain the total fall of man in Adam, and his utter inability to recover himself. They give prominence to the necessity of men who profess to be Christians feeling a *personal interest* in the blessings of salvation, or assurance by the Spirit of *present pardon*, and hold in a modified form the perfectibility of Christians in the present life, but reject the doctrine of the necessary perseverance of the saints. In their religious services, the Wesleyan Methodists use more or less the English liturgy. They observe a 'watch-night' on the eve of the New Year; and at the beginning of the year, they hold a 'covenant service,' at which congregations solemnly vow to serve the Lord. But even the ordinary religious services, in some places, are frequently marked by an ebullition of fervent feeling on the part of the audience, which has a very singular effect upon a stranger.

The success of Wesleyan Methodism has been very great, whether looked at as a vast 'home mission,' as originally intended, or in its foreign missionary enterprise. When Wesley died (1791), his 'societies' had spread over the United Kingdom, the continent of Europe, the States of America, and the West Indies, and numbered 80,000 members. Since then, they have largely increased, and, according to the latest returns, about 13 millions of people, including Sunday scholars, are under Methodist influence and teaching in all parts of the world: the membership being 2,900,000.

The Wesleyan Methodists first established themselves as a religious society in the United States of America in 1766, under the name of the Methodist Episcopal Church, which, at the termination of the revolutionary struggle, numbered 43 preachers and 13,740 members. Up to this time, the American Wesleyan Methodists laid no claim to being a distinct religious organisation. But the American revolution rendered the foundation of an independent society inevitable; whereupon, Wesley, who considered that, in the primitive church, a presbyter and a bishop were one and the same order, differing only as to their official functions, assumed the office of the latter, and set apart and ordained as bishop of the infant church the Rev. Thomas Coke, D.C.L. September 2, 1784, who was unanimously recognised by the Conference held at Baltimore in the December following. In 1830, a secession took place, comprising those who were dissatisfied with the Episcopal form of government, by whom a new organisation was formed, called the Methodist Protestant Church, whose numbers at the seventh general Conference (1858) amounted to 90,000 members and 2000 preachers. Two other secessions took place on the question of slavery: one in 1842, resulting in the formation at New York, in 1843, of the *Wesleyan Methodist Connection of America*, whose members in 1858 amounted to 20,000, and its preachers to 300; and another in 1844, originating the *Methodist Episcopal Church, South*, which in 1859 had 2661

travelling preachers, 5177 local preachers ; 511,601 white members ; 197,848 coloured members.

Various secessions from the Methodist body in England have also taken place.

In 1797, was formed the METHODIST NEW CONNECTION, which differs from the older body in admitting one layman to each minister into the Conference, and to a full share of all its business, spiritual and secular. These laymen are chosen either by the circuits, or by 'guardian representatives,' elected for life by the Conference. The PRIMITIVE METHODISTS were formed into a society in 1810, the causes of separation being a disagreement as to the propriety of camp-meetings for religious purposes, the question of females being permitted to preach, and the difference as to the admission to the Conference of lay members. The UNITED FREE CHURCH METHODISTS were formed by the amalgamation of the *Wesleyan Association*, originated in 1834, and the *Wesleyan Reform Association*, which began in 1849. Church independency, and freedom of representation in the annual assembly, are two of the most prominent distinctive traits in the organisation of the United Methodist Free Church.

The WELSH CALVINISTIC METHODISTS originated partly in the preaching of Whitefield, and partly in that of Howel Harris, a Welsh clergyman of the Church of England. Whitefield and Wesley differed on the subject of election. Whitefield did not form a religious sect, and after his death (1769), a large portion of his followers became absorbed in the new society, gradually forming itself through the preaching of Howel Harris and his coadjutors. This body, however, was not formally constituted a religious society till the beginning of this century. Its government is Presbyterian. The adults as well as children attend their Sunday schools ; and they have an extensive periodical literature.—The *Bible Christians*, or Bryanites, were formed by a local preacher named Bryan, who seceded from the Wesleyans in 1815. The only distinction between them and the original body appears to be that the former receive the eucharistic elements in a sitting posture.

BAPTISTS.

This denomination of Christians, sometimes called Antipædists, as opposed to Pædobaptists, or those who advocate infant baptism, refuse to acknowledge any great name as founder of their sect. They trace their origin to the primitive Church itself, and refer to the Acts of the Apostles and their Epistles as affording, in their opinion, evidence in favour of their distinguishing tenets. When Christianity became corrupted, they point to the maintenance of their practice among the Cathari and Albigenses, and other sects of the middle ages, who continued, amid surrounding darkness, to hold fast the apostolic testimony. They sprung into notice in England under Henry VIII. and Elizabeth. They were persecuted under both reigns, but they received freedom to meet for worship from James II., and complete religious liberty under William III. Ever since, they have diffused their principles in Great Britain and America.

The Baptists generally hold the usual orthodox beliefs, along with some differences. Thus, they have among them Calvinists both *hyper* and moderate, as well as High and Low Arminians. The great body of them in Britain and America are Calvinistic. *Particular* Baptists, so called because holding that Christ died for an elect number ; and *General* Baptists, who maintain that he died for all men, constitute the two leading sects into which the body is divided. *English* Baptists, in their church order and government, are the same as Congregationalists, the rite of baptism excepted. *Scotch* Baptists, properly so called, insist on a plurality of pastors in every church, and the exercise of mutual exhortation by the members in their public assemblies. There are Baptist churches in England, however, who are *Scotch* in their order, and English Baptists in Scotland who are *English* in theirs. Seventh-day Baptists, we believe, are to be found almost wholly in America, who observe not the first day of the week, but the seventh, as the day of rest.

Baptists are distinguished among their fellow-Christians by holding that baptism, being an ordinance the validity of which depends on an intelligent faith on the part of the recipient, is to be administered to those who are capable of exercising faith, and by *immersion* only. Its *subjects*, therefore, are actual believers in the Lord Jesus Christ—adults, not infants ; and its *mode* is immersion, not sprinkling. The Baptists are divided among themselves regarding communion—one portion receiving conscientious Pædobaptists to the Lord's table and membership ; the other refusing this privilege to any but Baptists. The churches of the former are called open communionists ; the latter, strict communionists.

The Baptists were early in the field of missions. They have been honoured to plant Christian churches in many parts of continental India, in Ceylon, in the Bahamas, the West Indies, Africa, and China. They have now schools of learning for training candidates for the ministry at Bristol, Bradford, London, Nottingham, &c.

Congregational in their form of church government, the Baptists are grouped generally in associations of churches, the greater number of them belonging to the Baptist Union, formed in 1832. In England and Wales, the associations number 53, the ministers 2000, and the members 241,764. There are supposed to be 8,500,000 Baptists of all descriptions in English-speaking communities.

UNITARIANS.

Applied generally to all who maintain that God exists in one person only, the term Unitarians is used specially to designate a small Christian sect of recent times, whose distinguishing tenet is the Unity as opposed to the Trinity of the Godhead. Their particular doctrine was held substantially from the middle of the 2d century to the end of the 3d by the Monarchians ; in the 4th century by Arius and his followers, who denied the consubstantiality of the Son with the Father ; after the Reformation, by the Socini and others, through whom it was largely diffused in Venetia, Poland, and Transylvania. During the reign of James I. continental Socinianism began to exercise considerable influence in England, and continued to do so till the end of the century ; but it was in the last decade of the 17th century

that the controversy was most active. After the passing of the Toleration Act in 1689, whereby Nonconformity was made legal, the way was prepared for that gradual change by which the orthodoxy of the English Presbyterians passed into Unitarianism. During the latter half of the 18th century, Priestley appeared as the champion of the humanitarian view of Christ's nature; and in 1744, Dr Lindsey resigned his charge in the Church of England, and became pastor of the Unitarian congregation of Essex Street, London—an event which formed an epoch in the history of English Unitarianism. In 1813, the Unitarians were placed by law on a par with other dissenters. The Unitarians of England and Wales are purely congregational in their church government, their only organ for combined action being the British and Foreign Unitarian Association, which holds its meetings annually in London. The Unitarians have 355 ministers, 352 chapels, and about 80 mission stations in the British Empire.

In the United States, the first secession from the Episcopal Church took place in 1787 on Unitarian grounds. About 1815, the important influence of Channing was thrown into the scale in favour of Unitarianism; and since then, Massachusetts, and particularly Boston, has been the stronghold of Unitarianism in America. The Unitarians have upwards of 250 societies in the States, and upwards of 20 in Boston.

The Unitarians of the present day must be divided into two classes: a conservative and a progressive class, or, as they are often called, an old and a new school. The former adopt the old rule of the sufficiency of Scripture, though with many such qualifications as the scientific criticism of the Bible appears to them to render indispensable. They generally hold the simple humanity of Christ, but retain the belief in miracles, which they regard as supernatural sanctions of the truth of Christianity. According to this view, Christ is an ambassador from heaven to earth, the miracles he wrought are his credentials and the moral and religious truths which he taught are his message. The progressive school of Unitarians, on the other hand, regard Christianity not as a message or a system of truth communicated and authenticated from without, but as the highest expression of the Divine in humanity, not depending for proof on miracles, which a minority of their number reject, on the twofold ground, that, as it seems to them, they are intrinsically incredible, and that the evidence for them is conflicting and uncertain. Holding that inspiration is a quality which is not peculiar to the Bible, they maintain that each book of Scripture is to be studied, not as a collection of infallible oracles, but as a record of the mind of the age in which it was produced. The Unitarians of all shades of opinion are agreed in rejecting the entire orthodox scheme, which they conceive to be essentially antagonistic to free inquiry.

THE SOCIETY OF FRIENDS.

It is perhaps more in the *spirit* than in the *letter* of their faith that the Society of Friends (or Quakers, as they are sometimes called) differ from other orthodox Christians. They themselves assert their belief in the great fundamental facts of Christianity, and even in the substantial identity of most of their doctrinal opinions with those of other evangelical denominations. Their principal distinguishing doctrine is that of the 'Light of Christ in Man,' on which many of their outward peculiarities as a religious body are grounded.

Founded in England by George Fox in the 17th century, the Society of Friends has made greater progress in America, where the celebrated Penn belonged to their number. About the year 1827, Elias Hicks created a schism in the Society in America by denying the miraculous conception, divinity, and atonement of Christ, and the authenticity and divine authority of the Holy Scriptures. A reactionary movement took place both in England and America towards Evangelism, which was headed by Joseph John Gurney of Norwich, and which resulted in a division among the orthodox Friends themselves, and in the formation of a new sect, called Wilburites, who are noted for the strictness with which they maintain the traditions and peculiarities of the Society.

The Friends do not consider human learning essential to a minister of the gospel, believing that the call to the ministerial work is 'not of men, neither by man, but by Jesus Christ and God the Father;' and that it is bestowed irrespectively of rank, talent, learning, or sex; that the ministry ought to be exercised freely, and, in general, that Christians should do all for love, and nothing for money. Their mode of conducting public worship illustrates the entireness of their dependence on the 'internal light.' In other religious bodies, the minister has a set *form* of worship; the Friends meet and remain in silence until they believe themselves moved to speak by the Holy Ghost. Their prayers and praises are for the most part silent and inward. The doctrine of the 'internal light' has also led them to reject the ordinances of Baptism and the Lord's Supper, as outwardly observed by other Christians. The taking or administering of oaths is regarded by Friends as inconsistent with the command of Christ, 'Swear not at all.' They are opposed to the payment of tithes, the use of arms, and war in all its forms, as well as to capital punishment. They have all along been distinguished for the part they have taken in the movement for the emancipation of slaves. They object to 'balls, gaming-places, horse-races, play-houses, oratorios,' which they regard as 'profanation.'

The arrangements and regulations pertaining to the interests of the Church are provided for in the institution of certain 'meetings' or assemblies, analogous to those of the Presbyterian denomination. These are four in number: the preparative, monthly, quarterly, and yearly meetings. To the latter, which consists of select or representative members of the quarterly meetings, belongs exclusively the legislative power. The Friends are distinguished by their liberality and provision for the wants of the poor of their body.

The Society of Friends numbers in the British Empire 17,000 members, and has 265 recorded ministers, and 400 unrecorded; and 327 places of worship in England and Wales. In America, their number exceeds 100,000.

MORAVIANS.

This religious community (also called *United Brethren*, *Moravian Brethren*, or *Bohemian*

Brethren) traces its origin to the followers of John Huss, who were expelled by persecution from Bohemia and Moravia in the beginning of the 18th century, and who, in gradually increasing numbers, settled on the estate of Count Zinzendorf, Berthelsdorf, in Saxony. To this settlement they gave the name of Herrnhut (or the Lord's charge). Zinzendorf with others joined the little brotherhood, who received the doctrines of the Augsburg Confession. The Moravians profess to be connected with the Bohemian or Moravian Brethren of former times by a regular succession of bishops. The bishops, however, exercise no episcopal authority, and their chief peculiar function is that of ordination, of which they alone have the power. Every congregation is governed by a *Conference of Elders*. The elders are bound to visit each family once in three months, and to report concerning the maintenance of family worship, and the conduct of the brethren, to visit the sick, and to aid the poor with money contributed by the other brethren. The whole church is governed by synods, which meet—always in Germany—at intervals of ten or twelve years. Between one synod and another, all affairs are managed by a *Conference of Elders* appointed for the purpose.

Moravians are to some extent scattered amongst the general population of the countries in which they dwell; but they prefer, where it is possible, to live in colonies, or separate societies. Colonies of Moravians exist in England, America, and Holland, but are most numerous and important in Germany and the mission-fields. The Brethren early entered on missionary work, and all the prosperity of their Church has been evidently connected with their earnest prosecution of it. They have missions in the West Indies, Greenland, Labrador, the Cape of Good Hope, Sarepta in Russia, &c. They have at their mission stations over 70,000 converts from heathenism.

The religious services of the Moravians are conducted with great simplicity. They meet for worship daily, in the evening, the service being much like that of a *prayer-meeting* amongst other Christians. They use a litany on the Lord's day, but extemporary prayer is frequent. They admit the use of instrumental music. They maintain the practice of washing the feet, both in choirs (or classes) and in congregations, before the communion. They meet on the last day of the year, to bring in the New Year with prayer and other exercises of religion. On Easter morning, they assemble in the burying-ground to celebrate the resurrection of Christ, and to express their confidence concerning their brethren who have died during the preceding year. The death of a member of the brotherhood is made known in the chief settlements by sound of trumpets, as if for victory.

The Moravians have in the British Empire 83 churches and preaching stations, and 5550 members.

SWEDENBORGIANS.

The Swedenborgians, or, as they designate themselves, 'The New Church signified by the New Jerusalem in the Revelation,' were first organised as a separate body in 1788, by Robert Hindmarsh, a printer in Clerkenwell, London, who was elected by lot to baptise and to ordain his comrades in the ministry. The Swedenborgians accept Swedenborg's voluminous writings as revelations from heaven, and regard them as infallible. According to Swedenborg, who flourished through the greater part of last century, Scripture has two senses, a natural and a spiritual, the latter of which it fell to him to unveil. He held that Father, Son, and Holy Ghost are one in the person of Christ; that the last judgment, terminating the Church initiated by the divine advent, was effected in the year 1757, in the world of spirits, after which began a new dispensation, signified by the New Jerusalem in the Revelation; that all angels have lived on earth; that all in whom love to God and man is the ruling principle, go to heaven at death; while all in whom self-love is the ruling motive, go to hell, which, as a whole, is called the Devil or Satan, there being no individual bearing that name; that all pass to their final lot at death save a few, who make a short sojourn in an intermediate state for the purposes of purification and final decision. His two most distinctive tenets are the doctrines, first, of correspondences, according to which the natural world is a repetition of the spiritual, and the spiritual world of the invisible mental world; and, second, that God alone lives—man and creation are dead; their apparent life is the divine presence.

The Swedenborgians transact their connectional legislation by means of a conference composed of both laymen and ministers, sent as representatives from each congregation. Their worship and ceremonies are simple, and present no striking features. The number of their societies in Britain is 58, with 4207 registered members. They are more numerous in the United States. In France, Germany, Sweden, and Russia there are Swedenborgians, but few and scattered.

THE APOSTOLIC CATHOLIC CHURCH.

This body is usually called by the name of Irvingites, from its founder, Edward Irving, a distinguished minister of the Scotch Church in London, who, in the winter of 1829–30, delivered a series of lectures on spiritual gifts, in which he maintained that those we are in the habit of calling 'extraordinary,' or miraculous, were not meant to be confined to the primitive Church, but to be continued through the whole period of the present dispensation. In connection with some singular manifestations at Port-Glasgow, in the west of Scotland, and in his own church in Regent Square, it was alleged that miraculous acts of healing had taken place, and that the gift of tongues had reappeared. Irving was deposed for heresy by the Church of Scotland, and propagated his views as the founder of the Apostolic Catholic Church, of which the constitution is briefly as follows:

There are, as in the apostolic times, four ministries: (1) That of 'Apostles,' to whom alone appertain spiritual prerogatives; (2) that of 'Prophets,' to whom it belongs to give 'exhortations to holiness, interpretations of Scripture, openings of prophecy, and explanations of symbols;' (3) that of 'Evangelists,' whose function it is to 'bring in' those who are without; and (4) that of 'Angels,' or Pastors. The ministers of each congregation comprise an angel with six ruling presbyters; various assistant ministers, deacons, and deaconesses; evangelists, and those who may have

prophetic or other gifts. This ministry is supported by tithes, the people giving a tenth of their income for the support of the priesthood. Church affairs are managed by a council of ministers of all classes, whose selection and arrangement are believed to have been foreshadowed in the structure of the Mosaic Tabernacle. The Catholic Apostolic Church does not differ from other Christian bodies in regard to the common doctrines of the Christian religion ; it only accepts, in what it considers to be a fuller and more real sense, the *phenomena* of Christian life. A very special feature is its extensive and elaborate symbolism. In regard to the sacrament of the Lord's Supper, however, it appears to entertain very much the same view as that of the Roman Catholic Church. The Catholic Apostolic Church has established itself in the United States, Prussia, France, Switzerland, as well as in Great Britain, where it has 19 churches.

THE PLYMOUTH BRETHREN.

Originating in a reaction against exclusive High Church principles, and against a dead formalism associated with 'unevangelical' doctrine, the 'Plymouth Brethren' numbered amongst their first members in Plymouth, and elsewhere, many retired Anglo-Indian officers, men of unquestionable zeal and piety. Their existence as a distinct sect is, however, very much to be ascribed to the labours and influence of Mr Darby, a barrister, who, under deeply religious impressions, became a clergyman of the Church of England, which he afterwards left, from conscientious scruples, and laboured as an evangelist both in England and on the continent of Europe, preaching in French, English, and German, and giving utterance to his opinions in numerous pamphlets, and in a quarterly periodical called *The Christian Witness*, which for a number of years was the organ of the Plymouth Brethren. His tenets, and those of the sect in general, are, upon the whole, Calvinistic. Millenarian views are held very generally by the Plymouth Brethren, who are also, in the matter of baptism, Baptists. Their most distinctive peculiarity, however, is their complete rejection of ecclesiastical organisation. They refuse to recognise any form of church government, or any office of the ministry ; and they insist much on the equal right of every *male* member of the church to 'prophesy,' or preach. The Plymouth Brethren reject every distinctive appellation except that of Christians ; but, while endeavouring to realise in their system the comprehensive unity and charity of the primitive church, they have become practically very much divided. Among other divisions, a great schism took place among them in consequence of doctrines preached at Plymouth and Bristol concerning the human nature of Christ. Their number exceeds 100,000.

THE GREEK CHURCH.

Taken in its widest sense, the Greek Church comprehends all those Christians following the Greek or Greco-Slavonic rite, who receive the first seven general councils, but reject the authority of the Roman pontiff, and the later councils of the Western Church. The Greek Church calls itself 'The Holy Orthodox Catholic and Apostolic Church,' and it includes three distinct branches—the Church within the Ottoman Empire, subject directly to the Patriarch of Constantinople ; the Church in the kingdom of Greece ; and the Russo-Greek Church in the dominions of the Czar. The proper history of the Greek Church as a separate body dates from the commencement of the efforts on the part of the Church of Constantinople to establish for itself a distinct jurisdiction, and an independent headship in the eastern division of the empire. The ecclesiastical pre-eminence of Constantinople, which followed upon the political distinction to which it rose as the seat of the imperial residence, and the centre of the imperial government, was promoted by the eminent qualities of some of the bishops, and especially of Chrysostom. Many circumstances ultimately combined to bring about a rupture between the two churches : the contests about image-worship, in which the patriarchs in more than one instance took the part of the iconoclast emperors ; the abandonment by the emperors of the defence of Italy against the Lombards ; the gradual growth of an independent confederation of Italian states, and the foundation of a new empire of the west, the political antagonism of which with the eastern empire, almost necessarily involved an antagonism of the churches themselves. The Latin doctrine of the twofold procession of the Holy Ghost, and the addition of 'Filioque' to the Latin creed, the Latin practice of clerical celibacy, the use of unleavened bread, and the denying to priests the power of administering confirmation, supplied other grounds of controversy and quarrel, and though repeated efforts at a general union were made, they were unsuccessful. It is the same with attempts which have been made by Protestant communions to establish an understanding with the Greek Church.

Anterior to the Mohammedan conquest, the Greek Church comprised within its limits Greece, properly so called, the Peloponnesus, Eastern Illyricum, the islands, and Asia Minor, as also Syria and Palestine, Arabia, Egypt, and parts of Mesopotamia and Persia. But with the first triumph of the Koran, the Church of Constantinople by degrees lost almost all her territory in Asia and Africa ; and since the conquest of the Turks, it has sunk into the condition of a weak and oppressed dependant.

In general, it may be inferred from the fact that the Greek Church receives the first seven councils, that on all the controversies regarding the Trinity and Incarnation, the Greeks are agreed with the Western Catholics, with the exception of the double procession of the Holy Ghost. The Greeks accept as the rule of faith the traditions of the Church, preserved by the testimony of the Fathers, in addition to the Bible and the deuterocanonical books. They admit the seven sacraments as received by the Roman Church. Baptism is, however, administered among them by a triple immersion, and confirmation is administered in immediate connection with baptism. As to the Eucharist, the Greeks admit the real presence of Christ, the transubstantiation of the elements, and the propitiatory sacrifice. But they differ from Catholics in the use of leavened bread, in administering the communion in both kinds, and in administering it in this

form even to children. In the matter of penance, they recognise auricular confession, priestly absolution, and penitential works. The Greeks differ from Catholics in not only permitting married candidates to be advanced to deaconship and priesthood, but in even requiring, as a general rule, that they shall be actually married before they can be admitted to orders. But marriage is forbidden in the case of bishops, who are always chosen from the monastic, and not the secular clergy. While they reject the purgatorial fire of the Western Catholics, they admit the principle of the intermediate state of purgation, and of the practice of prayer for the dead, as well as the intercession and invocation of saints. In addition to four yearly fasts, they observe the Wednesdays and Fridays throughout the year as fasts. In public prayer, the kneeling posture is used only at Pentecost; at ordinary times, they stand, the body being turned towards the east. The use of the sign of the cross is habitual among them, and they freely receive and multiply pictures, which they hold in high honour, and on which they lavish the most costly ornaments.

The monastic institute has subsisted in the Greek Church from the earliest times, and numerous convents of both sexes are dispersed over the east: the abbot is called Hegumenos, and the abbess, Hegumene; if several convents be subject to a single abbot, he is called Archimandrite.

The Greek Church is divided into three great sections. In the Turkish Empire, the Church has remained subject to the Patriarch of Constantinople, who from the beginning held the rank of a 'pacha of three tails,' but in return, the Porte claimed and exercised the right of appointing and also of deposing the Patriarch. For a long time the Metropolitan of Russia (afterwards Patriarch) was directly subject to the Patriarch of Constantinople, as also the bishop of the modern kingdom of Greece; but both churches are now independent. In the year 1589, a separate but dependent patriarchate was established at Moscow, which continued until the time of Peter the Great, by whom it was first suspended, and, twenty years afterwards, abolished. The Russo-Greek Church is now governed by a council called the 'Holy Synod,' or 'Permanent Synod,' which consists of archbishop, bishops, and archimandrites, all named by the emperor. This synod is regarded as one of the great departments of the government, the Minister of Public Worship being *ex officio* a member. The liturgy of the Russian Church is the same as that of Constantinople, but it is celebrated, not in the Greek, but in the Slavonic language.

The independence of the Church of the kingdom of Greece dates from the revolution. The new Church was formally organised by a decree of July 1833, on a plan in great part borrowed from the constitution of the Russian Church. In Greece, the 'Holy Synod' consists of five members, who are ordinarily archbishops or bishops, named by the crown, and holding office but for a year. The synod elects bishops, but the crown has the right of confirming and granting investiture.

The adherents of the Greek Church number about 75 millions; Russia containing 44 millions, with 73 bishops, of whom 7 are metropolitans, and 28 archbishops.

Sects of the Greek Church.

Nestorians.—This sect had its origin in the denial by Nestorius (431 A.D.) of the propriety of the expression 'mother of God' as applied to Christ. His followers exaggerated the distinction of two natures in our Lord into a distinction of two persons, united merely by a unity of will and affection. Although vigorously repressed in the Roman Empire, Nestorianism was protected by the Persians, and was ultimately established by King Pherozes as the national church, with a patriarch at Seleucia. The Nestorians now number about 140,000. They recognise the seven sacraments, observe frequent fasts, and pray for the dead. They are governed by a patriarch at Diz and 18 bishops. Another body of Nestorians exist in India, numbering 100,000.

The *Jacobites* are the oriental sect of Monophysites, or believers in the doctrine that Christ had but one nature. The name *Jacobites* belongs more specially to the Monophysites of Syria, Mesopotamia, and Chaldea, who number about 40,000 families.

The *Coptic Church* consists of the Christian descendants of the ancient Egyptians, who are generally Monophysites and number 150,000. Their highest dignitary is the Patriarch of Alexandria, who, however, resides at Cairo. The Copts are strict in their religious observances; baptise by immersion; practise unction, exorcism, auricular confession; and celebrate the Lord's Supper with leavened bread which has been dipped in wine.

The *Abyssinian Church* is national and independent, but its visible head, or *Abuna* ('our Father'), is ordained by the Coptic Patriarch of Alexandria. The doctrines of the Abyssinian Church coincide with those of the Coptic Church, especially in the Monophysite heresy; but several peculiar rites are observed, including circumcision of both sexes, and observance of the Mosaic laws respecting food, &c. love-feasts, and adult baptism.

Christianity was established in *Armenia* towards the close of the 3d century. In the ecclesiastical controversy concerning the twofold nature of Christ, the Armenian Christians held with the Monophysites, and constituted themselves a separate church. On the whole, it resembles the Greek Church in doctrine and sacerdotal constitution.

The *Maronites*, descendants of the Monothelite sect, have their chief seat on the western declivity of Mount Lebanon, and number about 150,000, distributed into 150 parishes. They are ruled by a patriarch, who is still styled Patriarch of Antioch, and 17 bishops. The Maronites have many convents for both sexes.

A number of sects, designated by the name of *Raskolnik* (Russian *Separatist*), equivalent to dissenter, exist in Russia, whose nonconformity began to appear on a considerable scale from the middle of the 17th century, when the ancient Slavonic liturgical and ritual books underwent revision. The revisions introduced into the churches by the authority of the Czar and Patriarch were resisted as innovations by the Raskolniks, who in later times were called Starowierzi ('Men of the Old Faith'), and who, while differing from one another in doctrine, follow certain common observances.

They are generally divisible into two classes—those who have popes (priests), and those who do not recognise the priestly order. The Raskolniks have among them those who, from their peculiarities, are called *self-baptisers* and *self-ordainers*.

THE JEWS.

Historically developed from Judaism, originally based on the Old Testament Scriptures, which constitute the Jewish rule of faith, and purporting to be the blessing which the Jews still look forward to, Christianity is intimately related to Judaism. In their history, as well as in their literature, the Jews are amongst the most remarkable people in the world. The records which lie at the foundation of the Christian and Mohammedan faiths find living embodiment in a race which, while partaking of the culture and general advancement of humanity, still cling with tenacity to institutions of remote antiquity. The persistency of national sentiment, which proved the occasion of the dispersion and expatriation of the Jews, was preserved among them amid the most astonishing series of persecutions that history records, and from which they have in recent times emerged into a condition of wealth, general eminence and influence, which rank them among the foremost promoters of civilisation at the present day. 'If there is a gradation in sufferings,' it has been well said, 'Israel has reached the highest acme; if the long duration of sufferings, and patience with which they are borne, ennobles, the Jews defy the high-born of all countries; if a literature is called rich which contains a few classical dramas, what place deserves a tragedy lasting a millennium and a half, composed and enacted by the heroes themselves?'

While retaining their belief in the credibility of their Scriptures, they have shared in surrounding influences in the method of interpreting them. The Rationalistic and the Supranaturalistic schools of biblical criticism divide Jews and Christians alike. The Jews have been famed for their attention to ceremonial observances. Their principal festivals are the New Year, the Day of Atonement, the Feast of Tabernacles, the New Moon, the Dedication, Purim, the Passover, and Pentecost. A division took place, a short time ago, among the Jews in this country, which forms an important feature in their history. The seceders reject the oral or traditional law, and seek to improve the character and observance of public worship. They have appointed a rabbi of their own, have revised their liturgy, and give themselves the title of British Jews. The sects of former times have all died out, with the exception of the Caraites or Scripturists, so called from their upholding the sufficiency of the Old Testament writings without the tradition of the oral law. Their number is not large, and they are found chiefly in the East.

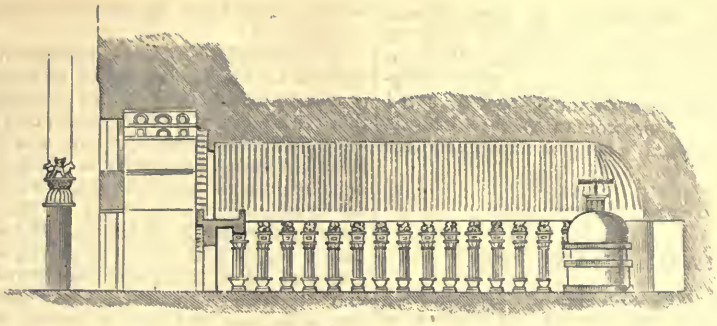
The Jews number about 50,000 in the United Kingdom, principally in London and other large towns, and these have 80 synagogues, with about 100 ministers and readers. The number of Jews throughout the world is estimated at seven millions and a half.

THE MORMONS.

Although Mormonism has nothing in common with Christianity, yet, as it is the most remarkable religious phenomenon of modern times, a brief notice of it will not be out of place in concluding this paper. It is American in its origin, its founder, Joseph Smith, having been born in Vermont in 1805. At an early age, he was visited, he says, by supernatural revelations and appearances; and when eighteen years old, was directed in a vision to seek for the 'record' of a new faith which was to supersede all others, and of which he was to become the prophet. The record, when discovered, proved to be a number of thin golden plates, inscribed closely with letters in a peculiar character; and with them, to enable him to translate the inscription, he found the Urim and Thummim, in the shape of a large pair of spectacles. Some years after, he professed to have deciphered these, and the result was the *Book of Mormon*, a history, so called, of the American Indians, whom Smith declared by revelation to be descendants of the lost tribes of the Israelites. This book was in reality taken from a manuscript romance written by a quondam clergyman, named Solomon Spalding, who died in 1816.

The Mormons fixed on a spot for a permanent possession, far away in the valley of the Salt Lake, beyond the Rocky Mountains. The emigration commenced in 1846, and lasted for two years. To this spot, emigrants from all lands have betaken themselves to join the Mormon Zion. The settlement has been added to the United States under the name of Utah; but the government has been carried on by the Mormon rulers. In consequence of the railway to San Francisco passing over the Rocky Mountains, the region of Utah has become accessible, and an effort has been lately made by the government of the United States to terminate the anomalies of Mormonism, but as yet without success. The Mormons number about 200,000. They have 82 churches in the United Kingdom. In the Mormon system of government, which is purely theocratic, there are various orders, including the *First Presidency*, composed of three successors to Peter, James, and John, in the Gospel Church, and of whom Brigham Young is *primus inter pares*; the *Patriarchate*, whose chief function is to administer blessings; 'The *Twelve*,' who ordain all other officers, baptise, and take the lead in all meetings; the *Seventies*, who are the missionaries and preachers of the body; and the *High-priests*, *Bishops*, *Elders*, *Priests*, *Teachers*, and *Deacons*.

In doctrine, the *Church of Jesus Christ of Latter-day Saints* is very peculiar. Preposterously materialistic in their conceptions of God—who, according to Brigham Young, is President of the Immortals, consisting of gods, angels, men, and spirits—the Mormons believe that by faith, obedience, and holiness, any man may rise into a deity; that the spirit of man was not created; and that Jesus Christ is shortly to appear, and reign in the Mormon Zion. Mormonism may be regarded as being virtually a system of eclecticism, and an attempt at such a new social order as shall conserve the main principles of natural virtue, and contribute to material and social prosperity in the community, as well as to rewards in a material heaven. To this end, Mormons maintain that their hierarchical government and practice of polygamy are eminently subservient.



Section of Buddhist Cave-temple at Karli.

MOHAMMEDANISM—HINDUISM—BUDDHISM.

RELIGION, in Christian countries, is generally understood as the feeling of reverence towards the Creator and Ruler of the world, together with all those acts of worship and service to which that feeling leads. The root of this sentiment lies in the very constitution of man and in the circumstances in which he is placed, and manifests itself abundantly even where the one supreme God of the Christian is unknown. Man is naturally religious, and if he is ignorant of the true God, he must make to himself false ones. He is surrounded by dangers and difficulties; he sees the mighty powers of nature at work all around, pregnant to him with hope and fear, and yet inscrutable in their working, and beyond his control. Hence arises the feeling of *dependence* upon something more powerful than himself—the very germ of religion. These operations of nature, again, he has only one way of conceiving and accounting for. The idea of physical causes is one of late growth; to the primitive man there is only one kind of agency he can understand—that of a will or mind like his own. Hence all things that he sees moving and acting become to him animated, conscious beings, with thoughts and passions similar to those of men; and what more natural than that he should seek, by offerings and entreaties, to secure their favour or propitiate their malignity or anger? There is, no doubt, a vast distance between the reverence with which the Christian looks up to Him that fills the universe, and that of the poor negro doctor who was observed by Dr Livingstone to speak in a whisper when he approached his basket of medicines or charms, lest he should offend the power which he conceived to lie concealed therein. But in both cases it is the same feeling that is at the bottom; they are both manifesting religion.*

According to this view, religion includes all forms of belief in the unseen and spiritual powers, or gods, together with the practices arising out of those beliefs. The forms that religious belief has assumed are endless, but they may be all classed under two heads: *Monotheism*, or the belief in *one* God; and *Polytheism*, or the belief in *many* gods. In most, if not in all polytheistic systems of religion, there is one of the gods superior to the rest in power and dignity, with more or less of acknowledged supremacy over them; still, within a certain sphere, they all have independent power, are all capable of doing man good or ill according as they are disposed towards him, without regard, or even in opposition, to the will of the supreme deity; they are therefore all objects of hope and fear, and have to be individually worshipped and propitiated. Monotheism does not exclude the notion of various ranks of spiritual beings, good and evil, vastly superior to man in power, and capable of working him weal or woe; but they are conceived as mere agents or messengers (angels) of the Supreme Ruler, and ministers of his love or of his anger.

The doctrine that there is but one God has the testimony of a Divine revelation to its truth. It is common to Judaism and Christianity, both of which are founded on this revelation. The only other religion in which this great truth has been reached is Mohammedanism, which arose among a people nearly akin to the Jews, and in which the influence of the Jewish sacred writings is clearly manifest. The religions founded on the Bible—Judaism, namely, and the various forms of Christianity—having been described in the two preceding numbers, it remains to give some account of Mohammedanism, and then of some of the more important polytheistic or pagan religions. Polytheism, in its lowest degradations, takes the form of belief in a multiplicity of unseen influences, hardly conceived as personal and conscious gods, but operating in the incomprehensible way expressed by the words *magic*, *charm*, *witchcraft*, &c. It is this form of religious belief that is understood by the term *superstition;* and as superstition is not confined to pagan nations, but prevails even under the purest forms of Christianity, wherever there is ignorance and degradation, it will be convenient to consider this part of the

* The word *religion* is of Latin origin, and according to its etymology would mean 'binding,' 'obligation,' or rather 'restraint.' It was applied by the Romans to all actions in which men are guided, not by motives deducible from the ordinary course of nature, but by regard to some unseen power or mysterious influence; as when Livy says of a spot in the Forum: *ubi despui religio est*, 'where spitting is a matter of religion;' that is, where there is a religious scruple restraining people from spitting.

subject by itself. The chapter on superstitions will thus form a supplement applicable alike to monotheistic and polytheistic religions. Without adverting to this subject, the picture of no religious belief is complete; even among well-educated Christians, the man or woman is rare who is altogether emancipated from polytheism in this sense.

MOHAMMEDANISM.

The origin of Mohammedanism is generally dated from 622 A.D., the year of the *Hejrah*, or flight of Mohammed from Mecca to Medina. At this period the Mohammedan era begins, time being reckoned from it backward and forward, as it is from the birth of Christ throughout the Christian world. The circumstances under which the new religion was first preached, and the chief features of its history and progress, having been sketched in the HISTORY OF THE MIDDLE AGES, No. 60, we shall confine ourselves here to an account of its doctrines and practices. With the conquest of Constantinople by the Turks, and the establishment of the Afghan and Tatar dominion in India, the conquering progress of Mohammedanism may be said to have terminated. At present, except that it is making considerable progress among the tribes of Africa, it is stationary, and, though retaining its superficial boundaries, is declining in internal vitality and vigour. Its professed adherents have been estimated at 180 millions; but it is scarcely necessary to state that in every estimate of this kind there is much room for error. In one instance, that of our Indian province of Bengal, it is now known that, previous to 1873, the number of the Mohammedan population was greatly under-estimated.

The fundamental doctrines of Mohammedanism are belief in one God, and belief in one true religion—a religion which has existed since the beginning of the world, and been preached from age to age by God's apostles and prophets, but which was only fully revealed to mankind by Mohammed, the last and greatest of the apostles. These doctrines, embodied in the formula, 'There is no God but God; and Mohammed is God's apostle,' are constantly on the lips of every Mohammedan. The devout reception of them involves everything included in the faith and duty of the true believer. The devout expression of them intimates that entire submission to God's will which is the essence of piety. Islâm is the word which expresses this pious resignation to the will and precepts of God, and this being, as it were, the sum of all religion, Islâm is the designation by which, among Mohammedans, the true religion is customarily denoted. Mohammedanism regards Adam, Moses, and Jesus as the greatest among those who prepared the way for the consummate teacher whose full and perfect revelation has superseded all other teaching. To Jesus it allows special honour. Deeming him a mere man, though a great prophet and apostle, it nevertheless admits that his birth was miraculous, and declares that he was taken up unto God without dying, the crucifixion being executed upon another person. He is to come again upon the earth to establish the Moslem religion everywhere, and to be a sign of the coming of the day of judgment.

Mohammedanism, like Christianity, teaches that the one God is the creator of all things in heaven and earth; that He rules and preserves all things; that He is eternal, unchangeable; that He is omnipotent, omniscient, omnipresent, and full of mercy. It differs from Christianity in holding that God is one person, who 'begetteth not, nor is He begotten;' in repudiating the doctrine of the Trinity, and denying the divinity of Christ. Between God and man it places a hierarchy of angels, who wait upon God and adore Him, who watch and guard men, and intercede for them with God; beings created of fire, with pure and subtile bodies, which, though like to those of men, and sometimes visible to favoured mortals, are exempt from the conditions and incidents of matter. Each order of the hierarchy has its special duty. The four chief angels are 'The Holy Spirit,' or 'Angel of Revelations,' Gabriel; the special protector and guardian of the Jews, Michael; the 'Angel of Death,' Azrael; and Israfil, whose office it will be to sound the trumpet at the resurrection. It also recognises another class of intermediate existences, the Jin or Genii, who are of a grosser fabric than the angels, and propagate their species, and are subject to death. Of the genii, as of the angels, there are orders, each with its special character and office (e. g., *peri*, fairies; *div*, giants; *takvin*, fates); some are good beings, some evil; and all from time to time take some part in unravelling or entangling the web of human affairs. Chief among the evil genii is Iblis (Despair), once called Azazil, and ranked among the angels most favoured of God, but who was cast down from this high estate because he refused to pay homage to Adam, with the other angels, at his creation. Coming down to men, Mohammedanism teaches that God has at all times had his chosen servants, through whom He communicated his will to men, and that the revelation of his will was from time to time embodied in inspired and sacred writings. The number of prophets commissioned by Him at various times is stated variously at between two and three hundred thousand; and of these, 313 were apostles, while six were authorised to proclaim new laws and dispensations, the later of which superseded the earlier. The six were Adam, Noah, Abraham, Moses, Jesus, and Mohammed, the last being the greatest of all, the propagator of the final dispensation, whose mission must not be disbelieved in under the direst penalties. The number of sacred Scriptures given to men is stated as 104; but of these, only four survive—the Pentateuch, the Psalms, the Gospel, and the Koran; and the first three are now imperfect, having been mutilated and falsified. The Koran, the Scriptures delivered by Mohammed, is now the sole and sufficient rule of faith and duty.

The chief belief which operates upon conduct is, in the Mohammedan, as in the Christian system, the tremendous doctrine of the resurrection from the dead to a day of judgment, and a future of reward or of punishment, according to the beliefs held, and the deeds done in the body. And Mohammedanism has no trace of the Christian doctrine of vicarious punishment. It teaches, however, that while strict account will be taken of every man's actions, and the good weighed against the bad, it is not his own good

works or merits that can gain any man admittance to the place of everlasting happiness; that this will come of God's mercy alone; and that God is very merciful, and will shew mercy to all whose good, by how little soever, exceeds their evil. In the final accounting, according to a common belief, a process of adjustment, as between individuals, will have place: from those who have committed injuries, a portion of their stock of merit will be transferred to those whom they have injured; and according to the result found after this process has been completed—according, that is, as, in each case, the good which remains outweighs or is outweighed by the evil, will be the judgment that will be given. Angels, genii, men, and animals—all who have ever lived—will appear for judgment. The trial over, the righteous will take the right-hand way, which leads to Paradise, and the wicked will pass to the left into hell. Both, however, have to go over the bridge Al Sirât, which is laid over the midst of hell, which is finer than a hair, and sharper than the edge of a sword, and beset with thorns on either side. This the righteous will cross with ease and swiftness. The wicked will fall from it into hell, and pass to the depth therein to which their careers have condemned them. For of hell, as Mohammedans conceive of it, there are seven stages, one below the other, each lower involving severer punishment than that which is above it. These are assigned, in their descending order, to Mohammedans, Jews, Christians, Sabians, Magians, idolaters, and hypocrites respectively; the place of hypocrites who made a profession of religion while they had none, being the lowest and worst of all. Intense heat and cold will be the means of producing the suffering endured in hell. Mohammedans, and all who professed the unity of God, will eventually be delivered from it; but the punishment of unbelievers and idolaters will be eternal. As to the righteous, destined for the abodes of eternal delight (Jannat Aden), after drinking of the Pond of the Prophet, which is supplied from the rivers of Paradise, whiter than milk and more odoriferous than musk, they will go on their way to the gates of Paradise, where they will be welcomed by beautiful youths and angels; and then they will enter upon an existence of happiness corresponding to the degree of righteousness (whether that of prophet, teacher, martyr, or believer) to which each has attained. Of the felicity that will be enjoyed by the blessed, about a hundred different degrees have been described. Nearly all consist in sensuous delights; and the capacity of language has been exhausted in the description of them. Suffice it, that the most gorgeous and delicious feasts, at which wine, exhilarating, yet not intoxicating, will not be wanting, the most costly and brilliant garments, odours and music the most exquisite, and, above all, the enjoyment of the Hur Al Oyûn, the black-eyed daughters of Paradise, created of pure musk, and free from all the bodily weaknesses of women, will be the portion of the commonest inhabitant of Paradise. Purely spiritual enjoyments will be provided for the higher natures, which deserve and can appreciate them. They will see God's face night and day. A separate abode of happiness will be reserved for women; but of the nature of their enjoyments the disclosure has been meagre. The notion that Mohammedans hold that women have no souls, is entirely unfounded.

The time of the resurrection, according to Mohammedan views, no man knows. It is a mystery; Mohammed himself could not learn it from the angel Gabriel. But it will be foreshadowed by fearful signs and wonders. As to what shall arise at the day of judgment, Mohammedanism, like Christianity, has its controversies. Some theologians believe that the spirit only, others, that the body only, will be raised; while a third opinion, which seems to have been that of Mohammed himself, asserts the resurrection of both soul and body. On the place of the soul, and its state after death and until the resurrection, also, opinions to some extent differ. All believe, however, that a dead person, when laid in his grave, is received by an angel, who announces to him the coming of the examiners, Monker and Nakîr, and that by them he is thereafter examined respecting his belief in God and in Mohammed, and according to his answers, either tortured, so that all beings except men and genii can hear his cries of anguish, or soothed and refreshed with the air of Paradise.

That all good and evil is absolutely and irrevocably preordained, and that the duty of man is absolute acquiescence in, and submission to whatever happens, as being the will of God, is another leading doctrine of Mohammedanism. A man's fortunes in this world, his actions, his beliefs, and, of consequence, his lot in the future state, are considered as unalterably predestined; no man can, by taking thought, change the nature of what lies before him in the slightest degree. In the Koran, this doctrine is not to be found in the consistent form which it has assumed in Mohammedan theology, though expressions constantly occur which tend towards it, and from which, without violence, it might be deduced. There can be no doubt that Mohammedanism, during the ages of its greatness, owed much to the courage which its soldiers derived from the belief that their destiny was irrevocably fixed, and by no means to be avoided by flinching from any duty.

To the dogmatical part of their religious system, of which a summary has now been given, Mohammedans give the name of Iman, or faith. The name religion, Din, they reserve for its practical side, which contains the ritual and moral laws, and lays down precepts of practice, both positive and prohibitory, declaring what the believer must do, and what he must avoid.

Of positive duties, the chief inculcated are prayer, almsgiving, fasting, and pilgrimage.

Prayer, 'the key of Paradise,' stands foremost among them. The practice of religion being regarded as founded on cleanliness, without which prayer will not be heard by God, certain bodily purifications are indispensable preliminaries to, and are held to be included in, prayer. Washing of the hands, face, ears, and of the feet up to the ankles, accompanied at each stage of the process by pious recitations, is the preparation for prayer in ordinary cases; but there are special occasions which require immersion of the whole body. The ground or carpet on which the believer prays must also be as clean as possible; and before praying he must, in token of humility, put aside all costly or sumptuous articles of dress. Prayers are said five times in the twenty-four hours:

about sunset, at nightfall, about daybreak, about noon, and in the afternoon; the exact time of sunrise, noon, and sunset being avoided, to guard against the appearance of countenancing the worship of the sun. The prayers are in forms prescribed, which may not be abridged, except by travellers and by soldiers preparing for battle. They are made up of extracts from the Koran, and other writings attributed to Mohammed, and consist in praise of God, desires for his direction or assistance, and pious ejaculations, not at all of special petitions. They are uttered with the face turned towards Mecca, kneeling, but with much variety of posturing. Notice of the times of prayer is given by the chanting of muëddins, or criers, from the minarets of the mosques or places of worship; and in these the prayers are recited by Imams, or ministers. Prayer, however, may be said anywhere; women, indeed, must always say the appointed prayers in some place other than the mosque, for it they are not allowed to enter, while men are there, lest their presence should distract the men from their devotions. The Imam is simply a qualified person selected to go through the appointed ritual by the warden of the mosque, and holding office at his pleasure. No religious character belongs to him. In our sense of the word, the Mohammedans have no clergy.

Next to prayer, stands the duty of almsgiving. Once every year, the law requires the giving of alms, consisting of cattle, money, corn, fruit, and other articles which can be sold; and it is customary to give away provisions to the poor at the end of the sacred month of Ramadan.

Fasting, though third in order of the positive duties, is a duty much insisted upon among Mohammedans: it is said to be 'a fourth part of the faith;' nay, to be 'the gate of religion.' It consists in abstaining from satisfying the appetites; in restraining the ears, eyes, tongue, and other bodily members from sin; in keeping the thoughts away from worldly cares, and fixing them upon God. During the whole of the month of Ramadan, the Moslem is required to fast from daybreak until sunset. Though there is no restraint upon indulgence between sunset and daybreak, the fasting is a severe trial of constancy at all times, but especially when (the Arabian years being lunar) the sacred month falls in the hot season. The fasting, particularly the abstinence from drink, is then excessively mortifying. Nurses and pregnant women are exempt from the fast; so are sick people, travellers, and soldiers on a campaign, though they are required to make up for the omission at other times.

Once at least to make a pilgrimage to Mecca, is the last of the leading positive duties of the Moslem. Inability from poverty, ill-health, or other good cause, may excuse from its performance; but as to him who through negligence omits it, it is deemed he might 'as well die a Jew or a Christian.' The Kaaba, or temple of Mecca, with its Black Stone, which bears the mark of Abraham's foot, and with other traces of the patriarch, had been regarded as sacred long before the time of Mohammed. Mohammed found the annual pilgrimage sanctioned by the usage of ages, and he accepted it, and found a place for it in his system. The ceremonies of the Hadj or pilgrimage take place in the month called Zil-hadj. Pilgrims come from every Mohammedan country. Apart from the pilgrimage, Mecca is to Mohammedans a holy city, full of spots which are regarded with deep veneration. The pilgrimage is frequently, if not habitually, followed by a visit to Medina, where is Mohammed's tomb.

Among minor positive duties, is that of keeping the appointed festivals, of which that which succeeds the month of Ramadan, though not the most important, is not unnaturally the most joyfully celebrated. The observance of Friday as the day of rest and worship may also be here mentioned. This, like the pilgrimage, was an established institution in Arabia for ages before the time of Mohammed. There is a service, including devotional readings from the Koran, and usually a sermon at the mosque; but, that over, work is not forbidden; those may work who cannot afford to give the whole day to pleasure and devotion.

Among things forbidden by Mohammedanism are the drinking of wine—under which are included all spirituous and intoxicating liquors—and, in the opinion of the very rigid, opium, coffee, and tobacco also; the eating of the flesh of swine, and of the flesh of animals which have died from disease or age, which have been strangled or killed by a blow or fall, or by some other beast, or on which the name of an idol has been invoked, or which have been sacrificed to idols, or which have not been slaughtered according to rules prescribed; and the use of the blood of animals. Games of chance are strictly prohibited, but, according to the majority of theologians, not games of skill, such as chess; usury also is forbidden; and to make an imitation of any living being in any material is not only forbidden, but considered one of the worst of offences, being regarded as tending to idolatry.

The social regulations of Mohammedanism—its laws, civil and criminal—are, equally with its code of personal duties, of religious obligation, resting as they do upon the same authority, the teaching of the Prophet. The principal Mohammedan governments, however, have had to depart in some degree from the strict law of Islâm, it being impossible for a government dealing with a society in any degree advanced to adhere rigidly to its prescriptions. Mohammed seems in the main to have accepted the laws he found existing about him, abrogating or altering where he thought it necessary. His laws are therefore those proper to a semi-savage people, and they have proved a heavy incubus on the advance of Mohammedan peoples. The law allows polygamy, but not without restriction; a man may not have more than four wives, but he may have a certain number of concubines besides. The limitations put upon marriage on the grounds of consanguinity or propinquity are, generally speaking, the same with those of the Jewish law; and the tie of milk—that is, connection through a foster-mother—bars marriage in every degree in which the tie of blood prevents it. To say to his wife, 'Thou art divorced,' or, 'I divorce thee,' and to pay back part of the dowry, are all a husband has to do to terminate a disagreeable connection. The woman, on the other hand, if under age, can be given in marriage by her guardians without her consent, and is bound to her husband for ever, unless she can prove some flagrant ill-usage, or neglect of conjugal duty on his part.

The ethics of Mohammedanism are of the highest excellence. Suffice it, that injustice, falsehood, pride, revengefulness, calumny, mockery, avarice, prodigality, debauchery, mistrust, and suspicion are denounced as ungodly and wicked; while benevolence, liberality, modesty, forbearance, patience and endurance, frugality, sincerity, straightforwardness, decency, love of peace and truth, are, next to trust in God, and submission to his will, represented as the notes of true piety, and the principal marks of a true believer.

The Koran (the Reading, that which ought to be read, pronounced Kooraan), which contains the revelations of Mohammed, is the basis of all the Mohammedan teaching; but, among orthodox believers, it is supplemented by the Sunna, a voluminous series of moral and legal traditions, traced to Mohammed, recorded during the first three centuries of the Mohammedan era, and gradually formed into collections, which are accepted as canonical. As the inspirations which make up the Koran were given forth by Mohammed as circumstances prompted, they were necessarily fragmentary and unconnected, and the arrangement adopted when they were brought together was not one to give them continuity and coherence. Beginning with the longest, the several chapters were placed one after another in the order of their length. The book consists of 114 chapters, which have distinctive titles, many of them curious, *e.g.* the Cow, Congealed Blood, the Fig, the Star, the Tower, and each begins with the formula, 'In the name of God, the Merciful, the Compassionate.' The language of the Koran is of surpassing elegance and purity, and Mohammed himself did not disdain to make use of its literary excellence to bear out the proof of his divine mission. The matter is a curious jumble of poetry, narrative, doctrine about all things, human and divine, and pious ejaculations. No other book, however, has ever been held in such reverence among men as the Koran receives among Mohammedans. It is never even touched without previous purification; its authority is sought in every difficulty; sentences from it are everywhere displayed. The traditions recorded in the Sunna are given in the form of a dialogue, and are mostly very brief; and they deal with nearly every conceivable subject—religious doctrines and practice, laws civil and criminal, and the usages of common life. The Sunna became a badge of religious dissension soon after Mohammed's death; but the division of the Mohammedan world into the two conflicting and bitterly hostile camps of the Sunnites (believers in the Sunna, the orthodox party) and the Shiites (sectaries), had its origin in the dispute as to the succession to the headship of Islâm, which arose at Mohammed's death. The Shiites represent those who regarded Ali, Mohammed's son-in-law, as his rightful heir. This is still their principal peculiar tenet, and Abu-Bekr, Omar, and their successors in the califate are deemed by them to have been unrighteous usurpers. The principal Shiite people are the Persians; the Turks are Sunnites.

Were it not known that Mohammed had the assistance of a Jew in composing his revelation, internal evidence would shew that his obligations to the Jewish Scriptures and traditions were almost unbounded. He owed something to Christianity also; and the amount of what he took over from the ancient heathenism of Arabia can scarcely be under-estimated. Originally, he seems to have had the idea of drawing around him Jews, Christians, and heathens, by borrowing freely from all of them—an idea abandoned when it proved unsuccessful. To form an estimate of his theology, as he ultimately shaped it, and of its influence on the races which have adopted it, is beyond our province. That its social polity tends to stereotype a low state of society, is clear enough; and, in fact, the Mohammedan races have, in general, not been progressive. On the other hand, the flourishing state of arts and learning among the Arabs and Moors during the golden period of Mohammedan history, and many other facts, occur to warn us against forming sweeping conclusions on this subject.

HINDUISM.

What we have to attempt under this head is to give some account, not of a single religion and its varieties, but of the most distinctive features of the religious history of a strongly religious and highly speculative people. With religions which are not of native growth in India, and with the beliefs of various small fractions of the population of India, we are not here to concern ourselves. (Buddhism is treated apart.) But when these are put aside, what we find in India now is, not so much a religion as a group of religions, and a rather numerous group, connected by ties of history, by veneration for the same sacred writings, by powerful religious and social ideas which they have in common, but separated from one another by differences of a very important kind. And it is not only these, but the precursors out of which they have sprung, and from which they differ even more than they do from each other, that should be described under the name of Hinduism. The description must be defective, for it must be limited to the leading lines which appear in contemporaneous systems. To trace these with a fair approximation to accuracy is the utmost we can hope to do.

At first sight it seems as if, among the Hindus, religion has shewn itself as mobile, as fluent, as among other races it has been stiff and unchanging. But Hinduism has a long history, and its history explains the apparent phenomenon. The mixture of many races in the population of India, of which one, a superior race, came gradually to dominate over the others, imposing upon them its religious and social ideas, is, at anyrate, the key to the most important of the changes which Hinduism underwent in its earlier period. Religions die hard, and the lower religions of the subjugated peoples forced important modifications upon the faith of the conquering race, the expositors of which, as a fusion of races made progress, found themselves compelled to accept, and as best they could to account for, numerous beliefs and practices entirely foreign to the religion of their ancestors. Once social change had gone so far that the Sanscrit, the ancient speech of the superior race, the language of their ancient sacred books, had become generally unintelligible, a powerful check

both upon development and upon corruption was gone. Growth and eclecticism thenceforth could pursue their course with much less hinderance; and thus Hinduism, while still venerating the sacred books, and deriving itself from them, grew into systems with which they had scarcely anything in common.

That the population of India, whatever the elements of which it is composed, is a mixture of numerous races, is beyond question, established by many different lines of evidence. Within the historic period there have been several irruptions of Tatar and Mongol races, who entered the country from the north-west. A multitude of facts point to the conclusion that, before the dawn of history, there was a succession of such irruptions from the same quarter. From the north-west appears to have come the conquering race whose stamp is still upon the social life of India, upon its institutions, its customs, and its language. The Arians, or Aryans, when we first have notice of them, were settled in the Punjab; but they were a fair-skinned people, surrounded by dark races; and from numerous other circumstances, it is evident that they were foreigners who had forced their way into the country. From their language, it is clear that they sprung from the same stock from which the races of Europe are derived. They seem to have gradually extended their settlements, first along the valley of the Ganges, and over Central India as far as the Vindhya Mountains, and at a later period into the Deccan. They reduced the populations which they conquered to strict subjection everywhere, and by their superior energy, both of body and mind, were gradually able to impose upon them their religious institutions and their language. Their language, the Sanscrit, it is true, took little hold in Southern India, but the chief modern dialects of Northern India are undoubtedly descended from it. The Vedas, their sacred books, are the scriptures from which Hinduism in all its varieties has ever professed to derive its doctrines. When first they come under observation, they had made no inconsiderable advance in civilisation. They were an agricultural rather than a pastoral people, and had made progress in many useful arts.

Hinduism may be divided into three great periods, comprising respectively its early, middle, and modern phases, and these it will be convenient, for reasons that will appear in due course, to call the Vedic, Epic, and Puranic periods.

THE VEDIC PERIOD.

The Vedic period is so called because our knowledge of it is derived from the Vedas, the sacred writings, the divinely inspired liturgies of the Aryans. Hinduism in this, its earliest phase, was the religion of the Aryan conquerors of India. There are four Vedas, but of these the Rig-veda (*rich*, praise, *veda*, knowledge, from *vid*, know) not only is the earliest, but is the original from which the others are derived. The others, indeed, are compilations founded on it, made each for a special purpose, the original being modified and added to as occasion required. The ritual of the Aryans seems to have grown in complexity, until the Rig-veda was found inadequate for purposes of worship, and more convenient liturgies had to be devised. The Yajur-veda and Sama-veda were the earliest of these productions; the fourth, the Atharva-veda, is of later origin. The Sama-veda consists entirely of extracts from the Rig-veda, put together so as to suit the ritual of the Soma sacrifices or offerings. The Yajur-veda, though chiefly made up of extracts from the Rig-veda, contains additions, the Yajuhs (*yaj*, sacrifice), prayers or thanksgivings, in prose, for use in sacrificing, which had become necessary, chiefly through the addition of new sacrifices, for which the hymns of the Rig-veda did not suffice. The Atharva-veda, which was used, not for the sacrifice, but for appeasing evil influences, for insuring the success of sacrificial acts, for incantations, and similar purposes, contains, as might be expected, a considerable amount of new matter. The Yajur-veda had the first place in practice, as being the liturgy through which the worshipper could most fully satisfy his sacrificial wants. All the Vedas alike are held to have been divinely inspired. Each consists of two distinct divisions—a Sanhita, or collection of mantras or hymns; and a prose portion called Brahmana, (*Brahman*, neuter), which gives injunctions for the performance of sacrificial acts, and explains their origin, and gives directions for the use of the mantras—the explanations being conveyed, and the directions accounted for, by means of legends and allegories, and sometimes also of mystical and philosophical speculations. The hymns of the Rig-veda seem to have been the production of many successive generations of families of Rishis, or seers. The directory portion of the Veda also must have been a growth of ages. Various conditions of society, various phases of belief, and even different periods of language, appear to be reflected in those writings. As to the dates at which the Vedas were put into their present forms, speculation has varied very widely. The twelfth century before the Christian era has been not without probability, assigned to the Rig-Veda, and there are writers who give it a far higher antiquity. But this, in the present state of our knowledge, is little better than conjecture, and all that can be confidently affirmed is, that the latest writings of the Vedic class are not more recent than the second century before Christ.

The religious ideas expressed in the greatest number of the Rig-Veda hymns, if not very elevated, denote a simple and harmless faith. The objects of worship are the elements of nature personified—Agni, the fire of the sun and lightning; Indra, the bright, cloudless firmament; the Maruts, or winds; Surya, the sun; Ushas, the dawn, and various kindred manifestations of the luminous bodies, and of nature in general; and they are worshipped purely in respect of the ability imputed to them to confer or withhold material benefits. The worshipper asks from them rain, food, cattle, health, or assistance against his enemies, addressing them with such arts as dependants use in begging favours from a superior. He complains to them of his troubles, and reminds them of the wondrous deeds they performed of yore, to coax them, as it were, into acquiescence and friendly help. Feeling no spiritual wants, he implores no spiritual blessings. Sin and evil are often adverted to, but a sinner is a man who does not worship the gods, or gratify them with the customary oblations; most frequently he is the heathen borderer who perhaps

infests the territory of the 'pious' man, and, at anyrate, is liable to the righteous vengeance of the worshipper and of his gods. The gods are spoken of as everlasting, and expressions occur which, taken literally, imply that the pious worshipper might obtain immortality by their aid; but there can be no doubt that, by this, length of life only is meant. Such a religion could have no dreadful or mysterious rites. The Aryans had no temples, and made no images of their gods. The one offering to the gods we hear of in this, which may be called the primitive stage of Vedic worship, consisted of the fermented juice of the Soma, or moon-plant, an exhilarating and inebriating beverage, which was deemed to invigorate the gods, and increase their beneficial potency. It was presented to them in ladles, or sprinkled on the sacred kusa-grass. Clarified butter, poured on fire, is mentioned in several hymns as an oblation agreeable to the gods; and this also may have belonged to the earliest phase of Vedic worship.

In another class of hymns to be found in the Rig-veda there is a departure from the simple conceptions of the early faith. The stirrings of new speculation begin to manifest themselves; and the objects capable of propitiating the gods are now regarded as gods themselves; Soma, the moon-plant, and its juice, especially being invoked as the bestower of all worldly boons. The animal sacrifice, too, with properties ascribed to it more mysterious than those belonging to the simple media of the earlier worship, now appears among the established rites.

A third class of hymns shews speculation advanced to a stage at which the mere worship of elemental powers could no longer be satisfactory. The worshippers had come to see a mystery beyond, and more mysterious than their gods, and to make their attempts at solving it. 'Who knows exactly,' we find in one of these hymns, 'and who shall in this world declare, whence and why this creation took place? The gods are subsequent to the production of this world; then, who can know whence it proceeded, or whence this varied world arose, or whether it uphold itself or not? He who, in the highest heaven, is the ruler of this universe does indeed know; but not another one can possess this knowledge.' In such utterances as these are the germs of the philosophic creed of the Vedic period, afterwards developed in the Upanishads, a class of writings the date of which is uncertain. Of these important works we can only speak very briefly. Their object is to explain, not only the process of creation, but the nature of a Supreme Spirit (*Brahman*, as a neuter word, and therefore different from the same word as the first god of the Hindu trinity), and its relation to the human soul. In the Upanishads, Agni, Indra, Vâyu, and the other deities of the Vedic hymns, become symbols to assist the mind in its attempt to understand the true nature of the one absolute being, and the manner in which it manifests itself in its worldly form. The human soul itself is of the same nature as this supreme or great soul: its ultimate destination is that of becoming re-united with the supreme soul, and the means of attaining that end is not the performance of sacrificial rites, but the comprehension of its own self and of the great soul. The doctrine which, at a later period, became the foundation of the creed of the educated—the doctrine that the supreme soul, or Brahman, is the only reality, and that the world has a claim to notice only in so far as it emanated from this being, is already clearly laid down in these Upanishads, though the language in which it is expressed still adapts itself to the legendary and allegorical style which characterises the Brahmana portion of the Vedas. The Upanishads became thus the basis of the enlightened faith of India.

THE EPIC PERIOD.

Our knowledge of this period is chiefly derived from the two great epic poems of ancient India, the Ramáyana and the Mahabhárata, and hence the name we have assigned to it. The Ramáyana appears beyond doubt to be the work of a single author, and the name of its reputed author is Valmiki. It ranks with the greatest epic poems of the world. Its subject is the history of Rama, one of the incarnations of the god Vishnu. The Mahabhárata, the main story of which narrates the conflicts of two rival families, descendants of a king, Bharata, is undoubtedly the work of many authors, and of different ages. It is greatly inferior to the Ramáyana in excellence; and, indeed, three-fourths of it is episodical matter, introduced at various times, and without regard to the motive of the work. The excrescences grafted upon it, however, add greatly to its general usefulness; there is scarcely any subject of which it does not treat, and thus it may almost be termed an encyclopædia of all knowledge, human and divine. It is evident that these poems must be of later date, by five or six centuries, than the earlier Vedas, but no date can be with confidence assigned to either. It may be surmised, however, that, at the latest, they were composed before the beginning of the Christian era. Changes in social structure, and changes in religious belief, both seeming to require a considerable time for their production, place a wide interval between these works and, at anyrate, the original Veda. In them we find descendants of the Aryan conquerors are masters of the greater part of India, the centre of their dominion being in the province of Oude; they have brought the races which they have conquered to an acceptance of their religion; they have made a new organisation of society, and given it the sanction of religion by ascribing to it a divine origin. What we have termed a new organisation of society, consisted in the classification known as caste. An institution of this kind, however, cannot have been created at a stroke; it is well known that somewhat similar social divisions have arisen spontaneously among nearly every race of men; and it is probable that among the Hindus, legislation only attempted to modify and give lasting form to divisions previously subsisting. It may be gathered that at no period was the attempt entirely successful. In the theory of caste, as laid down in the Institutes of Manu (a work of unquestionably great antiquity, from which much information as to Hindu life at this period is obtained), there are four primary classes, which were distinct at their very creation. First, there is the class of Brahmans, or priests, whose duty it is to read and study the sacred books, to conduct sacrifices, to teach, to act as lawyers and state-councillors. For the Brahmans, a species

of divinity is claimed. The poor among them are to be supported by the gifts of others; and it is only when subsistence is impossible by other means that they may descend to military duties, or engage in certain kinds of traffic. Second comes the class of Kshatriyas, or soldiers, comprising priests and nobles. The third is the caste of Vaisyas, who are engaged in agriculture, in keeping cattle, and in trading. Widely separated from all these is the fourth caste, that of the Sudras, who are enjoined to serve the other castes, and are considered unfit for the higher rites and rewards of religion, so that it was an offence even to read the Vedas to a Sudra. The god Brahmâ is believed to have created these classes for the functions assigned to them respectively, by causing them to proceed from different parts of his body—the Brahmans from his mouth; the Kshatriyas from his arm; the Vaisyas from his thigh; and the Sudras from his foot. Nevertheless, other castes existed at a very early period, some of which may have been produced by intermarriages between the pure castes, and similar causes operating while the new classification was being consolidated, while others were probably the continuation of divisions of older date. A certain recognition was given to the mixed castes, and we find employments and handicrafts assigned to each. It is obvious that the Sudras were originally slaves—no doubt the descendants of the conquered native races. The superior castes, on the other hand, who were all alike regarded as 'twice-born,' must have been mainly made up of the descendants of the conquerors. The institution of caste is unknown to the Vedas. The religious change observable in the Epic period is quite as remarkable as the social.

Though we find the elemental gods of the Vedas still objects of worship, they have been ousted from their former rank; they are now an inferior order of deities, exercising the office of 'guardians of the world.' The chief place in Hindu theory is now held by the triad or trimurti, Brahmâ, Vishnu, and Siva, who represent respectively the creating, preserving, and destroying energies of nature. Temples and images have now become indispensable to worship. The Trimurti, when represented, is one body with three heads: in the middle, that of Brahmâ; at its right, that of Vishnu; at its left, that of Siva. Brahmâ, theoretically, is first and greatest of this trinity; but his special function is that of creation; he takes little or no part in the regency of the world; and the result is that, as an object of worship, he gradually disappears—the philosophers, to account for this, declaring that he has become merged in the Brahmâ of their own speculation, the one primary, all-pervading spirit, of whom all things, including the greatest gods, are the manifestations. Vishnu and Siva are, in fact, the gods who divide between them the allegiance of the Hindus, and there is already noticeable a tendency among the worshippers of either to consider him the one god, of whom the other and Brahmâ were but passing forms. In the Ramáyana, the subject of which is an incarnation of Vishnu, the superiority of Vishnu is always assumed. In the Mahabhárata, we find a perpetual conflict as to which has the higher place. Inferior gods there now are almost beyond numbering, and they also are worshipped; but the old Vedic conception of a god as everlasting, not subject to decay or death, is scarcely, or, at anyrate, not generally held applicable to them. Among the innumerable legends connected with the gods, those which describe the incarnations of Vishnu and other deities are the most remarkable; and strange, indeed, is the conception of a divine providence which in these stories is presented to us. The accounts given of the creation of the world by Brahmâ, and of the four ages through which it has to pass, making a day of Brahmâ, at the close of which, all things are resolved into primary matter, and Brahmâ reposes for a night equal in length to the day, ready to begin anew the work of creation, and so on for a hundred years of such days—forming one of the wildest of those wild human imaginings called cosmogonies—also belong to this period of Hinduism. A minute and rigid ceremonial had sprung up along with the new theology, the most scrupulous observance of which was enforced by the sanctions of religion. It regulated not merely properly religious acts, but social life in almost every part. To comply with it without priestly assistance was impossible, and thus the Hindus of this period were probably the most completely priest-ridden people the world has ever seen.

The philosophical creed of this period adds little to the fundamental notions contained in the Upanishads, though it frees itself from the legendary dross which imparts to those works a deep tinge of mysticism. But with the doctrine that the individual soul is of the same nature with the supreme spirit, and may be reunited with it, we find connected in this period two beliefs, which were destined to have great influence over future religious thought and practice. One was, that penance prepared the soul for reunion with God. The other was the doctrine of metempsychosis or transmigration of souls. Whatever its origin, it became connected with the view that in a single life it was impossible for the soul to attain to that purity without which it could not be reunited to the universal spirit. The soul, after death, must therefore be born again and again, until it has become purified from all taint of earth. The beginning of this doctrine may be found in some of the oldest Upanishads; but its development into a system, with rewards and punishments proportioned to the deeds done in the last state of existence, and its rise to the position of a popular creed, belong to the Epic period. It pervades the legends of this period, and affects the social life of the nation. The Hindu ingenuity has worked out elaborate schemes of the forms of existence to which virtue may raise or sin condemn the unpurified spirit; but into these it would scarcely be profitable to enter. Suffice it, that while eminent virtue may elevate a soul to a long life of bliss in Indra's heaven, and to the position almost of a god, an irreligious life, or even a single vicious act, if of enormity—for example, disrespect to a Brahman—may lead to ages of torture in a succession of hells, before the soul resumes its terrestrial migrations; and that the soul may pass, as a punishment for sin, into the lowest animal forms, into vegetable existence, and even into inorganic matter.

The strictly moral part of the Brahmanical system, which is contained chiefly in the book

called the Institutes of Manu, is remarkable for purity and rigour. A complete system of ethics, it has been said, might be made up out of scattered moral sentences gathered from this work.

THE PURANIC PERIOD.

The Puránas and the Tantras are the two classes of works on which the popular faith of modern India is founded, and from the former set of books comes the name we have applied to this, the modern phase of Hinduism. The Puránas are eighteen in number; and while each of them appears to be held in special honour by one or another of the sects into which Hinduism is divided, they all have had for their paramount object to make out the claim to the rank of supreme god of either Vishnu or Siva. The Tantras are very numerous; they are all the scriptures or text-books of the worshippers of the female energy of the god Siva. For the Puránas (the name signifies 'old'), an age exceeding the period of history is claimed by the Hindus; but from internal evidence it is plain that in their present form they can barely claim an antiquity of a thousand years. The compilation of them is ascribed to Vyasa, the supposed arranger of the Vedas, and author of the Mahabhárata. The Tantras, by those who believe in them, are held to be of equal antiquity with the Vedas, and of superior authority. The antiquity ascribed to them is purely imaginary; their date is involved in obscurity; but they seem, at all events, to be later than the first centuries of the Christian era. In the Puránas, the legends of the older scriptures about gods and heroes are repeated, but with such modifications and additions as the purposes of the compilers required; and the deeds of every god or hero are freely claimed for the particular deity whom it is the purpose of the work to exalt. Whatever memorable thing the old books reported of any other god, is ascribed to Vishnu or Siva, as the case may be, who, it is alleged, has taken a special form for the accomplishment of the particular act. The form of a Tantra is always that of a dialogue between Siva and his wife, in one of her many forms, mostly as Uma or Parvati, in which the goddess questions the god as to the mode of performing various ceremonies, and the mantras or prayers and incantations to be used in them.

It is not to be supposed that the religious movement of Hinduism has been staid since the Puránas and Tantras became its most authoritative scriptures. On the contrary, there has been incessant change. But the leading divisions of modern Hinduism are still indicated by the diverse motives that have been ascribed to those writings. The triad, Brahmâ, Vishnu, and Siva, still remains the cardinal point in Hindu theory, but belief in it as it was originally accepted is completely gone. During the Epic period, the worship of Brahmâ had ceased. Then Vishnu and Siva were competing for the headship of the pantheon, but their separate godhood was scarcely doubted. In the Puranic period, the claim made for each of them excludes the other—annihilating him, by attributing to the one all that the other was formerly believed to have done. Vishnu and Siva are now each of them, in the belief of his worshippers, at once the creator, preserver, and destroyer. The claims made for them are often conveyed in language which seems to amount to a belief in one God; all other gods and all nature are sometimes spoken of as forms of the deity who is being glorified. On the other hand, the existence of millions of other gods seems never to be really denied. But with Vishnu and Siva, the female energy of Siva has in the modern period divided the homage of the Hindus. Lakshmi, the wife of Vishnu, also, is worshipped, but only in association with the god. The idea that to each god belongs a female principle through which his energy is exerted, is obviously taken from the analogy of mankind, and accordingly the female energy of the god is popularly thought of simply as his wife. In the modern period, the 'guardians of the world,' the elemental gods of the Vedic period, still retain their office and their hold upon the popular mind. Indra, the firmament, as the god who sends rain and wields the thunderbolt, and in whose paradise, Swarga, the inferior gods, and the souls of pious men have their abode, is a special object of adoration. The gods of inferior rank that are or have been conceived of as objects of worship are innumerable. The Hindus themselves enumerate 330 millions. But to count Hindu deities is like trying to count the objects in a kaleidoscope, for the same deity is known and worshipped under hundreds of names.

Of the ideas implied by the Vedic rites, scarcely a trace is visible in the Puránas and Tantras. The conception of the nature and character of the gods is lower than it was in the Epic period; and as regards the popular faiths, we do not find much improvement as we advance towards modern times. The gods of the Puránas are much immersed in worldly affairs, and their divine character is nearly lost sight of in the narration of their transactions. In short, they are far from being exemplary or edifying personages. In the worship addressed to the leading gods throughout the modern period, great differences occur; but the practices attending it are more debased and cruel than those which are spoken of as prevailing in earlier times. The philosophical creed of this period, which is still the creed of the educated classes in India, is based on the belief in one supreme being, which imagination and speculation endeavour to invest with all the perfections conceivable by the human mind, but the true nature of which is nevertheless declared to be beyond the reach of thought, and which, on this ground, is defined as not possessing any of the qualities by which the human mind is able to comprehend intellectual or material entity.

Amid the changes of theology, ceremonial has stood unshaken; the Hindus of the modern period have submitted to the crushing burden which Brahmanical ingenuity devised for their ancestors. The ceremonial impurities in which he believes, and the commission of which he must avoid, keep the Hindu in perpetual fear. The institution of caste also remains, though greatly modified from the original theory. With the exception of the Brahmans, the pure castes have disappeared, and out of the intermixture of the others, innumerable classes have arisen; while, except as to some of the holy functions of the Brahmans, the restriction of employments cannot be said to exist. Caste now acts chiefly in restricting people from associating together in such acts

as eating and drinking; and the loss of caste is usually the penalty of some kind of ceremonial impurity, as associating with improper persons, or eating improper food. Caste distinctions, however, are so congenial to the Hindu mind, that the burden of caste, as now existing, is lightly borne. Even those who have lost their caste, the Pariahs, are said to form castes among themselves.

Of the three deities who may now be said to divide among them the worship of the Hindus in all their sects, the name of Vishnu alone appears in the Vedas, but there he is only a representation of the sun, and though highly extolled, is represented as deriving his power from Indra. In the worship of Vishnu we have the more joyous and benignant aspect of Hinduism. The names under which he is chiefly worshipped are those connected with his incarnations or avatars. Though avatars are not entirely absent from the mythological history of Siva, they are specially characteristic of that of Vishnu. The god, it is believed, descended from time to time whenever a great disorder, physical or moral, disturbed the world, 'in a small portion of his essence' upon earth, to restore order in the world, and thereby to preserve it. The form he assumed was that of some wonderful animal or superhuman being, or he was born of human parents in a human form, and he always possessed miraculous properties. Some of these avatars are of an entirely cosmical character; others appear to be based on historical events, the leading personage of which was gradually endowed with divine attributes, until he came to be regarded as the incarnation of the deity. Besides the past avatars of Vishnu, one, it is believed, is yet to come. Ten avatars are generally enumerated, namely—1. The fish-; 2. the tortoise-; 3. the boar-; 4. the man-lion-; 5. the dwarf-; 6. the Parasu-Râma-; 7. the Râmachandra-, or, briefly, Râma-; 8. the Krishna and Balarâma-; 9. the Buddha-; and 10. the Kalki or Kalkin-avatar. The legends in which these avatars are related, throw a strong light upon the religious ideas of the popular Hindu creed. This will be seen from the one or two specimens of them which are all our space permits us to give.

A powerful monarch, named Bali, had, by the practice of austerities and costly ceremonies, raised himself to the rank of Indra, and usurping the dominion of the three worlds (the sky, the earth, and *patala*, or the under-world), he filled the gods with dismay. The gods implored the aid of Vishnu, but even Vishnu could not withdraw the power which Bali had, by legitimate means, obtained without his consent. He gained it by a trick. In the form of a poor Brahman dwarf, he appeared before the monarch, and begged of him a piece of ground on which to build a hut for himself; and his request being granted, with three strides he compassed the three regions of the universe, and the power of Bali was gone. This is the dwarf-avatar. Again, as Râma or Râmachandra, Vishnu is the hero of the Ramáyana. Râma, the son of the monarch of Oude, being banished by a court intrigue, had, with his wife Sita, to wander in the Deccan, then a savage region, under the dominion of demons (princes hostile to the Aryan race, no doubt). He made himself hateful to the prince of the demons, Rávana, who, out of revenge, carried off Sita to his residence in Lanka (Ceylon). Râma, with the monkey-hero Hanuman, and a whole army of apes, pursued him, and making a bridge across the straits to Ceylon, by throwing in mountains, overcame the demons, and recovered Sita. This, it may be observed, is probably a mythical account of the extension of the Brahman dominion and religion into Southern India. As Râma, Vishnu has numerous temples, where his wife, Sita, and the heroic monkey, Hanuman, are associated with him in worship. Let us now take the most famous and popular of all the avatars, in which Vishnu appears on earth in the form of Krishna. It being necessary to deliver the earth from a mighty demon, Kansa (a prince, most likely, of infidel or anti-Brahmanic tendencies), a portion of Vishnu descended into the womb of Devaki, the wife of Vasudeva, and was born in the form of man as Krishna. Kansa being informed that a child was to be born that would overthrow his power, and failing to catch the right one, Herod-like, ordered a general massacre of young boys. Krishna, the young god, however, had been sent away from Mathura, the capital of Kansa, to be educated in a pastoral district as the son of a cow-herd. While yet in the cradle, he performed feats of strength to which those of Hercules are nothing. As a child he delighted in playing tricks on his companions, and even on the god Indra. Grown up to be a youth, he captivated the hearts of all the milkmaids, and in his sports and dances with them, he so divided himself, that each of them believed herself the favoured partner of Krishna. Among many martial deeds he afterwards performed, was, of course, the destruction of the demon, Kansa, which had been the end of the avatar. Seven principal wives are assigned to him, besides 16,000 of less note, and he had 180,000 sons. After a life full of adventure, he was killed by a hunter, and Vishnu 'united himself with his own unborn, inconceivable, and universal spirit.' It is under the form of Krishna that Vishnu is most popular in modern India, and from what has been said of the life of Krishna, it need cause no surprise that the worship addressed to Vishnu, though characterised by much license, is, as a rule, free from terrible rites. It is fabled that the famous idol Jaggernaut (under the wheels of which multitudes of Hindus used to sacrifice themselves annually, in assurance of eternal bliss) was made to contain the bones of Krishna, and Jaggernaut (lord of the world) represents Vishnu as the dead Krishna. In this instance the worship differs much in character from that usually addressed to Vishnu in any of his forms.

Siva, who, like Vishnu, is to his worshippers not only the greatest of gods, but the god who comprises in himself all other deities, though his function in the triad was destruction, is chiefly regarded in modern times as the energy of reproduction. He is most commonly worshipped under the form of the lingam (the male principle in generation), emblematic of creation, which follows destruction. Of his multitudinous names, those in most frequent use are Isa or Iswara (lord); Rudra (the terrible), or Maharudra (the very terrible); and Mahadeva (the great god). His worship is more gloomy and terrible than that of Vishnu, and is characterised by bloody

sacrifices. His images have a terrific and repulsive aspect.

The Sakti, or female energy, of Siva, now as prominent in Hindu worship as Siva himself, is worshipped under many names, but those most commonly applied to her are Devi, Kali, Durga, Parvati, Uma. In her worship we see Hindu religion in its most gloomy and disgusting form. She is worshipped with bloody and licentious rites. As Durga she is a kind of goddess of war. Her martial feats consisted in the destruction of a succession of demons who had conquered the gods, and expelled them from heaven. In commemoration of her victory over one of those demons, the most splendid and popular of the Hindu festivals, the Durgapuja, is annually celebrated in Bengal about the autumnal equinox. Three weeks later, another festival, called the Kalipuja, in honour of the goddess as Kali (that is, the black), takes place, to commemorate her victory over the demons Chanda and Munda. Here she is represented holding the severed head of Chanda in her hand, with the heads of his soldiers formed into a garland suspended from her neck, and their hands wreathed into a covering round her loins. She is styled the Black Goddess of Terror; and her worship is based on the assumption, that she can be propitiated only by practices which involve the destruction of life. From the ritual of her worship, it is clear that human sacrifices at one time formed part of it; special directions are given how the victims are to be killed, and we learn that a sacrifice of three human beings will make her propitious for 100,000 years.

It is clear that, in the popular conception of Siva and of his Sakti, and also in the rites paid to them, Hinduism has borrowed largely from the aboriginal demon-worship, which still lingers in many parts of India. Such as it is, the worship of Siva is now the predominant worship of India.

The followers of each of the leading Hindu deities are divided into sects, connected by the claim of supremacy which they make for the object of their worship, separated from each other by different views as to his character, or by the religious and other practices which they found on their belief, and distinguished from each other by the sectarian marks which they make upon their bodies. The diversities of belief and practice are especially great among the followers of Vishnu. A noticeable sect among the worshippers of Siva is that of the Yogins, who practise the most difficult austerities in order to become absorbed into the universal spirit, and thus liberated from future births. The word Yoga means concentration, abstract contemplation; and the idea at the root of the Yoga doctrine is that, to become re-united with the universal spirit, the soul must become disentangled from, or completely indifferent to, all objects. This, it is believed, can be effected by means of self-inflicted penances. This belief, as we have seen, sprung up during the Epic period, and it is not now confined to the votaries of Siva, but it is among them that the practice founded upon it has been most thoroughly carried out. Continued suppression of respiration, painful and difficult postures, fixing the eyes steadily on the point of the nose—such are the practices by which the Yogins hope to secure re-union with Siva, whom they consider as the source and essence of all creation. The more devoted subject themselves to penances far more trying than these, and such as almost seem too much for human endurance: piercing the side or tongue, and thrusting a heavy piece of iron or a live snake into the opening; sticking the body full of nails; sitting under a burning sun surrounded by fires; swinging through the air suspended by hooks passed through the fleshy part of the back. The followers of Vishnu know an easier way to the same universally desired end of absorption into the supreme soul. Whoever worships Vishnu with wrapt devotion, makes him the object of all his actions, gifts, food, sacrifice, will be freed from the bonds of his actions, whatever they may have been, and will 'go unshackled to share the essence of the god.' Here is something like a doctrine of salvation by faith, and in the Puránas this doctrine is carried as far as ever it was by Christian Antinomians; faith in Krishna and entire dependence upon him making virtue unnecessary, and sanctifying any vice. The worshippers of the Sakti, or female principle of Siva, are mainly divided into two sects, distinguished from each other by the degree of impurity admitted in their religious rites.

Besides regular priests, Hinduism has its monks or devotees to a religious life, whose lives are one endless round of ceremonies. The daily devotions of the lay Hindu vary with his social position and greater or less zeal. The favourite places for performing them are the ghats, or flights of steps with which the margins of rivers and of tanks are lined. There the Hindu performs his ablutions, offers water to ancestors, and invokes his favourite god. Many content themselves with merely making the marks of their sects on their bodies, and invoking the god with uplifted hands. These sectarial marks are made mostly with the ashes of cow-dung, mingled with the urine of the animal—an unguent or holy water of great virtue in all consecrations. Pilgrimages to sacred places (fountains, rivers, cities) and to religious festivals are prominent features of religious practice. A visit to Benares, which is emphatically the holy city of India, is considered to secure eternal happiness. A similar virtue is ascribed to the waters of the Ganges. The temples with which modern Hinduism has covered the country are often grand and elegant structures. Its idols, on the other hand, are mostly rude, grotesque, and hideous. This arises, partly at least, from their excessively symbolical character. No idea of sanctity is attached to them; they are merely convenient emblems of the deity. The idols used in a procession are generally thrown away when the ceremony is over. It is in Southern India that the temples are grandest and most numerous. At Benares, which is in Northern India, there are still at least 1000 Hindu temples, though many were destroyed by the Mohammedans, or converted into mosques.

BUDDHISM.

The most widely received of all religions is—strange as it may seem—a religion without a God, and which regards extinction as the supreme good for men, considering it, too, as a reward so blessed that few are ever able to attain to it. That such a

faith as we have indicated should here and there be found as the esoteric speculation of philosophers, would not be very surprising. Such a faith, however, is Buddhism, the creed of 480 millions of men, more than a third of the human race; the faith which, were truth to be decided by majorities, would bear the palm from all the religions of the world. The study of such a religion may be expected to abound in puzzles, in conceptions which, to the European mind, are so strange as to be well-nigh unintelligible.

The great Eastern Peninsula, including Burmah, Siam, and the adjacent countries, Ceylon, China, Japan, Tibet, Central Asia, and Northern Asia, are the regions in which Buddhism now finds its worshippers. More than half of the immense population of China consists of its professed adherents. It has a considerable hold upon Japan. In the other countries named it reigns supreme. In Northern Asia, it is found as far west as the Volga, and it even extends into Lapland. From Hindustan, the land of its origin, it has almost disappeared, lingering only among the Nepaulese and some other northern tribes. Wide-spread as it is, our authentic knowledge of it is of recent date. Up to 1844, the most diverse opinions were entertained in Europe as to its nature and the date and place of its origin. It was the publication in that year of M. Eugène Bournouf's *Introduction to the History of Buddhism* that first supplied trustworthy information as to its history and doctrines. M. Bournouf's work was founded upon a collection of Sanscrit writings found about 1828, in Nepaul, by the British Resident there, Mr Hodgson; these, regarded by the Nepaulese as their canonical works, having proved on examination to be Buddhist scriptures. These appear to be the texts from which the Buddhist scriptures of Tibet, Mongolia, and China have been translated. The books of the Ceylon Buddhists, written in Pali, though not translations, substantially agree with them, and seem to be a later version of the same traditions. Since M. Bournouf's work appeared, several valuable contributions to our knowledge of Buddhism have been made. A copious account of it, as it appears in Ceylon, has been given by Mr Spence Hardy in his *Manual of Buddhism* and his *Eastern Monachism;* several Russian savants have devoted themselves to the study of the Chinese and Tibetan Buddhist books; and a complete and elaborate digest of the whole subject has been given by Carl Friedrich Kœppen of Berlin, in two volumes, one on the Religion of the Buddha and its Origin, the other on the Lamaist Hierarchy of Tibet. The means of giving a circumstantial history of Buddhism are still wanting, but the outline of its history is no longer doubtful.

It had its origin in the north of India, and the date of its origin, fixed by events in Indian history which have been chronicled by foreign historians, may be with confidence referred to the early part of the sixth century before the Christian era. That, as now received, it was of gradual growth, cannot be questioned; and it has been doubted whether its alleged founder, whose history is overlaid with a mass of extravagant and incredible legend, was an actual historical personage. The most eminent, however, among those who have investigated this question, are satisfied that he was an actual person, and that there is more or less of truth underlying the wild accounts we have of his history. Assuming this, his name was Sarvarthasidda; he was of the warrior caste, and was son of the king of Kapilavastu, a small state in the north-east of Oude. He is often called Sakya, from the name of his family, and Gautama from the name of the race of which his family was a branch; and Sakya often becomes Sakya-muni, the recluse or sage of the Sakya family. According to the legend, his conception was immaculate, and his birth was attended with signs and wonders. In his infancy and boyhood, he was a prodigy in all kinds of acquirements, intellectual and physical. He early betrayed a disposition to retire from the world; to counteract which, his father had him married to a charming princess, and surrounded with temptations to dissipation and self-indulgence. Twelve years spent amid the pleasures of a luxurious court, however, left him oppressed with the feeling that the best life can give is vanity and vexation of spirit. The thought of having to undergo the burden of existence through an indefinite series of changes, which the doctrine of transmigration presented to him, grew insupportable. He resolved to search for some way of deliverance from the misery of life, for himself and others. He fled secretly from his father's court, and began the life of an ascetic. This was when he was about thirty years of age. During six years, he subjected himself to every austerity practised among his countrymen. His austerities, however, proved as unsatisfactory as his pleasures. He returned for a time to a more rational way of life, and thereupon was forsaken by five disciples whom his severe asceticisms had drawn to him, and filled with the hope that they would, through him, receive enlightenment. At length, we are told, he seated himself under a tree, resolved not to rise up till he had seen the way to deliverance. Here he underwent unmoved a fierce assault from Mara, the god of sensuality, of sin and death, who set upon him with a whole army of monsters (by which may be understood the desires and passions). The temptation past, he remained immersed in contemplation, and at last he pierced the veil of ignorance, by means of which men are held in the toils of illusion, and that light burst upon him in which all things stand disclosed as they are. He comprehended the illusory nature of life, and was free from repetition of illusion. In comprehending that, he comprehended everything, and was become virtually omniscient. He remembered all his former transmigrations, and the transmigrations of all other beings. He saw at a glance the innumerable worlds. He perceived that concatenation of cause and effect which, determining all things, necessitates re-birth, and how the chain might be broken. He had attained to the perfect intelligence called Bodhi, and become Buddha, the being of perfect intelligence, the perfectly wise. The spot where this occurred, Bodhimanda, in Nepaul, is counted by Buddhists the centre of the earth; and the tree under which the Buddha sat became an object of veneration to his followers, under the name of the tree of intelligence. He at once began to preach his new gospel, and he continued preaching it for forty-five years. Every spot where a Buddhist monastery was afterwards founded, claimed the honour of having been visited by him, and he is even alleged to have transported himself, by a

miraculous power he had, to places at which, without such power, he could not possibly have been. Thus he is believed to have visited Ceylon, where, on the top of a high mountain, the mark of his foot, as he took his departure, is pointed out to this day. But the range of his wanderings appears to have been not extensive, but confined to a hundred or two of miles eastwards and westwards of the modern Patna. He is represented as making everywhere prodigious numbers of converts, but this must be taken with great allowance. At last, at a place called Kusinagara, in Oude, not far from his place of birth, he died, or, in Buddhist phrase, sunk into Nirvana. His body being burned, the relics were distributed among a number of contending claimants, and monumental tumuli, called topes, were erected to preserve them.

Little can be gathered as to the history of Buddhism during the two or three centuries following the death of its founder. A crisis in its fortunes arrived in the third century before the Christian era, when Asoka, a powerful monarch, who seems to have been master of nearly the whole of Hindustan, became a convert to Buddhism, and did for it what Constantine did for Christianity. Asoka made Buddhism the state religion of India. A council had been assembled to determine points of doctrine and discipline immediately after the Buddha's death. Another had been held about a hundred years later. In Asoka's reign, a third council was held, the object of which seems to have been to procure uniformity of doctrine and discipline among the Buddhists, who had come to be split up into many sects. The latest date that can be assigned to this council is 240 B.C. By this time, the art of writing was known. Inscriptions bearing the name of King Piyadesi, who, by most orientalists, is considered to be identical with Asoka—imbued with the spirit of charity and tolerance which, as will hereafter be seen, is characteristic of Buddhism—are still numerous in India. It is probable, then, though not certain, that at this council, the doctrines and precepts of Buddhism were written down—that it fixed the canon of the scriptures while settling the doctrine and discipline of the Church. At this council it was resolved to send missionaries of Buddhism all over India and the adjacent countries. It was now that Ceylon received the new doctrine; Prince Mahendra, Asoka's own son, being the apostle. Cashmere and the countries about Cabul were converted about the same time. Under the governments which followed that of King Asoka, the history of Buddhism seems to have been somewhat checkered, but, on the whole, the religion continued to gain ground. About the beginning of our era, it had a second period of high prosperity under a king of the White Huns, named Kanishka, whose power extended from Bactria to the Punjab. From this region it seems to have extended through Central Asia into China, where, so early as 65 A.D. it was acknowledged as a third state religion. Its flourishing condition in Hindustan and the countries to the north-west of it, seems to have lasted from the time of Asoka (250 B.C.) to the seventh century after Christ. In the lands to the north-west of the Indus, it was exterminated by the fanaticism of the Mohammedans. How it died out in India is entirely unknown. In the 7th century, Hiouen-Thsang—one of a series of Chinese pilgrims to the native land of Buddhism, from whose accounts, covering several centuries, the most trustworthy part of our knowledge as to the state of Buddhism in India after the Christian era is derived—represents the religion as widely prevailing, and flourishing under the protection of powerful rajahs. By the 11th or 12th century, it had almost entirely disappeared. At what period Buddhism constructed those wonderful cave-temples which still exist in India, is only matter of conjecture; but it is supposed that they were excavated in times of persecution, and probably during the early centuries of the Christian era. Of these excavations, about 900 are still extant. They are found chiefly in the presidency of Bombay.

The canonical writings of Buddhism are divided into three classes, forming what is called the Tripitaka, or triple basket. The first class consists of the Soutras, or discourses of the Buddha; the second contains the Vinaya, or discipline; the third, the Abhidharma, or metaphysic. Though, as has been stated, the scriptures of the northern and southern schools of Buddhism are substantially the same, some differences both of theory and of practice have arisen between them. Into these we shall not be able to enter, nor can we do more than allude to the ecclesiastical hierarchy, known as Lamaism, which Buddhism has erected in Tibet. Our chief aim must be to make intelligible the intellectual theory on which the Buddhist system rests.

Its view of the constitution and origin of the universe, Buddhism has taken from Hinduism, but with considerable variations. Besides this earth of ours, it holds that there are many worlds, so constituted as to cause almost endless degrees of misery or happiness to sentient beings placed in them. There are heavens, and there are hells; and imagination has run riot in picturing the tortures endured by unhappy beings relegated to the latter. And as there are other worlds than ours, so there are other beings than our world can exhibit; beings ranging from gods downwards. To such beings the gods of Hinduism and other religions may belong; Buddhism is under no necessity of denying their existence. But it holds that every state of being, from the highest to the lowest, whether lasting for a day or for millions of years, lasts but for a time. The due time expired, every being dies and passes into another, possibly a far different phase of existence; and so on everlastingly, except so far as the gospel of the Buddha shews a way of deliverance, at once from change and from being. The god then may fall from his high estate, just as that which has been a worm may be exalted. Buddhism taking from Hinduism the doctrine of the transmigration of souls, has applied it throughout the whole range of the universe. But if everybody and everything, even the gods, are subject to change, what power has created and guides the universe? Buddhism says it cannot tell; or, rather, it attributes all the changes of the universe to what, for want of a better phrase, may be called the nature of things, or the order of nature, of which change is the settled characteristic. This world has sprung out of the ashes of a former world; that out of the ashes

of an older world still; and, on the other hand, this world also will decay, and will in turn be succeeded by another. An endless succession of worlds and beings, each produced out of that preceding it, because it and nothing else could be produced out of it—that is the Buddhist view of the universe. Consistent with itself, it does not affirm the eternity of matter. Nor does it affirm the existence of spirit in the sense which we attribute to it in distinguishing it from matter.

It is the quality of the actions done during life—called, in the Pali language, Karma—that, in the Buddhist view, determines the state into which, at dissolution, a sentient being will be born, and it does so as by a natural law, a necessity working blindly; such being the previous states, and such the actions, the next state can be no other than that which actually is entered upon. The ideas of reward or punishment in our sense, i.e. of a righteous judge who rewards and punishes, are not known to Buddhism. The theory which accounts for the succession of worlds, has also to account for the successive states of being. But the order of nature, according to the Buddhist view, is favourable to virtue, and, speaking generally, it is according as a man's deeds have been good or bad, that in his next state he is advanced or depressed, happy or miserable. A soul may be born in any part of the Buddhist universe, and may pass into any form. There are the hells for evil-doers, the heavens for the righteous; and between the two, our earth, with all its varieties of life, animal and vegetable, and even its innumerable forms of dead matter, in any of which, for a degraded life, a being may have to dwell. Sometimes, it seems, a bad action may have no immediate effect, and may even remain latent during several existences; but, sooner or later, it never fails to tell either upon the state of being or the fortunes of the doer.

The endless succession of existences which the transmigration doctrine presented to it, had ever been felt as oppressive by the Hindu mind. Our life, according to this theory, is a period of trial, and it will be followed by other periods of trial without end in other states of being. Conscious as every one is of having no recollection of previous states, so that sufferings one may have to endure in a future state will be, as it were, the sufferings of another being, the theory, at anyrate, disposes people to reflect upon life and its possibilities. The mind in such meditation is apt to dwell more upon the evil chances of life than upon its pleasures. And throwing themselves imaginatively into the misery they see endured by sentient beings around them, men conceive of themselves as enduring such misery. In a country like Hindustan, with arbitrary governments, classes separated from each other by abysses, and a religion which has exhausted ingenuity in the invention of factitious sins and punishments appropriate for them, there must always have been among men alone enough to sadden the reflective mind. But there is no animal so vile but he is a being like man, no piece of matter in which a soul may not be imprisoned; and there are, besides, the hells, with their unspeakable tortures, against which the chance of heaven and its joys is but a poor set-off. The survey thus extended, it is intelligible how men should think that life on the whole is not to be desired; that even if they find their present lot endurable, men should shrink from being born again. There are in life, as they conceive of it, too many lots they shrink from, which they are glad they have not been born into, the very worst of which may, nevertheless, be theirs at some future time. High-blooded and active people do not give themselves up to theories. But among the Hindus, a race of feeble organisation, fitter for contemplation than for action, the issues of the transmigration theory had from a very early period been fully considered, with the result of a deep conviction being produced, that life, on the whole, is a burden, and its continuance through endless shifting phases, a misfortune, and almost a curse.

Brahmanism, starting from these premises, had propounded its method of getting rid of conscious being; the means being penance and the practice of virtue, and the result, the absorption of the soul into the Divine soul. The founder of Buddhism declaring life to be wholly miserable, was cut off by his atheistic philosophy from the Brahmanic conclusion. His gospel is, that deliverance from life is to be effected through extinction (Nirvana); and that the means of obtaining it—open to all, rich and poor, learned and unlearned, alike—consists in perfect renunciation of love to self and to existence. All Buddhist teaching and discipline tend towards producing the condition of mind which is the indispensable condition of getting into Nirvana. It is for this that virtue is to be practised, for this that the flesh must be crucified with the affections and lusts. There has been dispute as to the precise meaning of the word Nirvana, and the schools of Buddhists do not all attach precisely the same idea to it; but the shades of difference by which it has been attempted to distinguish it from extinction are inappreciable, and most inquirers have concluded that it means simply annihilation. Etymologically, it means a blowing out, as of a candle.

The Buddhist scheme of salvation rests on a metaphysical theory, consisting of a concatenation of causes and effects, which to the western intellect has little coherence. The sum of it seems to be, that it is our desires that attach us to existence, and necessitate re-birth; and that desires are caused by illusory ideas, the result of ignorance or error, attributing durability and reality to that which is transitory and unreal. Find out their illusoriness, and their spell is broken. Knowledge has come to you, and being is succeeded by Nirvana.

The bases of the Buddhist scheme for arriving at this consummation, are shortly stated in what Sakya-muni called his Four Sublime Verities. The first of these asserts that pain exists; the second, that the cause of pain is desire or attachment (that being the cause of the continuance of being); the third, that pain can be ended by Nirvana; and the fourth shews the way that leads to Nirvana. Of the first three, it is unnecessary to speak further. As to the fourth, the way to Nirvana consists in eight things: right faith, right judgment, right language, right purpose, right practice, right obedience, right memory, and right meditation. These eight parts or particulars of the way to Nirvana were developed by Sakya-muni into a set of practical precepts enjoining the various duties of common life and of religion—all ostensibly intended as means of destroying the chain of causes that tie men to existence, and

necessitate being born again. Thus austerities were prescribed to subdue the passions and affections, and lessen the attachment to existence. Why such social virtues as benevolence, meekness, truthfulness, respect to parents, should have been enjoined, is not so apparent; but probably they were considered as checks upon and counteractives to the indulgence of selfish regards. The Buddha considered mankind as divided into two classes—those who have embraced the religious life, who alone can hope to attain to Nirvana; and those who continue in the world, and are too attached to it to have any present prospect of emancipation from life. Certain of his precepts are intended for both classes; for the laity, as they may be called, have at least to take care that their next state shall be better, and not worse, than their present. Of the ten moral precepts, or 'precepts of aversion,' five are for both classes, and are precepts the transgression of which tends to misery in the next existence. These are—not to kill; not to steal; not to commit adultery; not to lie; not to be drunken. The other five, intended for the religious, or those who have entered upon the pursuit of Nirvana, are—to abstain from food out of season—that is, after mid-day; to abstain from dances, theatrical representations, songs, and music; to abstain from personal ornaments or perfumes; to abstain from a lofty and luxurious couch; to abstain from taking gold and silver. For the regular ascetics or monks, Gautama instituted a number of special observances of a very severe kind: They were to dress in rags sewn together with their own hands, with a yellow cloak thrown over them. They were to eat only the simplest food, and to possess nothing except what they got by collecting alms from door to door in a wooden bowl. They were allowed only one meal, and that had to be eaten before mid-day. For a part of the year they were to live in forests, with no shelter except the shadow of a tree, and there they were enjoined not to lie down even during sleep. They were allowed to enter the nearest village or town to beg food, but were to return to the forest before night. Some of these observances are complied with only in a formal or symbolical way, which involves no unpleasantness, in the Buddhist monasteries of the present time. In the lifetime of Gautama, monasteries seem to have been unknown. An investigation of the early history of Buddhism appears to some to lead to the conclusion that these austere practices were the very nucleus of Buddhism; that Sakya-muni merely founded a brotherhood of extreme asceticism; and that the development which fitted it to be the religion of a whole community, and provided it with a body of doctrine, took place gradually, after the introduction of monasteries, by the inevitable conflict of thought among the inmates with one another, and with the religious and philosophic systems around them.

Certain virtues or perfections of a supererogatory kind there are, which, according to the Buddha's teaching, tend directly to 'conduct to the other shore' (Nirvana). Such are alms-giving or charity, purity, patience, courage, contemplation, and knowledge. Charity, in the widest sense of the word, may be said to be the characteristic virtue of Buddhism, charity such as might spring out of the history attributed to its founder, who, according to the belief of his followers, had before his enlightenment passed through every possible state of life, from the lowest to the highest—a charity boundless in its self-abnegation, and extending to every sentient being. Among virtues to which a secondary place is assigned, are the avoidance of all offensive and gross language, and language tending to stir up strife between others; patience under injury; resignation in misfortune; and humility. Humility holds as prominent a place among the Buddhist graces as it does among the Christian. To enforce it, and no doubt also, as a check upon future backsliding, Sakya-muni instituted the practice of confession. Twice a month, at the new and at the full moon, the monks confessed their faults aloud before the assembly. Confession was exacted of all believers, only not as frequently as of the monks. The edicts of Piyadesi recommended a general and public confession at least once in five years. The practice of public confession would seem to have died out in India by the 7th century, when Hiouen-Thsang visited that country.

As might be expected of a system which, with a theory like that of Buddhism, makes the religious life a profession, casuistry has been busy among the Buddhists. The original morality of Buddhism has, in the course of time, been disfigured by many subtilties, puerilities, and extravagances; just as many of the precepts of Christianity were perverted by the casuistry of the Jesuits. But even as thus degraded, the Buddhist moral teaching is of a very high kind, superior to that of any religion the world has seen, Christianity alone excepted.

We have seen that it is through an act of the mind that the final stage towards Nirvana is taken, that act consisting in the attainment of a conviction of the illusory nature of all things. As might be expected, therefore, contemplation has a high rank among the Buddhist virtues, and a prominent place among the means of attaining to Nirvana. The process of meditation, and the several stages through which it conducts the soul to deliverance, have been laid down with great minuteness. Though, of course, complete Nirvana, or extinction, cannot take place till death, the state of preparation for it, called simple Nirvana, is attainable during life, and was, in fact, attained by Gautama himself. The process by which the state is attained is called Dhyana, and is neither more nor less than ecstasy or trance, which plays so prominent a part among mystics of all religions. The individual is described as losing one feeling after another, until perfect apathy is attained, and he reaches a region 'where there are neither ideas nor the idea of the absence of ideas.' It is sitting cross-legged in the attitude of contemplation, as he was when the secret of Nirvana flashed upon his mind, that the Buddha is almost always represented.

The *ritual* or *worship* of Buddhism—if worship it can be called, is very simple in its character. There are no priests, or clergy, properly so called. The *Sramanas* or *Bikshus* (mendicants) are simply a religious order, a kind of monks, who, in order to the more speedy arrival at Nirvana, have entered on a course of greater sanctity and austerity than ordinary men. They have no sacraments to administer or rites to perform for the people. Their only clerical function is to read the scriptures or discourses of the Buddha in

stated assemblies of the people held for that purpose. They have also everywhere, except in China, a monopoly of education; and in Buddhist countries, education, whatever may be its quality, is very generally diffused. In some countries, the monks are exceedingly numerous; around Lhassa, in Tibet, for instance, they are said to be one-third of the population. They live in *viharas*, or monasteries, and subsist partly by endowments, but mostly by charity. Except in Tibet, they are not allowed to engage in any secular occupation. The vow is not irrevocable. The incubus of monachism constitutes the great weakness of Buddhism in its social aspect. The adoration of the statues of the Buddha and of his relics, is the chief external ceremony of the religion. This, with prayer and the repetition of sacred formulas, constitutes the ritual. The centres of the worship are the temples containing statues, and the topes or tumuli erected over the relics of the Buddha, or of his distinguished apostles, or on spots consecrated as the scenes of the Buddha's acts. The central object in a Buddhist temple, corresponding to the altar in a Roman Catholic church, is an image of the Buddha, or a dagoba, or shrine containing his relics. Here flowers, fruit, and incense are daily offered, and processions are made with singing of hymns. Of the relics of the Buddha, the most famous are the *teeth* that are preserved with intense veneration in various places. Hiouen-Thsang saw more than a dozen of them in different parts of India; and the great monarch Ciladitya was on the eve of making war on the king of Cashmere for the possession of one, which, although by no means the largest, was yet an inch and a half long. The tooth of the Buddha preserved in Ceylon, a piece of ivory about the size of the little-finger, is exhibited very rarely, and then only with permission of the English government—so great is the concourse and so intense the excitement.

It is not quite easy to reconcile the seeming worship of the Buddha with the theory that he no longer exists; but inconsistency between theory and practice is not unfamiliar. In theory, the Buddha is not in existence, and certainly he is not a god. And he is only the Buddha of the present cycle, the man who discovered for the world that now is the secret of deliverance from being and its misery. Former cycles have had, future cycles will have, each a Buddha of its own. But he has been the supreme benefactor of mankind, and is the ideal of what men should be. As such, his memory is venerated, remembered with commemorative rites; and the line between this and worship is a fine one, and easily passed. What is most surprising is that prayers should be addressed to a being whose greatness is believed to consist in his having shewn to others how to procure, and having procured for himself extinction, or at any rate, immunity from all the interests of life. But among Easterns the power attributed to prayer is very much that of a charm, or incantation, and this view of prayer is more consistent with the Buddhist philosophy than with that of any other religion. It is indeed perfectly consistent with it to consider that prayer is operative as by a natural law; and the praying-wheels, with texts inscribed on them, worked by hand, or even by horse-power, which Buddhist monks use in their devotions, that they may easily multiply their petitions, may be taken as shewing that this is really the Buddhist theory of prayer. In theory, then, the address to the Buddha may be merely commemorative. But that the Buddha is actually worshipped by the more ignorant among those who hold his creed, it is impossible to doubt. And, as if the faith were too hard for uncultured natures, it is certain that many Buddhist peoples unite their faith in Buddhism with the worship of demons, and other superstitions to which Buddhism gives no countenance, though perhaps it does not exclude them. It could not be otherwise. Even Christianity has failed thoroughly to imbue the masses of any community with its beliefs, and to extirpate all practices descended from older and lower religions.

The element in Buddhism which, more than any other, has led to its surprising extension, has no doubt been the spirit of universal charity and sympathy that it breathes. In India, this contrasted with the exclusiveness of caste. Buddhism held much the same relation to Brahmanism that Christianity did to Judaism. It was, in fact, a reaction against the exclusiveness and formalism of Brahmanism—an attempt to render it more catholic, and to throw off its intolerable burden of ceremonies. Buddhism did not expressly abolish caste, but only declared that all followers of the Buddha who embraced the religious life were thereby released from its restrictions. In the bosom of a community who had all equally renounced the world, high and low, the twice-born Brahman and the outcast were brethren. It was just in this way that Christianity dealt with the slavery of the ancient world. The opening of its ranks to all classes and to both sexes—for women were admitted to equal hopes and privileges with men, and one of Gautama's early female disciples is to be the supreme Buddha of a future cycle—no doubt gave Buddhism a great advantage over Brahmanism. But its teaching went far beyond this. It preached a charity based on a doctrine wider even than that of the brotherhood of mankind—the doctrine of the brotherhood, if we may so call it, of all animated beings. And appealing to what is best in man, it has mastered the greater part of the Eastern world. Its philosophy alone might have repelled mankind. Its morality, admirable as it is, would not of itself have converted them, and, indeed, without some force to put it in motion, it must have remained in the barren region of ideals. The motive force for it was found in the brotherhood which Buddhism preached, and the sense of duty which grew out of it; and the consequent results upon human conduct are perhaps the best explanation that can be given of the wonderful success of an atheistic philosophy.

SCANDINAVIAN MYTHOLOGY, &c.—MINOR SUPERSTITIONS.

ALL polytheistic religions have their great features the same, and even in minute particulars, the coincidences are numerous and striking. This led to the opinion, very prevalent at one time, that all nations had borrowed their religious systems one from the other, and that the whole had had some one common source. Many thought they saw that source in the revealed religion of the Jewish Scriptures; the doctrines and rites of the patriarchal religion had, it was conceived, been corrupted into heathenism, the patriarchs themselves becoming the gods and heroes of the systems. Such views are now mostly given up. They cannot be made to accord with the facts; nor are any such hypotheses necessary. Religious beliefs are natural products of the human mind, and may be expected to resemble one another, however independently they spring up, so long as man's nature and the circumstances with which he is surrounded are substantially the same. The great agencies and elements of nature fill him with awe, and make him feel his dependence; and conceiving them to be actuated by conscious minds like his own, he seeks to propitiate their favour. The vivifying Sun, the all-producing Earth, the terrible and destructive Thunder and Lightning, the refreshing and fertilising Spring or River—gods unmistakably representing these and similar agencies are found in the pantheons of all nations: of the Indians, the Greeks, the Egyptians, the Assyrians, even the islanders of the Pacific, and the Mexicans and Peruvians of the New World. Different groupings of attributes and qualities would naturally arise, according to the different speculative tendencies of the peoples, but the foundation was in all the same.

Before the spread of Christianity, the various races that peopled Europe had each a system of religious belief and worship; the best known of these ancient European mythologies are those of Greece and Rome. These two resemble each other so closely, that they are generally considered as one. They have also a striking family likeness to the most ancient mythology of the Hindus; besides that general resemblance common to all mythologies, there are numerous points of coincidence, which can be accounted for only by supposing the peoples to have been originally connected. The same is true of the Scandinavian. From the affinities of language, it had already been inferred that all the nations of Europe, together with the ancient Persians and Hindus, had originally sprung from some mother-nation, which had died in giving them birth. A comparison of their mythologies leads to the same conclusion. In the HISTORY OF GREECE, a short sketch is given of classic mythology; and in order to save space for what is less generally known, we shall pass it over here, and content ourselves with referring the reader to that number (No. 58).

SCANDINAVIAN MYTHOLOGY.

Of the other ancient European mythologies, the only one of which we possess a connected account is the Norse or Scandinavian. Owing to the remote situation of Denmark, Norway, and Sweden, Christianity was long in penetrating

thither: it was not till the 11th century that it took root in those countries; and remnants of the old heathen worship continued for centuries later. The Norwegians who settled in Iceland in the 9th century carried with them their religion; there the *Sagas* or metrical legends of their gods were handed down by tradition till the 12th century, when, it is believed, they were collected and committed to writing by Saemund Sigfusson, surnamed Frodi, an Icelandic priest. This collection forms the older of the two books called the Eddas. The newer Edda is a sort of systematic treatise or handbook of old Norse mythology and poetry, compiled in the beginning of the 13th century, by an Icelander of the name of Snorri Sturluson. It is chiefly from these two books that we derive our knowledge of the Scandinavian religion. There is every reason to believe that the same system of belief and worship was common to the Scandinavians and to the Teutonic nations of Germany. Beyond a few incidental notices in the classic writers, we have no written account of the religion of pagan Germany. It had yielded to Christianity before any native literature had sprung up; but from the traces of it that have been gathered from names and other remnants that long survived in popular traditions and usages—and in some cases even yet survive—in the very midst of Christianity, it is clear that the Teutonic tribes worshipped the same gods, and with substantially the same ritual as the Scandinavians. Beyond their own inherent interest, therefore, the Eddas become important in the eyes of all that speak the English language, as the chief record—the Bible, as it were—of the religion of their ancestors.

The following is an outline of the contents of the Eddas:

Cosmogony.—In the beginning of time, there was neither earth nor heaven; only a yawning gulf (Ginnungagap). In the north of this lay Niflheim (Mist-home), ice-cold and dark; in the south, Muspelheim, glowing with light and heat. In Niflheim, sprung up rivers, which, turning to ice, along with layer upon layer of hoar-frost from the frozen mist, filled up Ginnungagap. Sparks from the warm south fell upon this ice; it melted; life stirred in the drops, and there sprung up a giant man, Ymir, who was wicked, as were all his descendants, the Hrimthursar or Rime-giants. After Ymir there sprung from the melted ice the cow Audhumbla, the four rivers of milk from whose udder nourished Ymir, while the cow supported herself by licking salt. Out of the blocks of salt she licked a man, a hero, great in stature, and beautiful, called Bur, whose son, Bör, had, by a wife of giant race, three sons—Odin, Wile, and We. These slew the giant Ymir; and the stream arising from his blood drowned the whole race of the Hrimthursar, except one who escaped with his wife, and became the progenitor of the new race of giants, the Jötuns. Out of Ymir's flesh was formed the earth; his blood became the sea; his bones, the mountains; his hair, the trees; his skull, the heaven; his brain, the clouds; and his eyebrows were formed by the gods into a wall round about Mitgard (the habitable earth), as a protection against the giants, who now had their abode on the outer verge of the earth. By Earth, daughter of Night, Odin had a son, Thor. Odin and his children—for he had several besides Thor—were called Æsir (from As, a lord or god). In the centre of Mitgard, the gods built themselves a splendid abode, Asgard (city of the lords or gods). They also provided for the lighting of the earth by means of the sun and moon, created day and night, and distinguished the seasons.

As yet, Mitgard was uninhabited; then the gods formed two human beings, Ask (ash) and Embla (elm). Odin gave them life, Wile gave them reason, and We gave them form and speech. Mitgard, as their dwelling, was called Manheim. Besides the four worlds or *heims* (homes) already named—Muspelheim, Niflheim, Godheim (Asgard), and Manheim—there were five others: Vanaheim, occupying the space between the vault of heaven and the earth, the abode of the Vanir, a race of gods, hostile at first to the Æsir, but afterwards reconciled to them; Alfheim and Svartalfheim, the homes of the light elves and of the dark elves or dwarfs—the former friendly, the latter hostile to the human race; Jötunheim, the abode of the giants; and Helheim, the home of Hel or Death—the infernal world. Thus, as in other cosmogonies, the earth arises out of the conflict of the two elements of fire and water.

Connected in some way with the name of the first man, Ask, is the famous ash-tree, Yggdrasil. It spread its branches over the whole earth, and as high as heaven. In the branches sat an eagle, and between his eyes a hawk; four stags also ran about among the branches, and devoured the leaves. One root went down to Niflheim, and was continually gnawed by the dragon Nidhögg; and a squirrel ran up and down the stem, seeking to make mischief between the dragon and the eagle. A second root stretched to the land of the giants, where Mimir's well was; a third reached to the abodes of men and the gods, and under it sat the three Norns or Fates, who watered the tree. They were named Urd (Past), Verdandi (Present), and Skulld (Future). Here was the judgment-seat of the gods, where they daily repaired. This tree is thought to represent the universe in its progression and vicissitudes—the course of time.

As yet, there had been peace in the world; but now the gods began to have their trials. A series of contests ensued with the gods of the race of the Vanir, a breach was made in the wall of Asgard, and the Æsir had to compound matters, giving Hœnir, one of their number, to the Vanir, and receiving the Van-god Njord, with his two children, Freyr and Freyjd, into their own ranks. Endless were the battles with the giants, and in these contests the great champion of the gods was Thor, who struck down the giants with his powerful hammer, Miöllnir (the Mauler or Smasher).

The number of the gods was twelve, and of the goddesses as many. It is not always, however, the same names that make up the lists; semi-divine beings are sometimes admitted, to the exclusion of some of the usual divinities; but the number twelve seems to have been considered essential. The more important of the gods are Odin, Thor, Baldur, Njord, Freyr, Tyr, and Loki. *Odin* or *Woden*, is the chief divinity, the 'father of the gods,' All-father, the ruler of heaven and earth, who rides through the world on the eight-footed steed, Sleipnir. Thor is the god of thunder, which is caused by his chariot as it rolls along

drawn by goats. Baldur, the son of Odin and Frigga, the most beautiful and best beloved of all the Æsir, is the subject of one of the finest myths of northern mythology.

Baldur having dreamed ominous dreams, the gods are filled with alarm lest any evil should befall him who was the delight of all eyes. Frigga took an oath of fire and water, of all metals, stones, plants, and animals, of poisons, and all diseases, that they would not hurt Baldur. The gods then began in sport to make trial of Baldur's invulnerability. They cut at him with their swords, and hurled darts, sticks, and stones at him without effect. All this was gall to the envious and malicious Loki. Learning that in administering the oath, one thing had been overlooked, namely, the shrub mistletoe, he brought a branch of it, put it in the hand of the blind god Hödur, Baldur's own brother, and advised him to join the sport, and have a stroke at Baldur. The stroke was fatal, and Baldur fell dead to the earth. The sorrow of the gods was unutterable. The heart of Nanna, Baldur's loving wife, broke, and she was laid on the same funeral pile with her husband. Hermodhr rode to the kingdom of Hel to procure the deliverance of Baldur; and Hel consented to give him up on condition that all creatures would weep for him. All men, all living beings, all things wept, except a witch or giantess, Thöck, or Thaukt, who was Loki in disguise. She refused, and so Baldur must remain in the kingdom of Hel till the end of the world.

Njord, the ruler of the sea, of the rivers, of the winds, and also the bestower of riches, was especially worshipped by fishermem and sailors, and had many temples. Freyr, son of Njord, the god of sunshine, summer, and fertility, was invoked for good crops and for peace; his abode was Alfheim, where he reigned over the Light Elves. Tyr (in old German, Ziu; in Anglo-Saxon, Tiv), a son of Odin, was the god of war and of fame, and was no less wise than brave. At the binding of the wolf Fenrir, when the wolf, before submitting, required some assurance that no harm was meant, Tyr put his right hand in the monster's jaws as a pledge that the binding was only in sport; and when the gods refused, of course, to let their deadly enemy loose again, Tyr lost his hand. Loki, though not of the race of the Æsir, could claim some sort of blood-relationship with Odin, and was reckoned one of the gods of Asgard. He was the principle of evil, was constantly plotting mischief against the other gods, and at last brought about their final destruction and his own.

Goddesses do not hold the same conspicuous place in northern mythology as in classical. The chief are: Frigga, the wife of Odin, who presided over marriage; Freyja, the goddess of joy and of love, who received in her palace of Folkvang the souls of departed wives; and Idun, the guardian of the precious apples, the eating of which preserved the gods in perpetual youth.

Though not ranking among the regular deities, there were various supernatural beings that played a conspicuous part. Among these were the Valkyrior, war-nymphs, who guided heroes in the fight, chose those who were to have the honour of dying in battle, and conducted their souls to the palace of Gladsheim, or Elysium, in Asgard, where, in the great feasting-room of Valhalla, they ministered to them the cup of mead or beer. But most important of all these preternatural beings were the progeny of Loki. By a giantess, Angurbodi (harbinger of anguish), he had three monster children—Hel (Death), the wolf Fenrir (destruction), and the serpent Jörmungandr. Foreseeing the evil that these would bring, Odin cast Hel down to Niflheim, and gave her the dominion over the world of shades, where those came who were so unfortunate as not to die in battle, or did not kill themselves. She is half black, half flesh-colour; her hall is Ice-cold; hunger is her dish; want, her knife; and weariness, her bed. Jörmungandr was cast into the sea, where it grew round the whole earth until it held its tail in its mouth. Fenrir was with difficulty chained.

The danger that lies in these monsters is thus only checked and staved off, and continues to stand threatening in the background. Nor are there wanting other sources of impending ruin. The reason why the sun and moon continue to run up and down the sky, is that they are each hunted by a hungry wolf, and, according to a prophecy, will one day be overtaken and devoured. Since the death of Baldur, nothing has gone well with the Æsir, and it is clear that the destruction of the world can no longer be warded off. Then comes *Ragnarök* (the twilight, or eclipse of the gods), ushered in by numerous signs, moral and physical. The ties of kindred are broken, and the world is filled with wrong; the wolves that hunt the sun and moon now gain on and swallow them; winter follows winter, with no summer between; all is storm, and snow and darkness. The heaven is besprinkled with blood, the earth quakes, and the mountains fall with a crash. For the wolf Fenrir has broken loose, and the great serpent rises from the ocean, and Loki comes on at the head of his bands. To meet the powers of destruction, march forth the Æsir, summoned by Heimdall's horn, and with them come the heroes of Valhalla. The two hosts meet on the plain of Wigrid, and the result is mutual destruction. Thor kills the serpent, whose poisonous gore in turn stifles Thor. Heimdall and Loki kill each other. The wolf Fenrir swallows Odin himself, but is despatched by the avenger Widar. At last Surtur (black smoke) hurls fire from Muspelheim over the earth; smoke and flame envelop Yggdrasil, and blaze to heaven, and the burned world sinks in the sea.

But out of the chaos rises a new earth, whose fields, green and fair, yield their fruit without sowing. The gods awake to new life, and a new human race springs up. The giants and monsters are for ever extirpated, but the gods return—all except Odin and Thor. Odin's hall will be occupied by Baldur and Hödur; Thor will be represented by his sons Modi and Magni (courage and strength), who will wield Miöllnir as their father did. Instead of Valhalla, there will be new abodes for the blessed, and the fate of departed souls will no longer depend solely on the manner of their death. When Odin's dominion closes, says the Saga, comes another, a mightier, though 'him I may not name.' The title of All-father is his, and he shall live through all ages, and rule over all. He it is who formed heaven and earth, and all that is therein; but what is greatest of all, he formed man, and gave him a spirit that shall

live and not perish, even when the body moulders to dust, or is burned to ashes.

Attempts have been made to explain the northern mythology by giving it a historic basis. Odin was supposed to be a powerful chieftain, who, driven from his dominions between the Euxine and Caspian, took refuge in Scandinavia, and subjected it to his sway. Now that the nature of mythologies in general is coming to be better understood, the historical explanation is given up; and little doubt remains that the present, like all other pagan systems, originated in the early attempts of men to express their conceptions as to the great operations of nature. The Aesir are the powers that regulate the vicissitudes of nature, and are themselves subject to those vicissitudes. Odin, 'the one-eyed,' 'the fire-eyed,' who sits on Air-throne, the watch-tower of Asgard, from which he sees to the ends of the world, is the Sun, the source of light, of heat, of all life and movement in the world. Most of the other gods, the sons of Odin, are merely multiplications or emanations of Odin, representing different aspects and functions of the sun—the thunder which his heat generates with the earth; his contests in spring with the frost-giants; the brightness and joy caused by his beams; but, on the other hand, the inevitable fate by which he must be extinguished and die at the close of day, when he is seen sinking into the ocean, as did the blazing ship which was the funeral pile of Baldur. In this division of sun-functions, Odin himself was conceived as more especially representing the sun as moving in the firmament or air, and overseeing all things. Frigga or Freyja—for they are originally one—is the fertile, all-bearing earth; and the other goddesses are merely personifications of her various attributes. But, although the basis of these gods is thus *physical* and *elementary*, moral elements become inevitably interwoven with the conceptions. The elemental powers being thought of as creatures with wills, the impressions they make become associated with moral and intellectual qualities—the wide-spreading glance of the sun, with far-seeing knowledge and wisdom; light, with joy; warmth and fertility, with goodness, mildness, and beneficence; night and cold, with the terrible and hurtful. In the regular progress of growth these mental attributes came to predominate over the physical; and Odin was no longer the all-seeing sun in the firmament, but the all-knowing and wise ruler; and his sons, instead of being light and heat struggling with darkness and cold, become divine heroes struggling with difficulties analogous to those of men—above all, great in war, then the sublimest business of life.

As to the influence of the Odin religion on the morals of its believers, it must be confessed that the gentler virtues, if thought of as virtues at all, are left sadly in the background. War, battle, is the sole business of life. Only by losing his life in the conflict, or by taking it with his own hand, can a man enter Elysium at death. Valhalla (hall of the 'waled' or chosen ones—'wale' in this sense, is still used in Lowland Scotch), in which the souls of heroes are received by Odin, was an immense edifice roofed with shields, and wainscoted with spear-shafts, with 540 doors, through each of which 800 *Einherjar* ('unique heroes'—*einn*, 'one,' and *herr*, 'a hero') could enter abreast. Distinguished princes, especially if they had shed much blood, and laid waste many lands, were received with special honour. All kings came to Valhalla, even though they might not have fallen in battle. In short, the joys of Valhalla were only for the rich and great, and the 'cold shade of aristocracy' was felt even in the other world. As a hero's rank in Valhalla depended partly on his 'following,' and on the riches he brought with him, the companions-in-arms of a fallen leader voluntarily slew themselves on his body; and not only his horse and weapons, but his treasures, were buried with him. Only treasure, however, acquired in the way of plunder was available for this purpose. The life of the Valhallians was not one of repose; for this is not the Teutonic idea of bliss. Every morning, by cock-crow, they marched out to battle, and fought and cut one another to pieces, by way of exercise, till mid-day; when, all wounds healing immediately, they returned to the banquet, at which Odin presided, and the drinking-horns were handed round by the Valkyrior as the handmaidens of Freyja. Odin partook only of wine; his share of the food he gave to the two wolves that sat by him. The heroes feasted on the flesh of the boar Sahrimnir, and drank beer and mead, which flowed abundantly from the udder of the goat Heidrun. Such a prospect might inspire courage and contempt of death, but was a direct encouragement to blood and rapine. On the other hand, the idea that the life of the gods was not one of mere luxurious idleness—as in the Greek mythology—but requiring unremitting watchfulness, wisdom, and heroic struggling, in order to keep the dark powers of destruction at bay, and that thus a brave man resembled them in this life, and might hope to be associated with them on almost equal terms in the next, no doubt contributed to that feeling of individual worth and dignity which distinguishes the Teutonic races. Truth was sacred to the gods; to be faithful to promises, to friendship, and to love was the highest duty. That the faith of our pagan ancestors was not without good moral fruit, we have the honourable testimony of Adam of Bremen, a zealous churchman of the eleventh century; rejoicing over the conversion of the Icelanders, he adds: 'Although even before receiving the faith, living after a certain law of nature, they had not differed much from our religion.'

Among relics of this religion still existing among ourselves, the most obvious are the names of the days of the week. Weeks of seven days were in use from the earliest times in the East and in Egypt. Both the number of the days and their names were taken from the planetary system, as the ancients conceived it, consisting of the sun, moon, and five planets; the planets, again, being called after certain deities. The Romans borrowed the system from Egypt shortly before the Christian era; and from Rome it seems to have spread among the nations of the north, while yet heathens. The Teutonic nations, in translating the names of the days, substituted deities of their own for the Roman, perhaps with the exception of Saturn. Sunday is Sun's day; Monday, Moon's day; Tuesday, Tyr's day (in Ang.-Sax. *Tiv*); Wednesday, Odin's day (Ang.-Sax. *Woden*); Thursday, Thor's day; Friday, Freya's day; Saturday, Saturn's day. Several of the

customs observed at Christmas are remnants of the heathen festival of Freyr, held at the winter solstice or turn of the year, to celebrate the return of the god of sunshine and fertility, who had been threatening to forsake the earth. The blazing Yule log, and the holly and other greenery hung round, were symbols of the bright summer sun and the green vegetation that were looked forward to. 'The procession of the boar's head' is also connected with Freyr, to whom the boar was sacred. In some places, cakes were baked in the shape of boars, and eaten.

SUN AND FIRE WORSHIP—THE PARSEES AND PERUVIANS.

There is every reason to believe that the chief deities in all polytheistic religions were, originally at least, personifications of particular influences of the Sun. The actual sun, however, still continued an object of worship; more especially as in the abstract, and more strictly personal gods, moral and intellectual qualities came to predominate over the physical. The worship of the Sun was more or less closely associated with that of Fire—his representative on earth. The keeping up of sacred fires is common to all polytheistic systems. Especially sacred and endowed with purifying virtue was fire produced by rubbing two pieces of wood, called *need-fire*. In the Veda, the sacrificial fire is always lighted in this way. Until quite recent times, the practice lingered—if it does not yet linger—in many places, both in these islands and on the continent of Europe, of lighting a fire by this means, and driving the cattle through it in order to prevent or drive away pestilence among them. One of the animals was sometimes sacrificed on the occasion. The Beltane or Bealteine fires of the Celtic nations, lighted on May-day and in November, and the bonfires of St John's or Midsummer-eve, as well as of Easter-eve, common to the Teutonic nations, are clearly relics of sun-worship (see KEY TO THE CALENDAR). In some parts of Germany, a great wheel* is made, and wrapped round with straw; this being lighted, the wheel is set a-rolling down a hill—an emblem of the sun. Among some nations, the sun bodily, and his terrestrial representative, fire, continued to be the chief objects of worship. This was particularly the case among the ancient Persians and the native Peruvians. The religion of the Persians we know only as it was modified by Zoroaster at a very early period. Zoroaster developed the system of *dualism*, as it is called—that is, he concentrated all the beneficent powers in one principle of light and good, whom he personified as Ormuzd, with a number of spirits or ministers of kindred nature in gradation under him; and all the adverse powers into one principle of darkness and evil, personified as Ahriman. Between the powers or kingdoms of light and darkness an unceasing contest went on. The direct objects of worship were the sun, light, and fire, as manifestations or abodes of the good principle or power. The Persians had neither temples nor statues, and offered their sacrifices on the tops of mountains. The priests formed a separate caste, called Magi. Many of the later Jewish notions about good and evil angels, not to be found in the earlier books of the Old Testament, were derived from contact with Zoroastrianism during the captivity in Babylon; and in particular, there is reason to believe that the conception of a prince or ruler of evil spirits is derived from that source—in other words, that Satan is a Hebraic form of Ahriman.

When the religion of Zoroaster was overthrown by Mohammedanism, some of its faithful adherents retired to the deserts in the south-east of Persia, where they are known by the Arabic name of Guebres, the same word as Kaffirs—that is, unbelievers; others took refuge in the north-west of India, about Bombay and Surat, where their descendants, called Parsees, form a numerous and wealthy section of the population. The great object of their system is purity, moral and ceremonial; the latter is carried to an absurd excess.

The most complete system of sun-worship that we have any account of is that existing in Peru, when discovered by the Spaniards (1526). An interesting account of this and other religions of South and Central America, drawn from notices left by the Spanish conquerors and missionaries, is to be found in Helps's *Spanish Conquest in America;* from which we take the liberty of giving the following, chiefly in the author's words: 'Our northern natures can hardly comprehend how the sun, and the moon, and the stars were imaged in the heart of a Peruvian, and dwelt there; how the changes in these luminaries were combined with all his feelings and his fortunes; how the dawn was hope to him; how the fierce mid-day brightness was power to him; how the declining sun was death to him; and how the new morning was a resurrection to him; nay, more, how the sun, and the moon, and the stars were his personal friends, as well as his deities; how he held communion with them, and thought that they regarded every act and word; how, in his solitude, he fondly imagined that they sympathised with him; and how, with outstretched arms, he appealed to them against their own unkindness, or against the injustice of his fellow-man.'

The Incas, as the Peruvian monarchs were called, claimed to be children of the sun, and his representatives on earth. Their government was a despotic theocracy, of which the Inca was both high-priest and king. In Cuzco, the capital, stood a splendid temple to the sun, all the implements of which were of gold. On the west end of the interior was a representation of the sun's disc and rays in solid gold, so placed that the rising sun, shining in at the open east end, fell full upon the image, and was reflected with dazzling splendour. In the place or square of the temple a great annual festival was held at the summer solstice. The multitude, assembled from all parts of the empire, and presided over by the Inca, awaited in breathless solemnity the first rays of their deity to strike the golden image in the temple, when the whole prostrated themselves in adoration. Sacrifices, similar to those of the Jews, were offered on the occasion, and bread and wine were partaken of in a manner strikingly resembling the Christian communion.

'It must not be supposed that the sun alone

* In the Edda the sun is called *fagrahvel*—fair or bright wheel; and this word *hvel*, Ang.-Sax. *hveol*, is believed to be identical with the Greek *hel(ios)*, Teut. *Saul*, Lat. *Sol*, the sun. The Scandinavian form of *hvel* is *hjul*, and this furnishes the most probable derivation of the Swedish and Danish *jul*, Eng. *Yule*—a festival connected with the sun.

absorbed the devotion of the Peruvians. There was little in nature that they did not contrive to make a deity of. The Moon, as the spouse of the Sun, the planet Venus as his page, the Pleiades, and the remarkable constellation of the Southern Cross, were minor deities. The rainbow and lightning were also worshipped as servants of the Sun; and fire, air, earth, and water were not without adoration. Then there were deities raised from the ranks of heroic men. Some of these were worshipped by the whole nation; others, the Huacas, were local divinities, and enjoyed provincial honours. These local deities were commemorated by statues. Then there were deities like the Lares and Penates of the Romans. The mummies of their forefathers, and a great stone which was always placed in a corner of a field near each country house or cottage, may be counted amongst the domestic divinities of the Peruvians. . . . The Peruvians believed in the immortality of the soul, in a resurrection, and in a system of rewards and punishments after death.'

MALIGNANT DEITIES OR SPIRITS—HUMAN SACRIFICE.

Speaking of the belief in malignant spirits, and the cruel rites with which they are sought to be propitiated, Helps remarks with equal truth and beauty: 'When we behold successful iniquity and the singular infelicity which often besets the most innocent of men; nay, further, when we see the spitefulness of nature—for so it seems unless profoundly understood. . . .—we cannot wonder at the belief in evil deities of great power and supremacy. And then what more natural than to clothe such deities with the worst attributes of bad men, and to suppose that they must be approached with servility, and appeased by suffering? Then further, what more natural than to offer to such gods the best upon earth—namely, our fellow-men?'

Even the best of heathen gods were conceived to have a spice of envy in their nature, and to be not always just in their anger; others, again, were essentially malignant, and the propitiation of these has always been an important part of polytheistic worship. Assuming, in fact, that the more benevolent powers are disposed of themselves to do him good, the pagan naturally bestows his chief solicitude on how to buy off the malignity of the others. Even under Christianity, the devil himself has had a kind of worship paid him on this principle. The practice, not uncommon at one time in Scotland, of leaving a portion of land in a parish unoccupied and untilled, under the name of the *Good-man's Acre*, was clearly meant as a kind of 'black-mail' to the arch-enemy.

The practice of sacrificing human beings, which undoubtedly prevailed in the earlier stages of all religions, was dictated by this feeling as to the malignant and sanguinary disposition of the unseen powers; and from that strongly conservative tendency inherent in man with regard to all sacred subjects, the practice was continued long after civilisation had given rise to more elevated and generous conceptions. As the humaner feelings became more and more revolted by it, an animal was substituted for the human victim, or the actual sacrifice was converted into a symbolical one. In the descriptions given of the Celtic festival of Beltane, we recognise distinctly a symbolical human sacrifice. The lot is cast by drawing pieces of cake, and the person who draws the blackened piece is considered devoted to Beal (the sun or fire-god), and must leap three times over the flames. There was undoubtedly a time when he was bound on the pile and burned.

The only record we have of this horrid rite being practised, in its rampant unmitigated form, in a community at all civilised, is in the case of the Mexicans when discovered by Cortes. Numerous victims were daily slain, and their hearts offered to the terrible deities worshipped by this otherwise refined people. When Cortes and his attendant Spaniards were conducted by Montezuma into the great temple of Mexico, they found the god of war, Huitzilopochtle, represented by a hideous image with broad face, wide mouth, and terrible eyes, and hung over with ornaments of gold and precious stones, and with the hearts of men wrought in gold. Close by were brasiers with incense, and on the brasiers were the real hearts of men who had that day been sacrificed. Tezcatlipuck, another god, had a countenance like that of a bear, with mirrors for eyes. Five human hearts, that day sacrificed, were burning before this idol. Everywhere the walls and altars were covered with blood, and the smell was that of a slaughter-house.

ANIMAL WORSHIP—FETICHISM.

That animals should be held sacred and receive worship need excite no surprise when we bear in mind the origin of polytheistic worship generally. They are manifestations of power; mysterious, too, because actuated by impulses differing from those of man; and often, by their greater acuteness of sense and more unerring instincts, seeming to possess supernatural knowledge. Besides this general ground, various animals have been associated with the gods as emblems and in other ways. But a more important source of the superstitious regard bestowed on animals, is the belief that gods, and spirits in general, often take the form of animals, either temporarily or as a permanent abode. The doctrine of the transmigration of souls is not confined to India. Kindred notions, though not perhaps reduced to system and formally enunciated, are all but universal; they seem as indigenous in the heart of Africa as on the banks of the Ganges. It was as a manifestation of the soul of Osiris—originally, like all the other Egyptian deities, a sun-god—that the sacred bull Apis, was worshipped in ancient Egypt. When the Spaniards first visited the coasts of South America, they found a ludicrous kind of animal-worship practised by the natives on the coast of Cumana (Venezuela). 'They held the toad to be, as they said, "the lord of the waters," and therefore they were very compassionate with it, and dreaded by any accident to kill a toad; though, as has been found the case with other idolaters, they were ready, in times of difficulty, to compel a favourable hearing from their pretended deities, for they were known to keep these toads with care under an earthen vessel, and to whip them with little switches when there was a scarcity of provisions and a want of rain.'—*Helps.*

The Portuguese who first visited the coasts of Western Africa characterised the religion of the natives as Feitiçao, or magic, and hence the name *fetichism* for religious beliefs in general that partake of the same character. A fetich is any object, natural or artificial, supposed to possess some magical power or virtue, either inherent or conferred upon it by some sort of consecration: stones, sticks, rudely carved figures, certain parts of plants and animals, anything may serve as a fetich. It is not supposed to work consciously and voluntarily, but blindly, and by the compulsion of certain rites; in short, after the manner of a charm. A fetich can hardly be called a god or idol; when not in use, it is thrown aside, and no regard paid to it; and when the worshipper is displeased with the effect it produces, he beats it, or breaks it in pieces. It is only as the personification becomes more complete, and the object of worship is endowed with permanent consciousness, and a will actuated by intelligible motives, that fetichism rises into idolatry or polytheism. Yet it is difficult to draw the line, and unphilosophical to represent fetichism as a peculiar species of superstition or worship.

MINOR SUPERSTITIONS.

The popular imagination has in all ages and countries peopled earth and air with a variety of supernatural beings inferior to the gods, properly so called, yet separated from them by no well-marked boundary; and a belief in these has continued more or less in Christian countries, after the knowledge of the One God had dethroned the false deities, or led to their conversion into devils. The more prominent of these creations of the fancy come under the following heads:

1. Ghosts, Lares, Manes.

That a living principle survives the death of the body is the most universal of beliefs, although the conceptions as to the nature or condition of that something are various enough. The idea of a pure spirit, as we understand it, cannot be said to have existed among pagan nations. The soul was conceived as some sort of emanation or exhalation from the body, of a thin, filmy, corporeal consistence, and might under certain circumstances be seen as it issued from the mouth—often in the shape of a bird. From a belief in the corporeal nature of departed souls, and of their requiring sustenance, have arisen a great part of the ceremonies connected with interment, and more particularly the practice of making stated offerings to the souls or shades of ancestors. Without these oblations, libations, and sacrifices, they were believed to suffer the pains of hunger and thirst, and to become more attenuated than even ghosts ought to be. Among the most sacred religious duties of the Romans was that of making offerings to the shades of departed heroes generally (*Lares*), and to those of their own ancestors in particular (*Lares familiares, Manes*). The same feeling pervades the Hindu religion. The worship of ancestors—that is, the supplying them with the necessaries of existence (luckily these necessaries are not considered to be very great in quantity or substantial in kind)—may be said to be the only religion that the followers of Confucius have.

The same belief is to be found in the heart of Africa. One of Dr Livingstone's native attendants accounted for a headache from which he was suffering by saying: 'My father is scolding me because I do not give him any of the food I eat.' Being asked where he thought his father was, he replied, 'Among the Barimo' or gods, which simply means departed spirits.

Out of this notion has sprung that intense desire of offspring—that dread of not leaving a son to perform the family rites due to the dead—which is so universal. Hence the practice of adoption. The shades or manes, though not deities, have yet power to bring good or evil fortune, according as they are pleased or displeased; and thus, where filial piety is not strong enough, there is always a motive in fear to secure them their dues.

Departed souls, when they do not immediately take up their abode in another body, are spoken of as being received into some separate abode, either in heaven or in the under world. Under certain circumstances, however, they are denied this rest, and condemned to hover about between heaven and earth. It is these 'troubled,' 'wandering' souls that appear as *ghosts*, frightening or otherwise tormenting men. Such were the *Lemures* and *Larvæ* of the Romans. For one thing, the Romans held want of burial to be a cause of unrest to the departed soul. A popular belief in Christian times was that the souls of unbaptised children were doomed to flutter about as Will o' the Wisps or *ignes fatui*. The possession of an important secret is a frequent cause of 'trouble' to a spirit. Among revengeful tribes the soul of one that has been slain cannot rest until avenged.

2. Giants, Dwarfs, and Fairies.

Giants were a race of imaginary beings, as much above man in size and brute strength as the dwarfs and fairies were below him. The giants have long since died out, like the megatheriums; the smaller beings have been more persistent, though even they threaten to become before long extinct. In the Scandinavian mythology, the giants play a conspicuous part. Thor it was that fought with and subdued them; and there is no little likeness between this northern god and the Welsh hero, Jack the Giant-killer. Solitary rocks and boulder-stones were at one time ascribed to the giants, who had either thrown them as missiles, or dropped them while carrying them to build with. The name of the Giants' Causeway implies that it is their work. A string of low gravel-hills in the island of Rügen is accounted for thus: A giant dwelling on the island, wished to make a mole over to the mainland, and, putting on an apron, filled it with earth for that purpose; but on his way to the strait, part of the earth fell here and there through a hole in the apron, and formed the hills in question. He only succeeded in carrying his mole part of the way across. The giants, though possessing great strength, were exceedingly thick-witted, and were easily overreached by men. Many parts of the legends about the giants were in the middle ages transferred to the devil. Boulders were thought to be stones thrown by the Fiend in trying to

obstruct the building of a church or other good work. Nor is the medieval devil a whit more acute than the heathen giants were; in the numerous bargains he makes with men about building barns, bridges, and churches, he is uniformly done out of his hire by some quibble or trick.

Dwarfs and Fairies.—In the Scandinavian mythology there were two races of alfr or elves—the light elves, bright, beautiful, and friendly to men; the dark elves, misshapen, malicious, and dwelling under the earth. The latter became the dark or gray dwarfs that work in mines. (The word *elf*, we may remark, signifies 'white,' and is connected with the Latin *albus*.) The Celtic nations had a belief in similar beings, and the whole have become mixed in inextricable confusion. Their character has also been affected by the notions that came to be prevalent regarding the devil and good and evil angels. Beings of this class are of mixed disposition; they have all a delight in playing tricks on mankind, but some are more spiteful than others. Many of them enter into friendly and confidential relations with men, forming a class of domestic spirits, acting often as drudges (*brownies*, &c.). To those who keep in favour with them, they are all ready to grant aid, especially in skilled operations, such as smith-work.

The fairies proper differ from the other dwarfish beings in the beauty of their forms, being represented as beautiful miniatures of human beings. They represent the light elves of northern mythology. In Scotland, and other countries where the Celtic traditions predominated, the fairies retained in part the original and better features of their character, and were usually called the Good Neighbours, or the Men of Peace; but even there their character was deteriorated by a considerable leaven of dwarfish malignancy. This evil part of their nature caused much annoyance to mankind, and more especially their propensity to the kidnapping of human beings. Unchristened infants were chiefly liable to this calamity, but sometimes adult men and women were also carried off. The reason for these abductions is to be found, according to the authorities on this subject, in the necessity which the fairies lay under of paying 'kane,' as it was called, to the master-fiend; or, in other words, of yielding up one of their number septennially into his hands by way of tribute. They greatly preferred on such occasions to make a scapegoat of some member of the human family.

The necessity for this kidnapping shews the fairies to have been *family* people. They are always represented as living, like mankind, in large societies, and under a monarchical form of government. The Salique law seems to have had no countenance among them; for we more often hear of fairy queens than of fairy kings, though both are frequently spoken of. The Land of Faërie was situated somewhere under ground, and there the royal fairies held their court. In their palaces, all was beauty and splendour. Their pageants and processions were far more magnificent than any that Eastern sovereigns could get up, or poets devise. They rode upon milk-white steeds. Their dresses, of brilliant green, were rich beyond conception; and when they mingled in the dance, or moved in procession among the shady groves, or over the verdant lawns of earth, they were entertained with delicious music, such as mortal lips or hands never could emit or produce. At the same time, most of the legendary tales on the subject represent these splendours as shadowy and unsubstantial. When the eye of a seer, or any one gifted with supernatural powers, was turned upon the fairy pageantries or banquets, the illusion vanished. Their seeming treasures of gold and silver became slate-stones, their stately halls became damp caverns, and they themselves, from being miniature models of human beauty, became personifications of fantastic ugliness. In short, the Fairy Eden was a day-dream—a thing of show without substance.

This is the general account given of the fairy state, but few of the legends on the subject agree on all points. From a very early period, however, every fairy annalist concurred in giving to the king and queen of the fairies the names of Oberon and Titania. Oberon is the Elb-rich, or Elf-king, of the Germans, which was changed into Auberon or Oberon by the old French romancers, who represented him as a tiny creature of surpassing loveliness, with a crown of jewels on his head, and a horn in his hand that set all who heard it a-dancing.

It was the belief that unchristened children were peculiarly liable to be carried off by the fairies, who sometimes left little changelings of their own blood in place of the infants of mortal kind. Various charms were used in Scotland for the restoration of stolen children. The most efficacious was believed to be the *roasting* of the suppositious child upon live embers, when it was understood that the false infant would disappear, and the true one be left in its place. The possession of what are called *toad-stones* was also held to be an efficient preservative against the abduction of children by the fairies.

In some instances, fairies came to be mixed up with witchcraft. Some of the poor creatures arraigned in Scotland in past times for witchcraft admitted having had correspondence with them. There can be little doubt that these wretched beings, whom the *torture* forced into the confession of *some* kind or other of supernatural traffic, were induced to admit an association with fairies, in the hope that this would be looked upon as less sinful than a league with the enemy of mankind. The trials of Bessie Dunlop and Alison Pearson, in the years 1576 and 1588, illustrate this statement. Bessie Dunlop avowed that her familiar was one Thom Reid, the ghost of a soldier slain at Pinkie in 1547, and who, after his death, seems to have become an inmate of Elf-land. She related that this Thom Reid, who appeared frequently to her in the likeness of an elderly man, gray-coated and gray-bearded, wished her to go with him to the fairy country, and gave her herbs to cure various diseases. He even once brought to her the queen of the fairies, who, to the confusion of poetry, was a fat woman, fond of ale, and, in short, most unlike the Titania of romance. Alison Pearson also admitted her familiarity with the fairies, from whom she frequently received herbs for the cure of disease. It is remarkable that Patrick Adamson, an able scholar and divine, who was created archbishop of St Andrews by James VI., actually took the medicines prescribed by this poor woman, in the hope that they would

transfer an illness with which he was seized to the body of one of his horses. This feat, it was believed, was accomplished by the supernatural prescription. The unfortunate women who confessed to these things were deceived in the expectation which led to the act: they could not so save themselves; they were both convicted, and perished at the stake.

MAGIC.

Medicine.

Magic is a general name for wonderful effects produced in some mysterious way. The name is derived from the Magi, who were the priest-caste among the ancient Medes and Persians, corresponding to the Levites among the Israelites. The Magi were great astrologers and wonder-workers, and all such arts have since been designated as magic. Medicine, in its early form, is intimately allied to magic. It would soon be discovered by accident that certain plants produced powerful effects, both good and bad, upon the bodies of men and animals; and the reverence arising from their real virtues would lead to ascribing to them all manner of imaginary ones. The laws of nature being little known, one thing was not more incredible than another; and effects were assigned to causes in the most arbitrary and accidental way. The Rosicrucian physicians treated a case of wounding by applying the salve to the weapon instead of to the wound itself; and this may be taken as the type of magical, as contrasted with rational medicine. In modern times, drugs are mostly drawn from the mineral and vegetable kingdoms; but while the healing art was in the mystic stage, animal substances were most esteemed. If the juice of a plant could affect the living body, how much more must the life-blood of another animal! And the rarer the kind of blood, so much the rarer the virtue. The blood of an innocent child, or of a virgin, was believed to cure the leprosy; that of an executed criminal, the falling sickness. The hearts of animals, as being the seat of life, were held to be potent drugs. The fat of a hog had been found by experience to benefit a sore; what virtue, then, must there be in human fat, with the solemn mysteries of the grave about it!

In early stages of society, women are the doctors; while the men fight and hunt, the women gather herbs and decoct salves for their wounds; and the art would naturally become a sort of profession in the hands of the older women who had a reputation for superior skill of that kind. Mostly a blind groping—a mystery to themselves as well as others—their operations were looked upon with awe. The 'wise woman' with her kettle, cooking her mysterious broth, adding ingredient after ingredient (for the more, the rarer, the horribler they were, would not the compound be the more efficacious?), inspired not only hope but fear; for the art might be, and doubtless was, used to hurt as well as to heal. Roman matrons were often accused and convicted of poisoning by their decoctions; and during seasons of pestilence, these female druggists were persecuted with indiscriminate fury, as were witches afterwards in Europe. So much was the notion of poison uppermost in the Roman mind respecting them, that *venefica*, literally 'a poison-maker,' was the general name for a preparer of magic medicines, an enchantress or sorceress—the corresponding character to our witch.

The word *witch*, Ang.-Sax. *wicce*, is from the Gothic root *veihan* (allied to the Latin *facio*), which means simply 'to do.' So important are all acts of a religious nature, that in most languages the word signifying 'to do' means also, without any addition, 'to perform sacrifice or religious rites;' and of this nature the brewings and incantations of the 'wise women' were considered to be. Shakspeare's 'weird sisters' use *I'll do, I'll do, I'll do*, in this significant way. The heathen *wicce*, though looked upon with awe, had by no means the unmixed malevolent nature ascribed to her successor, the witch, in Christian times, whom the accusation of heresy and of being in compact with the devil converted into a sort of incarnate demon.

The operation of magical medicines was not, as is the case with those of the modern pharmacopœia, confined to physical effects on living bodies to which they were applied; associated with incantations and other ceremonies, as they always were, they could be made to produce almost any desired effect—raise or lay storms; fertilise a field or blast it; kill or cure a man absent as well as present; and give the power of predicting future events. How a belief in imaginary virtues of things may grow out of the experience of their real virtues, is indicated by Dr Livingstone, when speaking of the belief in rain-making among the tribes in the heart of Southern Africa. The African priest and the medicine-man is one and the same, and his chief function is to make the clouds give out rain. 'The preparations for this purpose are various—charcoal made of burned bats; internal parts of animals, as lions' hearts and hairy calculi from the bowels of old cows; serpents' skins and vertebræ; and every kind of tuber, bulb, root, and plant to be found in the country. 'Athough you disbelieve their efficacy in charming the clouds to pour out their refreshing treasures, yet, conscious that civility is useful everywhere, you kindly state that you think they are mistaken as to their power; the rain-doctor selects a particular bulbous root, pounds it, and administers a cold infusion to a sheep, which in five minutes afterwards expires in convulsions. Part of the same bulb is converted into smoke, and ascends towards the sky; rain follows in a day or two. The inference is obvious.' The religion of this part of Africa may be characterised as medicine-worship.

Incantations.

A yet more powerful source of magical power lies in set forms of speech—solemnly composed words. As all early compositions were in verse, poetry and song became associated with magic. *Incantation*, *enchant*, are derived from a Latin root, meaning simply 'to sing;' and *charm* is only a disguised form of the Latin *carmen*, a song. A *spell* is merely something said, a tale, and hence a form of words used as a charm. *Conjuring*, *exorcising*, *blessing*, and *cursing*, all rested on a belief in the mysterious power of words solemnly conceived and passionately uttered.

There is in the human voice, especially in its more lofty utterances, an actual power of a very wonderful kind to stir men's hearts. When to

this we add that poetic utterance is a special and exceptional gift; that the language of primitive nations is crude and unmanageable, the words being as difficult to weld together as pieces of cast iron; that it is only when the poet's mind has risen to unusual heat that he can fuse them into those rythmical sequences that please the ear and hang together in the memory; that, in short, his art is a mystery to himself—an inspiration; we need not wonder at the feeling with which everything in the form of verse or metre was viewed.

The singing or saying of such compositions, which could thus stir the blood of the hearers, they knew not how, what other effects might it not produce? Accordingly, there is no end to the power ascribed to incantations, especially when accompanied, as they generally were, with the concocting of drugs and other magical rites. They could heal or kill. If they could not raise from the dead, they could make the dead speak, or 'call up spirits from the vasty deep,' in order to unveil the future. They could extinguish fire; darken the sun or moon; make fetters burst, a door or a mountain fly open; blunt a sword; make a limb powerless; destroy a crop, or charm it away into another's barn.

The prayers of heathens, whether for blessings or for curses, partake largely of the nature of magical incantations. They are not supposed to act as petitions addressed to a free agent, but by an inherent force which even the gods cannot resist. This notion is very prominent in Hinduism; but it more or less disguisedly pervades all superstitious worship. 'They think they shall be heard for their much speaking.' Even in the Buddhistic religion, which dispenses with a god, prayers are still used—a striking evidence of the magic power which is supposed to lie in solemn words.

For almost every occasion or operation of life, there were appropriate formulæ to be repeated in order to secure success; and many of these, with that reverence for antiquity and conservative tendency which always characterise superstition, continue to live in popular memory, although often the words are so old as to be unintelligible. The Romans, in the days of Cato, used incantations, for curing dislocations, full of words the meaning of which had been lost. A form of words used to this day in Shetland for healing a sprain can be traced back to the tenth century. In its earliest form, as found in an old German manuscript, it narrates how Woden and Baldur riding out to hunt, Baldur's horse dislocated its foot, and how Woden, using charmed words, set bone to bone, &c. and so healed the foot. The repetition of this rhymed narration acted as a charm to heal other lamed horses. The modern version of this tradition, as current in Norway, makes the accident happen to the horse of *Jesus*, and Jesus himself perform the cure. In Shetland, also, it is the Lord, meaning Jesus, that is substituted for Woden; and the formula is applied to the healing of persons' limbs as well as those of horses.

Divination,

or fortune-telling, has always been one of the chief objects of the magical art. A *sorcerer* was originally one who read the future by means of lots (Middle-age Lat. *sortiarius*, from *sors*, *sortis*, a lot). It was a maxim with the heathen nations of antiquity, that if there are gods, they care for men; and if they care for men, they must send them signs of their will; and this has been a universal sentiment in all ages and countries. The modes of becoming acquainted with the will of the gods are innumerable. Astrology was a favourite method among the ancient Chaldæans, as well as in the middle ages. Inspired prophets or seers, and oracles, were characteristic of the Greeks. Perhaps one of the most universal forms of divination is that by birds. The art of reading the signs given by birds, called *auguries* and *auspices* (both from *avis*, a bird), was reduced to a system by the Romans, and was considered a national concern of the highest moment. Nothing of importance, public or private, was entered upon without taking the auspices; and if they were unfavourable, the undertaking was deferred. In the case of some birds, the sign was taken from the voice, in that of others, from their flight; and while it was a good omen when a raven, for instance, appeared on the right, the crow, to be favourable, must be seen on the left. Every sound and motion of each bird had a different meaning, according to the varying circumstances of time, and so forth.

Chiromancy, or *palmistry*—that is, the art of reading the destiny from the lineaments of the hand—is another form of divination that has been reduced to regular system. In the middle ages, along with astrology, it occupied the attention of Cardan, Paracelsus, and other great men, who elaborated it into the semblance of a science; it is now the exclusive property of the gipsies, who still find believers in their art among maid-servants, and occasionally, it is said, among their mistresses.

An extensive set of omens are taken from observing what first happens to one, or what animal or person one meets first in the morning, or at the commencement of an undertaking—the *first-foot*, as it is called. To stumble has been universally held to presage misfortune. Some semblance of a reason might be found for this belief; but in most cases the interpretation seems altogether abitrary. The dread of a hare crossing the path seems to be widely prevalent; while to see a wolf is a good omen. This feeling is probably a remnant of warlike times, when the timid hare suggested thoughts of cowardice and flight; while the bold wolf, sacred to Odin, was emblematic of victory. The character of the hare for being unlucky is also connected with the deep-rooted belief that witches are in the habit of transforming themselves into hares. That to meet an old woman is unlucky, is another very general belief; arising, without doubt, from the same causes that lead to their being considered witches. In some places, women in general are unlucky as first-foot, with the singular exception of women of bad reputation. This belief prevailed as far back as the age of Chrysostom. Priests, too, are ominous of evil. If hunters of old met a priest or friar, they coupled up their hounds, and went home in despair of any further sport that day. This superstition seems to have died out, except in the case of sailors, who still consider clergy a 'kittle cargo,' as a Scotch skipper expressed it, and anticipate a storm or mischance when they have a black-coat on board. This seems as old as the days of the prophet Jonah.

The observation of *lucky and unlucky days* was once an important matter, and was often the turning-point of great events. It is now almost confined to the one subject of marriage. In fixing the wedding-day, May among months, and Friday among days, are avoided by high and low. The explanation offered is, that Friday is unlucky because it is the day of the Crucifixion, and that May is unlucky only by contrast with the following month, which was, among the Romans, sacred to Juno, the foundress of marriage, and the giver of fertility to women.

Perhaps half the superstitious beliefs that yet survive among civilised and Christian communities, group themselves round the subject of love and marriage—of such intense interest to all, yet so mysterious in its origin, and problematical in its issue. The liking or passion for one individual rather than any other, is so unaccountable, that the god of love has been fabled blind; it is of the nature of fascination, magic, spell. And then, whether happiness or the reverse shall be the result, seems beyond the reach of ordinary calculation. All is apparently given over to mystery, chance, fortune, and any circumstance may, for what we know, influence or indicate what fortune's wheel shall bring round. Hence the innumerable ways of prognosticating which of two or more persons shall be first married, who or what manner of person shall be the future husband or wife, the number of children, &c. It is generally at particular seasons, as at the eve of St Agnes and Hallowe'en, that the veil of the future may thus be lifted.

Dreams have in all ages and countries been believed in as indications of the future; and of all forms of superstition this is perhaps the most excusable. Whatever is mysterious as to its cause, and beyond the control of the will, appears as supernatural; and what more so than dreams! The thoughts in dreams, too, arise out of the past and present circumstances of the dreamer, and therefore are not altogether without connection with his future destiny, as most other omens are.

Sneezing partakes of the supernatural, for the same reason as dreams do; it is sudden, unaccountable, uncontrollable, and therefore ominous. The person is considered as possessed, for the time, and a form of exorcism is used. A nurse would not think she had done her duty if, when her charge sneezes, she did not say: 'Bless the child!' just as the Greeks more than two thousand years ago said: 'Zeus protect thee!'

An important exercise of the art of divination was to determine the innocence or guilt of parties accused. The casting of *lots* was much used for this purpose. Somewhat different was the trial by *ordeal* (Ang.-Sax. *ordæl;* Ger. *urtheil*, judgment), or *Judgment of God*, as it was called, in which God was supposed to interfere by a miracle; as when, to prove his innocence, the accused had to handle red-hot iron without injury; or when he was made to swallow a piece of consecrated bread in the belief that it would choke him or poison him if guilty. The water-ordeal was much used in the trials of witchcraft in the middle ages. The accused was cast, bound hand and foot, into water; when, if she sank, she was innocent, but was nevertheless most likely drowned; if she floated, she was held guilty, and was burned. It is curious to find the same crime tried in much the same way in the heart of Africa at the present day. 'When a man,' says Dr Livingstone, 'suspects that any of his wives have bewitched him, he sends for the witch-doctor, and all the wives go forth into the field, and remain fasting till that person has made an infusion of the plant (called "goho"). They all drink it, each one holding up her hand to heaven in attestation of her innocency. Those who vomit it are considered innocent, while those whom it purges are pronounced guilty, and put to death by burning. The innocent return to their homes, and slaughter a cock as a thank-offering to their guardian spirits. The practice of ordeal is common among all the negro nations north of the Zambesi.' The women themselves eagerly desire the test on the slightest provocation; each is conscious of her own innocence, and has the fullest faith in the *muavi* (the ordeal) clearing all but the guilty.

Such are a few of the more important heads under which methods of divination might be brought. To notice the isolated points of this superstition would be endless. One general remark it is important to make: an omen is not a mere sign of what is destined to be; it is conceived as causing, in some mysterious way, the event it forebodes; and the consequence, it is thought, may be prevented by some counteracting charm. Thus the spilling of salt not only forebodes strife, but strife is conceived as the consequence of the spilling of the salt, and may be hindered by taking up the spilled salt and throwing it over the left shoulder.

Superstitions of the magic kind have still a deep hold in the minds of the ignorant classes of the community, as is often strikingly brought to light in the courts of justice. Among the better educated, such observances as are kept up are in general treated half-playfully, but often, also, with a good deal of earnestness at bottom. Even in the most enlightened circles, it still causes no little dismay to some to find themselves at table in a party of thirteen!

WITCHCRAFT

is merely the form that the belief in the arts of magic assumed under the action of certain notions introduced by Christianity. The powers supposed to be possessed by the witches, and the rites and incantations by which they acquired those powers, were substantially the same as belonged to the Venefica of the ancient Romans, and the Vala or Wise Woman of the Teutonic pagans. But when, along with the knowledge of the one true God, the idea of a purely wicked spirit, the enemy of God and man, was introduced, it was natural that all supernatural powers not proceeding directly from the true God should be ascribed to him (see page 441). This gave an entirely new aspect to such arts: they became associated with heresy; those who practised them must be in compact with the devil, and have renounced God and the true faith. Previously, if a witch was punished, it was because she had been guilty of poisoning, or at least was believed to have poisoned or wrought some other actual mischief. But the practice of witchcraft in itself was not looked upon as a crime; on the contrary, it was on the whole a beneficial art, being in fact the only form of the healing art known, and in part also the religion of domestic

life. Now, however, it was only the power to work evil; and merely to be a witch was in itself a sin and crime that filled the pious mind with horror. This feeling, zealously fostered, first by the Catholic clergy, and then no less by the Protestant, rose to a frenzy that for four centuries filled Europe with the most shocking bloodshed and cruelty.

We must here notice, however, that the demon or master-fiend of the witchcraft legends was a very different being from that great fallen spirit, held, in a graver view of things, so deeply to influence the best interests of humanity. As this superstition gained force in the Christian world, which it did by slow and successive steps through the whole of the middle ages, or from the fifth century till about the fifteenth, the devil gradually lost many of the former features of his character; or, rather, a different being was substituted for him, combining the characteristics of the Scandinavian Loki with those of a satyr of the heathen mythology—a personage equally wicked and malicious, as the sterner spirit of evil, but rendered ludicrous by a propensity for petty trickery, and by such personal endowments as a pair of horns, a cow's tail, and cloven feet. We are told, it is true, that he could at will assume any specious disguise that suited him, but the eye of the initiated observer could readily detect the 'cloven foot'—or, in other words, penetrate his true character. Such as he was, he played an important part in the annals of modern witchcraft, which was supposed to rest entirely on the direct and personal agency of himself and the imps commissioned by him. Nor was this supposition confined to the illiterate, or to persons of peculiarly credulous temperament. Authors, distinguished for sense and talent, record with great seriousness that the devil once delivered a course of lectures on magic at Salamanca, habited in a professor's gown and wig; and that at another time he took up house in Milan, lived there in great style, and assumed, rather imprudently one would say, the suspicious, yet appropriate title of the 'Duke of Mammon.'

The powers ascribed to this debased demon were exceedingly great. The general belief was, that through his agency storms at sea and land could at all seasons be raised; that crops could be blighted and cattle injured; that bodily illnesses could be inflicted on any person who was the object of secret malice; that the dead could be raised to life; that witches could ride through the air on broomsticks, and transform themselves into the shapes of cats, hares, or other animals, at pleasure.

The superstition seems to have approached its height about the end of the fifteenth century. In his bull of 1484, Pope Innocent charged inquisitors and others to discover and destroy all such as were guilty of witchcraft. This commission was put into the hands of a wretch called Sprenger, with directions that it should be put in force to its fullest extent. Immediately there followed a regular form of process and trial for suspected witches, entitled *Malleus Maleficarum*, or a Hammer for Witches, upon which all judges were called scrupulously to act. The edict of 1484 was subsequently enforced by a bull of Alexander VI. in 1494, of Leo X. in 1521, and of Adrian VI. in 1522—each adding strength to its predecessor, and the whole serving to increase the agitation of the public mind upon the subject. The results were dreadful. A panic fear of witchcraft took possession of society. Every one was at the mercy of his neighbour. If any one felt an unaccountable illness, or a peculiar pain in any part of his body, or suffered any misfortune in his family or affairs, or if a storm arose, and committed any damage by sea or land, or if any cattle died suddenly, or, in short, if any event, circumstance, or thing occurred out of the ordinary routine of daily experience, the cause of it was witchcraft. To be accused, was to be doomed; for it rarely happened that proof was wanting, or that condemnation was not followed by execution. Armed with the Malleus Maleficarum, the judge had no difficulty in finding reasons for sending the most innocent to the stake. If the accused did not at once confess, they were ordered to be shaved and closely examined for the discovery of devil's marks; it being a tenet in the delusion that the devil, on inaugurating any witch, impressed certain marks on her person; and if any strange mark was discovered, there remained no longer any doubt of the party's guilt. Failing this kind of evidence, torture was applied, and this seldom failed to extort the desired confession from the unhappy victim. A few extracts from the work of Dr Hutchinson will shew the extent of these miserable proceedings:

'1485 A.D.—Cumanas, an Inquisitor, burned forty-one poor women for witches, in the county of Burlia, in one year. He caused them to be shaven first, that they may be searched for marks. He continued the prosecutions in the year following, and many fled out of the country.

'1488 A.D.—A violent tempest of thunder and lightning in Constance destroyed the corn for four leagues round. The people accused one Anne Mindelin, and one Agnes, for being the cause of it. They confessed, and were burned.

'About this time, H. Institor says, one of the inquisitors came to a certain town that was almost desolate with plague and famine. The report went that a certain woman, buried not long before, was eating up her winding-sheet, and that the plague would not cease till she had made an end of it. This matter being taken into consideration, Scultetus, with the chief-magistrate of the city, opened the grave, and found that she had indeed swallowed and devoured one-half of her winding-sheet. Scultetus, moved with horror at the thing, drew out his sword and cut off her head, and threw it into a ditch, and immediately the plague ceased! and the inquisition sitting upon the case, it was found that she had long been a reputed witch.

'1524 A.D.—About this time a thousand were burned in one year, in the diocese of Como, and a hundred per annum for several years together.'

From other authorities, it is learned that the devastation was as great in Spain, France, and Northern Germany, as it was in the Italian states. About the year 1515, five hundred witches were burned in Geneva in three months, and in France many thousands. An able writer in the *Foreign Quarterly Review* (No. XI. 1830), sums up the following particulars respecting the executions for witchcraft in some of the German states:

'In Germany, to which indeed the bull of Innocent bore particular reference, this plague

raged to a degree almost inconceivable. Bainberg, Paderborn, Würzburg, and Trèves were its chief seats, though for a century and a half after the introduction of the trials under the commission, no quarter of that great empire was free from its baneful influence. A catalogue of the executions at Würzburg for the period from 1627 to February 1629, about two years and two months, is printed by Hauber in the conclusion of his third volume of the *Acta et Scripta Magica*. It is regularly divided into twenty-nine burnings, and contains the names of 157 persons, Hauber stating at the same time that the catalogue is not complete. It is impossible to peruse this list without shuddering with horror. The greater part of this catalogue consists of old women or foreign travellers, seized, as it would appear, as foreigners were at Paris during the days of Marat and Robespierre: it contains children of twelve, eleven, ten, and nine years of age; fourteen vicars of the cathedral; two boys of noble families, the two little sons of the senator Stolzenburg; a stranger boy; a blind girl; Gobel Babelin, the handsomest girl in Würzburg, &c. And yet, frightful as this list of 157 persons executed in the short space of two years appears, the number is not—taking the population of Würzburg into account—so great as the Lindheim process from 1660 to 1664; for in that small district, consisting at the very utmost of 600 inhabitants, thirty persons were condemned and put to death, making a twentieth part of the whole population consumed in four years.

'If Bainberg, Paderborn, Trèves, and the other Catholic bishoprics, whose zeal was not less ardent, furnished an equal contingent, and if the Protestants, as we know, actually vied with them in the extent to which these cruelties were carried, the number of victims from the date of Innocent's bull to the final extinction of these prosecutions, must considerably exceed 100,000 in Germany.'

Witchcraft in Scotland.

The mania respecting witchcraft, which sprang up into vigour throughout Southern Europe in consequence of the edicts of Innocent and Leo, spread in time to Scotland, and acquired strong possession of the public mind during the reign of Queen Mary. At that period an act was passed by the Scottish parliament for the suppression and punishment of witchcraft; but this only served, as the papal bulls had done, to confirm the people in their maniacal credulity, and to countenance and propagate the general delusion. In terms of these ill-judged statutes, great numbers of persons, male as well as female, were charged with having intercourse with the devil, convicted, and burned on the Castle-hill of Edinburgh and elsewhere. This continued during the earlier part of the reign of James VI., whose mind, unfortunately for the more aged of the female part of his subjects, was deeply impressed with the flagrant nature of the crime of witchcraft. In 1590, James, it is well known, made a voyage to Denmark to see, marry, and conduct home in person his appointed bride, the Princess Anne. Soon after his arrival, a tremendous witch-conspiracy against the happy conclusion of his homeward voyage was discovered, in which the principal agents appeared to be persons considerably above the vulgar. One was Mrs Agnes Sampson, commonly called the *Wise Wife of Keith* (Keith being a village in East Lothian), who is described as 'grave, matron-like, and settled in her answers.' On this occasion, the king was induced by his peculiar tastes to engage personally in the business of judicial investigation. He had all the accused persons brought before himself for examination, and even superintended the tortures applied to them to induce confession. The statements made by these poor wretches form a singular tissue of the ludicrous and horrible in intimate union.

'The said Agnis Sampson was after brought again before the king's majestie and his council, and being examined of the meetings and detestable dealings of those witches, she confessed that upon the night of All-hallow-even, she was accompanied, as well with the persons aforesaid, as also with a great many other witches, to the number of two hundred, and that all they together went to sea, each one in a riddle, or sieve, and went in the same very substantially, with flagons of wine, making merrie, and drinking by the way in the same riddles or sieves, to the kirk of North Berwick in Lothian; and that after they had landed, took hands on the land, and danced this reil, or short daunce, singing all with one voice:

> Cummer, goe ye before, cummer, goe ye;
> Gif ye will not goe before, cummer, let me.

At which she confessed that Geillis Duncan did goe before them, playing this reil or daunce upon a small trump, called a Jew's-harp, until they entered into the kirk of North Berwick. These made the king in a wonderful admiration, and he sent for the said Geillis Duncan, who upon the like trump did play the said daunce before the king's majestie, who, in respect of the strangeness of these matters, took great delight to be present at their examinations.'

In the sequel of Agnes Sampson's confession, we find some special reasons for the king's passionate liking for these exhibitions, in addition to the mere love of the marvellous. The witches pandered to his vanity on all occasions, probably in the vain hope of mitigating their own doom. Agnes Sampson declared that one great object with Satan and his agents was to destroy the king; that they had held the great North Berwick convention for no other end; and that they had endeavoured to effect their aim on many occasions, and particularly by raising a storm at sea when James came across from Denmark. 'The witches demanded of the divell why he did beare such hatred to the king; who answered, by reason the king is the greatest enemie hee hath in the world.' Such a eulogy, from such a quarter, could not but pamper the conceit of 'the Scottish Solomon.'

In her confession, Agnes Sampson implicated one Dr Fian, otherwise called John Cunningham, master of the school at Saltpans in Lothian, a man whose story may be noticed at some length, as one of the most curious and instructive in the whole annals of Scottish witchcraft.

Mrs Sampson deposed that Dr Fian was always a prominent person at the witch-meetings, and Geillis Duncan, the marvellous trump-player, confirmed this assertion. Whether made through

heedlessness or malice, these averments decided Fian's fate. He was seized, and after being 'used with the *accustomed paine* provided for those offences inflicted upon the rest, first, by *thrawing of his head with a rope*, whereat he would confess nothing;' and, secondly, being urged 'by fair meanes to confesse his follies,' which had as little effect; 'lastly, hee was put to the most severe and cruell paine in the world, called the bootes, when, after he had received three strokes, being inquired if he would confesse his actes and wicked life, his tongue would not serve him to speake; in respect whereof, the rest of the witches willed to search his tongue, under which was founde two pinnes thrust up into the heade; whereupon the witches did say, now is the charme stinted, and shewed that those charmed pins were the cause he could not confesse anything; then was he immediately released of the bootes, brought before the king, and his confession was taken.' Appalled by the cruel tortures he had undergone, Fian seems now only to have thought how he could best get up a story that should bring him to a speedy death. He admitted himself to be the devil's 'register,' or clerk, who took the oaths from all witches at their initiation, and avowed his having bewitched various persons. In proof of the latter statement he instanced the case of a gentleman near Saltpans, whom he had so practised upon, he said, that the victim fell into fits at intervals. This person, who seems to have been either a lunatic or afflicted with St Vitus's dance, was sent for, and 'being in his majestie's chamber, suddenly hee gave a great scritch, and fell into madnesse, sometimes bending himself, and sometimes capring so directly up, that his heade did touch the seeling of the chamber, to the great admiration of his majestie.' On these and other accounts, Dr Fian was sent to prison, but he contrived soon after to escape from it. 'By means of a hot and harde pursuite,' he was retaken, and brought before the king, to be examined anew. But the unfortunate man had had time to think, and like Cranmer under somewhat similar circumstances, resolved to retract the admissions which the weakness of the body had drawn from him, and to suffer anything rather than renew them. He boldly told this to the king; and James, whom these records make us regard with equal contempt and indignation, ordered the unfortunate man to be subjected to the following most horrible tortures: 'His nailes upon all his fingers were riven and pulled off with an instrument called in Scottish a *turkas*, which in England are called a payre of pincers, and under everie nayle there was thrust in two needles over, even up to the heades; at all which tormentes, notwithstanding, the doctor never shrunk a whit, neither would he then confesse it the sooner for all the tortures inflicted on him. Then was hee, with all convenient speed, by commandement, convaied again to the torment of the bootes, wherein he continued a long time, and did abide so many blowes in them, that his legges were crusht and beaten together as small as might bee, whereby they were made unserviceable for ever.' Notwithstanding all this, such was the strength of mind of the victim, or, as King James termed it, 'so deeply had the devil entered into his heart,' that he still denied all, and resolutely declared that 'all he had done and said before was only done and said for fear of the paynes which he had endured.' As, according to this fashion of justice, to confess or not to confess was quite the same thing, the poor schoolmaster of Saltpans was soon afterwards strangled, and then burned, on the Castle-hill of Edinburgh (January 1591).

Before the close of James's reign, many men of sense began to weary of the torturings and cremations that took place almost *every day*, in town or country, and had done so for a period of thirty years (betwixt 1590 and 1620). Advocates now came forward to defend the accused, and in their pleadings ventured even to arraign some of the received axioms of *Dæmonologie* laid down by the king himself in a book bearing that name. The removal of James to England moderated, but did not altogether stop, the witch-prosecutions. After his death, they slackened more considerably.

As the spirit of Puritanism gained strength, however, which it gradually did during the latter part of the reign of Charles I., the partially cleared horizon became again overcast, and again was this owing to ill-judged edicts, which, by indicating the belief of the great and the educated in witchcraft, had the natural effect of reviving the frenzy among the flexible populace. The General Assembly was the body in fault on this occasion, and from this time forward the clergy were the great witch-hunters in Scotland. The Assembly passed condemnatory acts in 1640, 1643, 1644, 1645, and 1649, and with every successive act the cases and convictions increased, with even a deeper degree of attendant horrors than at any previous time. 'The old impossible and abominable fancies,' says the review formerly quoted, 'of the *Malleus* were revived. About thirty trials appear on the record between 1649 and the Restoration, only one of which appears to have terminated in an acquittal; while at a single circuit held at Glasgow, Stirling, and Ayr in 1659, seventeen persons were convicted and burned for this crime.'

It must be remembered, however, that the phrase 'on the record' alludes only to justiciary trials, which formed but a small proportion of the cases really tried. The justiciary lists take no note of the commissions perpetually given by the privy-council to resident gentlemen and clergymen to try and burn witches in their respective districts. These commissions executed people over the whole country in multitudes. Wodrow, Lamont, Mercer, Whitelocke, and other chroniclers, prove this but too satisfactorily.

The popular frenzy seems to have exhausted itself by its own virulence in 1661–62; for an interval of six years subsequently elapsed without a single justiciary trial for the crime of witchcraft, and one fellow was actually whipped for charging some person with it. After this period, the dying embers of the delusion only burst out on occasions, here and there, into a momentary flame. It is curious that as something like direct evidence became necessary for condemnation, that evidence presented itself, and in the shape of possessed or enchanted young persons, who were brought into court to play off their tricks. The most striking case of this nature was that of Christian Shaw, a girl about eleven years old, and the daughter of Mr Shaw of Bargarran in Renfrewshire. This wretched girl, who seems to have been an accom-

plished hypocrite, young as she was, quarrelled with a maid-servant, and to be revenged, fell into convulsions, saw spirits, and, in short, feigned herself bewitched. To sustain her story, she accused one person after another, till not less than twenty were implicated, some of them children of the ages of twelve and fourteen! They were tried on the evidence of the girl, and five human beings perished through her malicious impostures.

The last justiciary trial for witchcraft in Scotland was in the case of Elspeth Rule, who was convicted in 1708, and—banished. The last regular execution for the crime is said to have taken place at Dornoch in 1722, when an old woman was condemned by David Ross, sheriff of Caithness. The number of its victims, for reasons previously stated, it would be difficult accurately to compute; but the black scroll would include, according to those who have most attentively inquired into the subject, upwards of FOUR THOUSAND persons!

Witchcraft in England.

Witchcraft, though always penal, became the subject of the express statutes of Henry VIII. 1541, Elizabeth, 1562, and also of James I. This latter monarch, who, as we have seen, was a great witch-fancier while in Scotland, brought with him to England a keen sense of the duty of finding out and punishing all sorts of diablery. The act passed in the first year of his reign in England defines the crime with a degree of minuteness worthy of the adept from whose pen it undoubtedly proceeded. 'Any one that shall use, practise, or exercise any invocation of any evil or wicked spirit, or consult or covenant with, entertain or employ, feed or reward any evil or wicked spirit, *to or for* ANY *purpose;* or take up any dead man, &c. &c. &c.; such offenders, duly and lawfully convicted and attainted, shall suffer death.' We have here witchcraft first distinctly made, of itself, a *capital* crime. Many years had not passed away after the passing of this statute, ere the delusion, which had heretofore committed but occasional and local mischief, became an epidemical frenzy, devastating every corner of England. Leaving out of sight single executions, we find such wholesale murders as the following in abundance on the record. In 1612, twelve persons were condemned at once at Lancaster, and many more in 1613, when the whole kingdom rang with the fame of the 'Lancashire witches;' in 1622, six at York; in 1634, seventeen in Lancashire; in 1644, sixteen at Yarmouth; in 1645, fifteen at Chelmsford; and in 1645 and 1646, sixty persons perished in Suffolk, and nearly an equal number at the same time in Huntingdon. These are but a few selected cases. The tests and tortures for the discovery of witches, sanctioned by the law, were administered by a class of wretches, who, with one Matthew Hopkins at their head, sprung up in England in the middle of the seventeenth century, and took the professional name of *witch-finders.* The practices of the monster Hopkins, who, with his assistants, moved from place to place in the regular and authorised pursuit of his trade, will give a full idea of the tests referred to, as well as of the horrible fruits of the witchcraft frenzy in general. From each town which he visited, Hopkins exacted the stated fee of twenty shillings, and in consideration thereof, he cleared the locality of all suspected persons, bringing them to confession and the stake in the following manner: He stripped them naked, shaved them, and thrust pins into their bodies to discover the witch's mark; he wrapped them in sheets, with the great toes and thumbs tied together, and dragged them through ponds or rivers, when, if they sank, it was held as a sign that the baptismal element did not reject them, and they were cleared; but if they floated—as they usually would do for a time—they were then set down as guilty, and doomed: he kept them fasting and awake, and sometimes incessantly walking, for twenty-four or forty-eight hours, as an inducement to confession; and, in short, practised on the accused such abominable cruelties, that they were glad to escape from life by confession. If a witch could not shed tears at command (said the further items of this wretch's creed), or if she hesitated at a single word in repeating the Lord's Prayer, she was in league with the Evil One.

After he had murdered hundreds, and pursued his trade for many years—from 1644 downwards—the tide of popular opinion finally turned against Hopkins, and he was subjected, by a party of indignant experimenters, to his own favourite test of swimming. It is said that he escaped with life, but from that time forth he was never heard of again.

The era of the Long Parliament was that perhaps which witnessed the greatest number of executions for witchcraft. *Three thousand persons* are said to have perished during the continuance of the sittings of that body, by legal executions, independently of summary deaths at the hands of the mob. Witch-executions, however, were continued with nearly equal frequency long afterwards. Chief-justices North and Holt, to their lasting credit, were the first individuals occupying the high places of the law, who had at once the good sense and the courage to set their faces against the continuance of this destructive delusion. It was under Holt's justiceship that the first acquittal is supposed to have taken place, in *despite* of all evidence, and upon the fair ground of the general absurdity of such a charge. In the case of Mother Munnings, tried in 1694, the unfortunate panel would assuredly have perished, had not Chief-justice Holt summed up in a tone so decidedly adverse to the prosecution, that the verdict of not guilty was called forth from the jury. In about ten other trials before Holt, between the years 1694 and 1701, the result was the same through the same influences. It must be remembered, however, that these were merely noted cases, in which the parties withstood all preliminary inducements to confession, and came to the bar with the plea of not guilty. About the same period—that is, during the latter years of the seventeenth century—summary executions were still common, in consequence of confessions extracted after the Hopkins fashion, yet too much in favour with the lower classes. The acquittals mentioned only prove that the regular ministers of the law were growing too enlightened to countenance such barbarities.

After the time of Holt, the ministers of the law went a step further in their course of improvement,

and spared the accused in spite of condemnatory *verdicts*. In 1711, Chief-justice Powell presided at a trial where an old woman was pronounced guilty. The judge, who had sneered openly at the whole proceedings, asked the jury if they found the woman 'guilty upon the indictment of conversing with the devil in the shape of a cat?' The reply was: 'We do find her guilty of that;' but the question of the judge produced its intended effect in casting ridicule on the whole charge, and the woman was pardoned. Barrington, in his observations on the statute of Henry VI., does not hesitate to estimate the numbers of those put to death in England, on this charge, at THIRTY THOUSAND!

Notwithstanding that condemnations were no longer obtainable after 1716, popular outrages on supposed witches continued to take place in England for many years afterwards. The occurrence of such outrages having been traced to the unrepealed statute of James I. against witchcraft, an act was passed in 1736 (10th George II. cap. 55), discharging all legal proceedings on the ground of sorcery or witchcraft; and since that period, prosecutions for following hidden arts have had no higher aim than the punishing of a pretended skill in fortune-telling and other forms of practical knavery.

In the North American colonies of New England, the witchcraft mania raged with peculiar intensity. As in Scotland and elsewhere, the clergy were the prime movers. Two clergymen have obtained a special and unenviable notoriety for the part they acted in this matter. The one was the Rev. Cotton Mather, a man who was considered a prodigy of learning and piety, but whose writings and proceedings in regard to the trial and execution of witches, of which he was the chief instigator, shew a degree of fanaticism, credulity, and blind cruelty that is almost incredible. The other, a Samuel Parris, minister of Salem, made use of the popular feeling to gratify his own spite at individuals. At last, in the 'Salem tragedy,' as it is called, in 1692, the executions, torturings, and imprisonments rose to such a height as to be no longer endurable; a complete revulsion of public feeling took place, and the delusion was broken. For details of New England witch-trials, we must refer to No. 141 of *Chambers's Miscellany of Tracts*.

SPECTRAL ILLUSIONS.

According to old theories on the subject of apparitions or spectres, the person who declared that he had seen such an appearance was either set down as the fabricator of an untruth, or his story was fondly believed, and in the latter case the supernatural incident was added to the mass of credible history. It is now well understood that we need neither accept the appearance as a fact, nor yet accuse the narrator of a wish to deceive. The explanation is to be sought in disorder of the nervous system. Much light has of late years been thrown upon this subject by a more careful examination of what takes place in all cases when a sensible idea or image is called up in the mind. When we think vividly of an object that we have seen or even imagined, we are said to have it 'in our mind's eye.' The phrase is generally understood as a metaphor; but physiologists now teach us that it is a literal truth. The revived impression or idea of an object once seen is not called up without an actual physical motion, or current of some kind, taking place, not merely within the brain, but throughout the nerves of vision to their extremities in the eye. This affection of the nerves, by the memory of an object, is of the same kind as that which takes place when the object is present to the sight; the chief difference seems to be that the revived impression is much feebler than the original, so that it is impossible to mistake the one for the other. What is true of sight is true of the other senses; the nerves of any sense are physically affected by thinking of things connected with that sense. In some cases, the affection is palpable and unmistakable; thus the thought of a savoury dish actually tickles the palate of a hungry man, and makes the saliva flow—in common phrase, makes the mouth water; the remembrance of a nauseous medicine will at times cause vomiting; to hear of torture and laceration makes the flesh creep.

While the nervous system is in a normal and sound condition, the affections excited in it by ideas are so faint that they are never mistaken for impressions from without; in fact, we are in all ordinary circumstances utterly unconscious of their existence. But when the system is in any way disordered or unusually excited, then certain ideas are apt to take possession of it—haunt it, and thus the affection of the nerves, of vision for instance, becomes so strong as to be equal to an impression made by the actual objects. The person in this condition naturally believes that these objects are really before him; in other words, he sees visions or spectres. The illusion is generally dissipated by trying to handle the object; for the nerves of touch are not so easily disordered or imposed upon as those of sight and hearing.

We must content ourselves with this brief statement of the physiological principle on which all cases of spectral appearances are to be explained. We would merely remark, in conclusion, how necessary caution and discrimination are in receiving testimony to some kinds of facts. Even when the witness declares that he had the evidence of his senses for what he asserts, we may be justified in disbelieving the alleged fact, and that without calling in question his good faith—his imagination may have made his senses impose upon him. What an amount of delusion of this kind must have taken place during the witchcraft mania! Thousands on thousands, of all ranks and conditions, testified to having witnessed a variety of things which we now know to be impossibilities. They could not all have meant to tell falsehood; the vast majority, without doubt, believed what they said. But they were under the influence of a contagious frenzy, when the eye sees what the fancy suggests. It may be laid down as a general rule, that when any extensive excitement prevails on a subject involving the sentiment of wonder, multitudes will be found testifying, and testifying honestly, to alleged facts, which fall in with the prevailing belief, but have no better foundation than their own heated imaginations.

KEY TO THE CALENDAR.

JANUARY.

JANUARY and February are said to have been added to the list of months by the second Roman king, Numa Pompilius, in the year before Christ 672. The name of the former month is unquestionably from Janus, the god of the year in the Roman mythology, to whom the first day was sacred, and in whose honour it was celebrated with riotous feastings and givings of presents. We learn from Ovid's *Fasti* that a Roman workman did not spend the Calends or 1st of January entirely in debauchery: he wrought a little at his trade, for the sake of good-luck throughout the year.

1. *Circumcision.*—A festival of the Romish Church, from about the year 487, and of the Church of England since 1550, in honour of the circumcision of Christ. The banks and public offices are shut on this day. As the first day of the year, it is celebrated throughout the modern Christian world with festive rejoicings, too often approaching or exceeding the bounds of propriety. In England, till a period not very remote, it was customary to usher in the year by drinking spiced liquor from the *Wassail Bowl*, so called from the Anglo-Saxon *Waes-hael* (Be healthy), the toast used on the occasion. The custom without the name still exists in Scotland. It was also customary on this day to give and receive gifts, originally with the superstitious design of securing good-fortune for the year, and afterwards for affection and to promote good neighbourhood. Even the kings of England accepted presents from their courtiers on this morning. The 1st of January, under the name of *Le Jour de l'an*, continues in France to be distinguished by a universal system of present-giving. It has been calculated that sweetmeats to the value of £20,000 are sold in Paris on this day.

6. The *Epiphany*, a festival in honour of the manifestation of the infant Jesus to the three wise men of the East, who came to worship him. It began to be celebrated in 813. This continues to be observed as a festival in the English Church, and is marked by the shutting of many of the public offices. The popular name for the festival is *Twelfth-day*, with reference to its occurring twelve days after Christmas. Twelfth-day, and more particularly Twelfth-night, are distinguished by joyful observances. It is a tradition of the Romish Church that the three wise men were kings, and many sets of names have been furnished for them—Caspar, Melchior, and Balthazar being the set best known; their remains were said to have been recovered in the fourth century by the Empress Helena, and the skulls are still shewn, under circumstances of great pomp and ceremony, in the great church at Cologne. Perhaps it is owing to this idea of the regal rank of the wise men, that a custom has existed from early ages throughout Europe of choosing a person to act as king on Epiphany. In England, this custom has blossomed out a little. Both a king and queen were chosen. It was done by placing beans on a large cake. The cake was divided among the company, and whoever of the male sex got a bean was king; whoever of the female sex, queen. The Twelfth-night cake continues to be eaten by merry companies, and the characters of king, queen, &c. being drawn in that manner, are supported amidst much jocularity till midnight.

Shakspeare has shewn the respect in which the observances of Twelfth-night were held in the Elizabethan age, by applying it as a title to one of his most delightful dramas, although he does not appear to have introduced any of the festivities peculiarly appropriate to that season, with the exception, perhaps, of the gross orgies of Sir Toby Belch and his boon-companions.

The day after Twelfth-day was a popular rustic festival, under the mock-name of *St Distaff's* or *Rock Day*. (Rock is the appellation given to a quantity of lint put upon a distaff.) It seems to have been a sort of farewell to the festivities of Christmas.

18. *Septuagesima Sunday.*—[It is necessary here to mention that the Movable Feasts and Holidays of the Church are nearly all regulated by Easter—that is, so long before or after Easter. Easter, the great festival of the Church, is itself movable. According to canonical regulations, Easter-day is always the first Sunday after the full moon which happens upon, or next after, the 21st day of March; and if the full moon happens upon a Sunday, Easter Sunday is the Sunday after. The first of these movable feasts is Septuagesima Sunday, which occurs on January 18th, when Easter Sunday is on March 22d. In this place we propose setting down the movable feasts on the earliest days on which they ever occur; and Septuagesima Sunday is therefore put under January 18th. All the rest will follow in order, as in the calendar for a year on which they occur on the earliest possible day.] Quadragesima is an ancient name of Lent, as meaning the forty days' fast. The first Sunday in Lent hence received the name of Quadragesima. Early in the seventh century, Pope Gregory appointed three Sundays of preparation for Lent, and, assuming a decimal reckoning for convenience, they were respectively called, reckoning backwards, Quinquagesima, Sexagesima, and Septuagesima.

21. *St Agnes's Day*, a festival of the Church of Rome. The annals of canonisation present no image of greater sweetness and purity than St Agnes. She is described as a very young and spotless maid, who suffered martyrdom in the tenth persecution under Diocletian, in the year 305. A few days after her death, her parents, going to make the offerings of affection at her tomb, beheld a vision of angels, amidst which stood their daughter, with a snow-white lamb by her side. She is therefore usually represented

with a lamb standing beside her. Perhaps this legend has been partly founded on the resemblance of the name Agnes to *Agnus*, Latin for a *lamb*, for mere coincidences of sound often led to very important ideas in the middle ages. At Rome, on St Agnes's Day, during mass, and while the Agnus is saying, two lambs as white as snow, and covered with finery, are brought in and laid upon the altar. Their fleeces are afterwards shorn and converted into palls, which are highly valued.

Throughout the Christian world, and in England as much as elsewhere, it was customary for young women on St Agnes's Eve to endeavour to divine who should be their husbands. This was called *fasting St Agnes's Fast.* The proper rite was to take a row of pins, and pull them out one after another, saying a Paternoster, and sticking one pin in the sleeve. Then going to rest without food, their dreams were expected to present to them the image of the future husband. In Keats's poem entitled *The Eve of St Agnes*, the custom is thus alluded to :

> They told her how upon St Agnes' Eve,
> Young virgins might have visions of delight,
> And soft adorings from their loves receive,
> Upon the honied middle of the night,
> If ceremonies due they did aright ;
> As, supperless to bed they must retire,
> And couch supine their beauties, lily-white ;
> Nor look behind, nor sideways, but require
> Of heaven with upward eyes for all that they desire.

25. *Sexagesima Sunday ;* eight weeks before Easter.

Conversion of St Paul.—A festival of the Romish and English Churches, and in London a holiday at the public offices, excepting the Excise, Stamps, and Customs. The populace in former times thought this day prophetic as to the weather of the year :

> If St Paul's Day be fair and clear,
> It doth betide a happy year ;
> If blustering winds do blow aloft,
> Then wars will trouble our realm full oft ;
> And if it chance to snow and rain,
> Then will be dear all sorts of grain.

In Germany, when the day proved foul, the common people used to drag the images of St Paul and St Urban in disgrace to duck them in the river.

Natural History.—January, in our climate, is the coldest month of the year, on an average ; for in some years February and March are both colder. The store of heat acquired in summer is now completely dissipated, and the sun has not yet attained sufficient power to replace it. In the central parts of the island of Great Britain, the general average of the thermometer this month is 37 degrees. Vegetation is nearly at a stand during January. Our ancestors thought it necessary that it should be a severe month, for the sake of the rest of the year. This mode of judging, however, is not confirmed by modern experience ; for a mild winter is often followed by a warm summer. In sheltered situations, a few flowers, as the crocus, mezereon, and polyanthus, are occasionally seen to blossom in the latter part of January ; and about the same time (in England) the hedge-sparrow, thrush, and wren begin to pipe.

FEBRUARY.

The establishment of February as the second month of the year by Numa Pompilius has already been mentioned. According to Ovid in his *Fasti*, a curious record of Roman customs, all objects which were thought to have the effect of moral purgation in the religious ceremonials of that people were called Februa. Ceremonials of this kind took place at this season ; hence the name of the month. The vanity of Augustus is said to have been the cause of this month being so much shortened. The arrangement of Julius Cæsar seems to have contemplated an alternation of months of thirty with those of thirty-one days. August was one of thirty days ; but when Augustus gave it his name, he could not endure that it should be one of the shorter class, and therefore gave it an additional day, at the expense of February, already one of that class. Our ancestors called February *sprout kale*, from the sprouting of the cabbage, still called kale in Scotland.

1. *Quinquagesima Sunday ;* seven weeks before Easter : called also Shrove Sunday.

2. *Candlemas-day*, or the Purification of the Virgin, a festival of the Church of Rome, and holiday in the English Church. It is said to have been founded upon Roman rites in which candles were carried. The early Fathers of the Church held it in commemoration of the attendance of Mary in the Temple, forty days after childbirth, as commanded by the law ; and it was their custom on this day to bless candles and distribute them among the people, by whom they were carried in solemn procession. The saying of Simeon respecting the infant Christ in the Temple, that he would be a *light* to lighten the Gentiles, probably supplied an excuse for adopting the candle-bearing procession of the heathen, whose external religious practices the founders of the Romish Church made a practice of imitating, in order to take advantage of the habits of the people. Apparently in consequence of the celebration of Mary's purification by candle-bearing, it became customary for women to carry candles with them when, after childbirth, they went to be *churched.*

Candlemas-day is a holiday at the public offices, excepting the Stamps, Excise, and Customs. It is called a Grand Day in the Inns of Court, a Gaudy Day at the two universities, and a Collar Day at St James's, being one of the three great holidays, during the terms, on which all legal and official business is suspended.

There is an ancient superstitious notion, universal in Europe, that if Candlemas be a sunshiny day, the winter is not half finished. The Germans say : The badger peeps out of his hole on Candlemas-day, and if he finds snow, he walks abroad ; if he sees the sun shining, he draws back again into his hole.

3. *St Blaise's Day.*—St Blaise, who has the honour of a place in the Church of England calendar, was a bishop of Sebaste, in Armenia, and suffered martyrdom in 316. He is the patron saint of the craft of wool-combers, and his name was once considered potent in curing sore throats. At Bradford there is still a septennial procession of the wool-trade upon his day. Formerly, it was celebrated extensively by fires lighted on hills, and this is still done in Scotland on the previous

evening, under the name of the Candlemas Blaze, the resemblance of the name Blaise to blaze having apparently suggested the practice.

Shrove Tuesday.—According to the plan already laid down, we place Shrove Tuesday upon this day of the month of February. As the day before the commencement of Lent, it has been from an early age celebrated throughout Christian Europe by feasting and merry-making of the most extravagant nature. The name is derived from the ancient custom of being *shrived* or *shrove*, i.e., obtaining absolution, on this day. It is the concluding day of the time of Carnival, which in various Catholic countries is of greater or less extent, but celebrated with most distinction at Venice and Rome. Carnival is obviously a term from *caro* and *vale*, as meaning a farewell to flesh, this article of food being unused during the whole of Lent. In these two Italian cities, and partially in many others, the Carnival is distinguished by shows, masquerades, races, and a variety of other exhibitions and amusements. The people may be said to live for several days in public. The wealthier classes parade about in their carriages, from which they pelt each other with sweetmeats. Whim and folly are tolerated in their utmost extent, so that only there be nothing said or done to burlesque ecclesiastical dignitaries.

The main distinction of Shrove Tuesday, in the early times of our own history, was the eating of pancakes made with eggs and spice. The people indulged in games at football, at which there was generally much license; also in the barbarous sport of *throwing at cocks*. In the latter case, the animal being tied by a short string to a peg, men threw sticks at it in succession, till an end was put to its miseries and its life at once. Cock-fights were also common on this day, not only amongst the rustics, but at the public schools, the masters condescending to receive the defeated and slain cocks as a perquisite.

4. *Ash Wednesday*, the first day in Lent, a holiday of the Church of England, observed by the closing of all the public offices, excepting the Stamps, Excise, and Customs. The palms or substitute branches, consecrated and used on Palm Sunday of one year, were kept till the present season of another, when they were burnt, and their ashes blessed by the priest and sprinkled on the heads of the people: hence the name given to the day. This sprinkling of ashes was performed with many ceremonies and great devotion. On this day also persons convicted of notorious sin were put to open penance. In England it is still a season for the saying of the 'commination' in the Prayer-book, by which the doers of certain kinds of wickedness are cursed.

8. *First Sunday in Lent.*—The Wednesday, Friday, and Saturday after this Sunday are called Ember Days, and the week in which they occur Ember Week. On Ember Days our forefathers ate no bread but what was baked in a simple and primitive fashion under hot ashes: hence the name. The other Ember Days of the year are the Wednesdays, Fridays, and Saturdays after the Feast of Pentecost, Holy-rood Day (Sept. 14), and St Lucia's Day (Dec. 15).

14. *St Valentine's Day.*—St Valentine was a priest of Rome, martyred in the third century, but he seems to have had no connection with the notions and practices to which his day has since been given up. This, it is scarcely necessary to say, is a day thought to be especially devoted to the business of Cupid and Hymen. Possibly its being about the season when the birds choose their mates may be the origin of this belief. Antiquaries have also pointed out that the Lupercalia—feasts of ancient Rome in honour of Pan and Juno—were held at this time, and that amongst the ceremonies was a game in which young persons of the opposite sexes chose each other jocularly by lot.

St Valentine's Day is now almost everywhere a degenerated festival, the only observance of any note consisting in the sending of anonymous letters containing pictorial squibs, or *billets-doux*, accompanied by tags of wretched verse, expressive of the sentiment of the sender. These are paltry frivolities compared with the observances of St Valentine's Day at no remote period. The true and proper ceremony, then, was the drawing of a kind of lottery, followed by ceremonies not much unlike what is generally called the game of forfeits. Misson, a learned traveller of the early part of the last century, gives apparently a correct account of the principal ceremonial of the day. 'On the eve of St Valentine's Day,' he says, 'the young folks in England and Scotland, by a very ancient custom, celebrate a little festival. An equal number of maids and bachelors get together; each writes his or her true or some feigned name upon separate billets, which they roll up, and draw by way of lots, the maids taking the men's billets, and the men the maids'; so that each of the young men lights upon a girl that he calls his *valentine*, and each of the girls upon a young man whom she calls hers. By this means each has two valentines; but the man sticks faster to the valentine that is fallen to him than to the valentine to whom he is fallen. Fortune having thus divided the company into so many couples, the valentines give balls and treats to their mistresses, wear their billets several days upon their bosoms or sleeves, and this little sport often ends in love.'

The common people seem to have imagined that an influence was inherent in the day, which rendered in some degree binding the lot or chance by which any youth or maid was now led to fix attention on a person of the opposite sex. It was supposed, for instance, that the first unmarried person of the other sex whom one met on St Valentine's morning in walking abroad, was a destined wife or husband.

15. *Second Sunday in Lent.*

22. *Third Sunday in Lent.*

24. *St Matthias the Apostle.*—A festival of the Church of England. St Matthias was chosen by lot after the Crucifixion, in place of the traitor Judas (Acts i. 23).

Natural History.—The popular voice allots a course of snow, rain, and their hybrid sleet, to this month, and considers it necessary that such should be its features, in order that all the powers of humidity may be exhausted before the commencement of March, when an opposite kind of weather is looked for. It is indeed true that frost, followed by regular thaw, and that succeeded by the sharp drying winds of March, bring the ground into the most favourable state for ploughing and seed-sowing. The general average of the thermometer is 39 degrees; that of different years

varies from 32 to 42. The snowdrop and crocus are the chief ornaments of our flower-borders at this season. The primrose will also flower; the hepatica come forth in some strength; and in mild seasons several other of our earlier flowers and flowering shrubs begin to shew blossom. In England, the raven and rook begin to build their nests; the house-pigeon has young; the ringdove coos, the goldfinch sings, and thrushes pair. In Scotland, the notes of the thrush and blackbird give token of the approach of spring.

MARCH.

March, which with the ancients ranked the first month of the year, was named in honour of Mars, the god of war, and the supposed father of the founder of Rome. Our Anglo-Saxon ancestors called it *Lenct-monath*—that is, Lent or Spring Month.

1. *Mid Lent Sunday.*—A holiday of the Church of England. It was considered as incumbent upon all true Christians on this day to pay a visit, if possible, to their mother-church, or church of their native parish, and there make some small offering. The epistle for the day accordingly contains an appropriate allusion—*Hierosolyma mater omnium*, Jerusalem the mother of all (Gal. iv. 26). And it was customary on the same day for people to visit their parents, carrying with them some gift, and receiving the parental blessing in return, together with a mess of frumenty—that is, a porridge composed of whole grains of wheat, boiled in milk, and sweetened and spiced. This practice was called 'going a-mothering,' and the day was sometimes called *Mothering Sunday*. The festival, with all its peculiar observances, is supposed to have taken its rise in the heathen festival of the Hilaria, celebrated by the ancient Romans in honour of the mother of the gods, on the Ides of March.

St David's Day.—The interest attached to this saint and his day is confined to the Welsh, whose patron saint St David is considered. Learning, and more particularly asceticism, the great sources of promotion in those days, raised him to high esteem and ecclesiastical rank, and gave him the reputation of a power to perform miracles. At a synod called at Brevy in Cardigan, in 519, in consequence of the Pelagian heresy, he made an eloquent and convincing display against the erroneous doctrines, which were therefore condemned. He died in 544, at an advanced age, and was buried in the church of St Andrew; but in 962, his remains were transferred to Glastonbury Abbey.

While the Welsh venerate the memory of St David, they are unacquainted with our idea of him as their patron saint, a notion which has sprung up in consequence of the popular fiction of the Seven Champions of Christendom. They observe the 1st of March as the anniversary of his death. On this day, all true Welshmen, whether in their own country or far removed from it, made it a point of conscience to wear a leek in their hats; and this custom is alluded to in writings of considerable antiquity. It has also been made effective use of by Shakspeare in his historical drama of *King Henry V.;* and the heroic cudgelling which he there represents the choleric Welshman, Fluellen, as having administered to Ancient Pistol when he compelled him to eat the leek which he had mocked at on 'St Tavy's Day,' has given rise to a proverbial saying; for of an individual who has been forced to do anything contrary to his own inclination, it is by no means uncommon to say that he has been made 'to eat his leek.'

8. *The Fifth Sunday in Lent.*—It was popularly distinguished as *Care* or *Carling Sunday*, terms which appear to be of very dubious import. The peasantry and yeomanry used to steep peas, and afterwards parch them, and then, frying them with butter, made a feast of them on the afternoon of this day. It is thought not unlikely that the custom bore some reference to the superstitious notions which the ancients entertained respecting beans, as containing the souls of the departed. The peas, as eaten in the north of England, were called *carlings*. We may presume that the day took its name from this word, *carling* being in time softened into *Care*. It figures in the following old rhyme, which enumerates the Sundays of Lent by popular appellations:

> Tid, Mid, and Misera,
> Carling, Palm, and good Pace-day.

The first three words are supposed to have been derived from the beginnings of certain psalms—thus, *Te d*eum, *Mi d*eus, *Miser*ere mei.

15. *Palm Sunday*, called in the English Prayer-book the Sunday next before Easter; also sometimes called Passion Sunday, as being the commencement of Passion Week, or the week celebrative of the sufferings or passion of our Lord. It is a festival of great antiquity and a partly joyous character, as more particularly commemorating the brilliant though short-lived popularity of the reception which Christ met with on entering Jerusalem immediately before his passion. On this day, in Catholic countries, the priests bless branches of palm, or some other tree, which are then carried in procession, in memory of those strewed before Christ at his entrance into the holy city. The procession is as splendid as circumstances will admit of; and after it is done, the boughs used on the occasion are burnt, and their ashes preserved, that they may be laid on the heads of the people next Ash Wednesday, with the priest's blessing.

17. *St Patrick's Day*, a high festival of the Romish Church. The interest attached to this saint and his day is, however, chiefly confined to the Irish, whose patron saint he is considered; though that term, as in the case of St David, is of modern and English origin. The Irish venerate St Patrick as the person who introduced Christianity into their country. The common tradition makes him a native of Kilpatrick, near Dumbarton in Scotland, and to have first visited Ireland as a boy and a prisoner; but there are some grounds for supposing that he was born in the north of Gaul. In 431 he was commissioned by Pope Celestine to convert the Irish, a task which he immediately commenced, and carried into effect with unexampled ardour and perseverance. He travelled throughout the whole of Ireland, preaching everywhere to the barbarous people, whom he baptised in multitudes. He also ordained clergy to preside over them, gave alms to the poor, made presents to the kings, founded monasteries, and, in short, established the Christian religion and a full apparatus for its support in

Ireland. Monkish annals and popular tradition attribute to him an immense number of miracles, most of which have probably no basis in fact. He died at Down in Ulster, according to the Bollandists, in 460, according to Usher, in 493.

As the Welsh are solicitous to display the leek on St David's Day, so are the Irish to shew the *shamrock* on that of St Patrick. The shamrock is a bunch of trefoil. It is associated with St Patrick and his day, in consequence, as popular story goes, of the saint having made a very adroit use of the plant in his first preaching, immediately after landing. The people being staggered by the doctrine of the Trinity, and disposed to shew some violence to him, he took up a trefoil growing by his side, and illustrated the point by shewing its three blades growing on one stalk; whereupon they were immediately convinced, and became converts. In Dublin, St Patrick's Day is, or was lately, a scene of festivity and mirth unparalleled. 'From the highest to the lowest,' says Mr Hone, 'all seem inspired by the saint's beneficence. At daybreak flags fly from the steeples, and the bells ring out incessant peals till midnight. The rich bestow their benevolence on the poor, and the poor bestow their blessings on the rich, on each other, and on the blessed St Patrick. The "green immortal" shamrock is in every hat. Sports of manly exercise exhibit the capabilities of the celebrated shilelah. Priestly care soothes querulousness; laughter drowns casualty; lasses dance with lads; old women run about to share cups of consolation with each other; and by the union of wit, humour, and frolic, this miraculous day is prolonged till after the dawn of next morning.'

19. *Maundy Thursday*, called also Shere Thursday, the day before Good Friday. Its name of Shere Thursday appears to have arisen from the practice which the priests had of shearing their hair on this day, to make themselves as trim as possible for Easter. The other name is more doubtful, but seems most probably to have been derived from Ang.-Sax. *mand*, later English *maund*, a basket, in consequence of the distribution of gifts on this day in baskets—the word *maundy*, used by old authors for alms or gifts, being apparently derived in its turn from the practice of this day. The religious customs of the day consisted in works of humility, and in conferring gifts on the poor. The object seems to have been to commemorate, or imitate, the humility of Christ in washing the feet of his disciples—the giving of maundies being an additional good work. The king of England was accustomed on Maundy Thursday to have brought before him as many poor men as he was years old, whose feet he washed with his own hands, after which His Majesty's maunds, consisting of meat, clothes, and money, were distributed amongst them.

This strange ceremonial, in which the highest was for a moment brought beneath the lowest, was last performed in its full extent by James II. King William left the washing to his almoner; and such was the arrangement for many years afterwards. For a considerable number of years the washing of the feet and other ceremonies have been entirely given up; and since the beginning of the reign of Queen Victoria, an additional sum of money has been given in lieu of provisions.

20. *Good Friday.*—This day, as the presumed anniversary of the Crucifixion, has for ages been solemnly observed throughout Christian Europe, the only exceptions being in Presbyterian countries, such as Scotland. In Catholic times, the observances of the day in England were of the same character with those which are still maintained in many parts of the continent. It is still a solemn festival of the Church of England, and the only one besides Christmas which is honoured by a general suspension of business. Strictly observant Church-of-England people abstain from all kind of animal food, even from cream to tea; such, we are informed by Boswell, was the custom of Dr Johnson. The churches are in general well attended, and it is considered proper to appear there in black clothes.

Amongst the usages of this day was a strange ceremony of creeping to the cross, which even the king was not exempt from performing. The king also distributed rings at Westminster Abbey for the cure of the cramp. The ceremonious burying of a crucifix, as representing the burial of Christ, is calculated to give less surprise. It was also customary at great churches to have a small building in the form of a tomb, in which the host was this day deposited, by way of representing the burial of Christ. In England, and perhaps also in other countries, eggs and bacon were the kinds of food appropriate to Good Friday. The eggs laid on this day were thought to have the power of extinguishing any fire into which they might be thrown. In modern times, the only species of viands connected with Good Friday in Britain is the well-known hot cross bun—a small spiced cake, marked with the figure of a cross, and sold not only in bakers' shops, but by persons traversing the streets with baskets.

In old times, Good Friday was distinguished in London by a sermon preached at *Paul's Cross* (a wooden pulpit placed on stone steps, and surmounted by a cross, which stood, till the time of the Civil War, in the open air, near the north-east corner of St Paul's Cathedral). The sermon was generally on the subject of Christ's passion. Connected with it, two or three others were preached on Monday, Tuesday, and Wednesday, in Easter Week, at the Spital in Spitalfields, where the Lord Mayor and all the most eminent persons in London generally attended. The 'Spital sermons' are still kept up, but take place in St Bride's Church.

21. *Easter Eve.*—In Catholic times, it was customary to put out all fires on this day, and light them anew from flint. The priest blessed the new fire, and a brand from it was thought to be an effectual protection against thunder-strokes. A large wax-taper, called the Paschal Taper, was also blessed, and lighted beside the representative sepulchre above mentioned, and there a vigil was kept till morning. The taper used on one of these occasions in Westminster Abbey Church is said to have been 300 pounds in weight.

22. *Easter-day*, a solemn festival in celebration of the Resurrection. The word used by us is from *Ostara*, in Anglo-Saxon *Eastre*, the name of a goddess once extensively worshipped by the Teutonic nations, and personifying the light of the rising sun, or the dawn; it is allied to *east*. Easter is observed with much ceremonial, not

only throughout Catholic Europe, and in the countries where the Greek Church is established, but in Turkey and the Mohammedan countries along the coast of Africa. The festival is an ingraftment upon the Jewish Passover, the name of which (*pascha*) is still applied to it in almost every country besides England. The Catholic observances of Easter are of an elaborate character. At Rome, the pope is carried in state to perform high-mass in St Peter's, from the balcony of which he afterwards blesses the people assembled in the Piazza below—perhaps one of the most imposing religious spectacles which the world anywhere presents. In England, before the Reformation, the Catholic observances of Easter were as fully enacted as in any other country. Early in the morning, a sort of theatrical representation of the Resurrection was performed in the churches, the priests coming to the little sepulchre where, on Good Friday, they had deposited the host, which they now brought forth with great rejoicings, as emblematical of the rising of the Saviour.

At present, Easter Sunday is distinguished by little besides the few peculiarities of the service, and the custom of going to church in attire as gay as possible.

The viands appropriate to Easter-day in the old time were, first and above all, eggs, then bacon, tansy-pudding, and bread and cheese. The origin of the connection of eggs with Easter is lost in the mists of remote antiquity. They are as rife at this day in Russia as in England. There it is customary to go about with a quantity, and to give one to each friend one meets, saying: 'Jesus Christ is risen;' to which the other replies: 'Yes, he is risen;' or, 'It is so of a truth.' The pope formerly blessed eggs, to be distributed throughout the Christian world for use on Easter-day. In Germany, instead of the egg itself, the people offer a print of it with some lines inscribed. Formerly, the king of England had hundreds prepared to give to his household: in a roll of the expenses of Edward I. the following occurs, in the accounts of Easter Sunday, in the eighteenth year of his reign—'Four hundred and a half of eggs, eighteenpence.'

At this day, the Easter eggs used in England are boiled hard in water containing a dye, so that they come out coloured. The boys take these eggs and make a kind of game, either by throwing (bowling) them to a distance on the greensward—he who throws oftenest without breaking his eggs being the victor—or hitting them against each other in their respective hands, in which case the owner of the hardiest or last surviving egg gains the day.

It was at one time customary to have a gammon of bacon on this day, and to eat it all up, in signification of abhorrence of Judaism. The tansy seems to have been introduced into Easter-feasts as a successor to the bitter herbs used by the Jews at the Passover. It was usually presented well sugared.

It was a custom in the thirteenth century to seize all ecclesiastics found walking abroad between Easter and Pentecost, and make them purchase their liberty with money. This was an acting of the seizure of the apostles after Christ's passion.

'Lifting at Easter' is another old custom, which may be presumed to have originated in a design of dramatising the events connected with Christ's passion. It consisted in hoisting individuals up into the air, either in a chair or otherwise, until they relieve themselves by a forfeit. A curious record makes us aware that on Easter-day, in the eighteenth year of the reign of Edward I. seven ladies of the queen's household went into the king's chamber and *lifted him*, for which fourteen pounds appears to have been disbursed as a forfeit. The men lifted the women on Easter Monday, and the women claimed the privilege of lifting the men in return on the ensuing day. Three hoists were always given, attended by loud huzzas.

23. *Easter Monday.*—This and the ensuing day are holidays of the Church. The week commencing with Easter, and called thence Easter Week, is a season of festivity and partial suspension of business; and the earlier days of it after Easter itself are in London devoted by the working-classes to recreation and amusement, which they chiefly seek for in excursions to taverns near town.

25. *The Annunciation of Our Lady*, a festival of the Church of England. It is commonly called in England *Lady-day*, as an abridgment of the Day of our Blessed Lady. This festival is in celebration of the incarnation of Christ, or the announcement by the Holy Ghost to Mary that she should bear the Son of God. The Annunciation is observed as a holiday at all the public offices, excepting the Stamps, Excise, and Customs. It is a gaudy day in the Romish Church. In Catholic countries the service of this day resounds with 'Hail, Mary!' uttered in a strain of the highest enthusiasm. The 25th of March is held as a quarter-day for many commercial purposes in England.

29. The first Sunday after Easter, called *Low Sunday*, because it is Easter-day repeated, with the church service somewhat abridged or *lowered* in the ceremony from the pomp of the festival the Sunday before.

Natural History.—March is eminently a spring month, and the season more particularly devoted to sowing. Its general character, as far as the extreme uncertainty of our climate warrants us to speak, is dryness. The frosts of winter, followed by the sharp dry winds of this month, have the effect of pulverising the soil, and fitting it for the reception of the seed. The value of the weather appropriate to March is expressed in the saying, 'A peck of March dust is worth a king's ransom.' This month is also expected to undergo a change between its beginning and its end. The English say: 'March comes in like a lion, and goes out like a lamb;' the Scotch version of the same idea is: 'March comes in with an adder's head, and goes out with a peacock's tail.' The general average temperature of March (41 degrees) is so little above that of February, as to make the greater dryness appear to arise in but a small degree from heat. There is in March a general bursting of the trees into leaf, of the meadows into flower, and partly, it may be added, of the birds into song.

APRIL.

The Romans gave this month the name of *Aprilis*, from *aperio*, because it was the season when things *opened*. By the Saxons it was

called *Eastre-monath*. The Dutch term it Grass month.

1. *All-fools' Day.*—From a very early age, this day has been considered as one set apart for the exercise of all kinds of mirthful folly and practical joking; the term given to it we may hold as a travesty of the festival of All-saints' Day. The custom of playing off little tricks on this day, whereby ridicule may be fixed upon unguarded individuals, appears to be universal throughout Europe. In France, one thus imposed upon is called *un poisson d'Avril* (an April fish). In England, such a person is called an April fool; in Scotland, a gowk. Gowk is the Scotch for the cuckoo, and also signifies a foolish person, being, in fact, from the same root as the English word gawky. The favourite jest in Britain is to send one upon an errand for something grossly nonsensical—as for pigeon's milk, or the History of Adam's Grandfather; or to make appointments which are not to be kept; or to call to a passer-by that his latchet is unloosed, or that there is a spot of mud upon his face. When he falls into the snare, the term April fool or gowk is applied with a shout of laughter. It is very remarkable that the Hindus practise precisely similar tricks on the 31st of March, when they have what is called the Huli Festival.

7. The fifteenth day after Easter is marked by an old English festival, to which the inexplicable term *Hock-day* is applied. The custom peculiar to the day consisted in the men and women of rural districts going out to the roads with ropes, and intercepting passengers jocularly, and raising money from them, to be bestowed, it may well be presumed, in pious uses.

23. *St George's Day* in the Romish calendar. St George is held as the tutelar or patron saint of England. He is said to have been a native of Cappadocia; and it is tolerably certain that he was held in great veneration by the Greeks in the fourth century. He is invariably represented as a man on horseback, spearing a dragon. With a regard apparently to his military character, our Edward III. adopted his name as his war-cry, and his figure as a badge in connection with the Order of the Garter; thus originated the association of St George with England, since in many respects so conspicuous. It is remarkable that in Russia St George is as much a favourite saint as he is in England. The sovereigns of that country have borne his emblem from a time previous to Edward III. The derivation of Russian Christianity from the Greek Church suggests a ready explanation of this fact.

25. *St Mark the Evangelist's Day*, a holiday of the Church of England. It was once customary to bless the fruits of the earth on this day; hence, perhaps, a notion amongst the peasantry, that to plough or do any other work on St Mark's Day will be apt to bring down Divine wrath. The eve of St Mark was distinguished by some superstitious ceremonies. Maidens met to make the *dumb cake*. This was done by a number not exceeding three, and it was to be done in silence. At twelve o'clock, the cake being prepared, each broke off a piece and ate it; then walked backward to her sleeping-room. It was thought that those who were to be married would hear a noise as of a man approaching. Those who heard nothing were to remain unmarried. Watching the church porch was another practice of this eve. A man went fasting and took his station there before midnight. It was thought that during the hour between twelve and one he would see the spirits of all who were to die in the parish during the ensuing year walk into church, in the order in which they were to die, those who were to perish by violence making gesticulations appropriate to the peculiar modes of their death. There were similar superstitions regarding the Eve of St John (June 24).

26. *Rogation Sunday.*—The Sunday before Ascension is always so called. The three days immediately following are also called Rogation Days. The Archbishop of Vienne, in Dauphiné, about the year 469, caused the litanies or supplications to be said on those days for deliverance from earthquakes, by which his city had been much injured. The days were thence called Rogation—that is, supplication—days.

30. *Ascension-day, or Holy Thursday*, a holiday of the Church of England, observed by the shutting of most of the public offices. This festival, which invariably occurs on the fortieth day after Easter, is designed to celebrate the ascension of Christ into heaven. It was once distinguished by great festivities.

Natural History.—Mild weather, with genial showers, is the character usually given to April; but in modern times the weather is often the reverse of this, being dry, with cold winds. On the average, indeed, there is more north wind and *less rain* this month than in any other. The progressive advance of temperature from winter towards summer is very apparent this month, the general average height of the thermometer being 46 degrees. April is a busy month in the fields, and the usual seed-time for barley. In the gardens, it is the busiest time of the year for seed-sowing.

MAY.

Among the Romans, this was the *mensis maiorum*, or month dedicated to the elder persons of their community, while the next was the *mensis juniorum*, or month of the younger people. Thus, it was supposed, arose the names of May and June. Others thought that May would derive its name from Maia, the mother of Mercury, who was worshipped on the first day; but it is more probable that Maia and her day were afterthoughts, when the real origin of the name of May was out of mind. That origin is to be sought in the Sansc. root *mah*, 'to grow,' so that May is just the season of growth. The same root, no doubt, appears in the Ang-Sax. *magu*, 'a son,' and *maegth*, a maid or daughter; also in the Latin *mag*-nus and *maj*-or. The Anglo-Saxons gave this month the name of Trimilchi, because they then began to milk their cows three times a day. The Romans believed it to be unlucky to marry in May, probably because the following month was sacred to Juno, the foundress of marriage.

1. *St Philip and St James the Less*, a holiday of the Church of England.

As a popular festival under the name of *May-day*, this day has been celebrated from time immemorial. The celebration must doubtless

have been prompted by Nature herself: the time of the young flower and leaf, and of all the promise which August fulfils, could not but impress the minds of the simplest people, and dispose them to joyful demonstrations in word and act. The sun, as the immediate author of the glories of the season, was now worshipped by the Celtic nations under the name of Baal; hence the festival of *Beltane*, still faintly observed in Ireland and the Highlands of Scotland. Even in Ayrshire, they kindled Baal's fire in the evening of May-day till about the year 1790. The Romans held games called Floralia, at which there was great display of flowers, and where women danced, if we are to believe Juvenal, only too enthusiastically. The May-day jollities of modern Europe seem to be directly descended from the Floralia.

In England, we have to go back a couple of hundred years for the complete May-day; since then, it has gradually declined, and now it is almost extinct. When it was fully observed, the business of the day began with the day itself—that is to say, at midnight. We have the authority of Shakspeare, that with the populace of England it was impossible to sleep on May morning. Immediately after twelve had struck, they were all astir, wishing each other a merry May, as they still, at the same hour on the 1st of January, wish each other a happy new year. They then went forth with music and the blowing of horns, to some neighbouring wood, where they employed themselves in breaking down and gathering branches. These they brought back at an early hour, and planted over their doors, so that by daylight the whole village looked quite a bower. In some places, the Mayers brought home a garland suspended from a pole, round which they danced. In others, and this was a more general custom, there was an established May-pole for the village, which it was their business to dress up with flowers and flags, and dance around throughout all the latter part of the day. A May-pole was as tall as the mast of a sloop of fifty tons, painted with spiral stripes of black and white, and properly fixed in a frame to keep it erect. Here lads and lasses danced in a joyful ring for hours to the sounds of the viol, and maskers personating Robin Hood, Little John, Maid Marian, and others of the celebrated Sherwood company of outlaws, as well as morris-dancers, performed their still more merry pranks. May-poles, as tending to encourage levity of deportment, were condemned by the Puritans in Elizabeth's time; James I. supported them in his *Book of Sports;* they were altogether suppressed during the time of the Commonwealth, but got up again at the Restoration. Now change of manners has done that which ordinances of parliament could not do: this object, so interwoven with our national poetical literature, is all but rooted out of the land.

A certain superstitious feeling attached to May-day. The dew of that morning was considered as a cosmetic of the highest efficacy; and women, especially young women, who are never unwilling to improve in this respect, used to go abroad before sunrise to gather it. To this day there is a resort of the fair sex every May morning to Arthur's Seat near Edinburgh, for the purpose of washing their faces with the dew. Mr Pepys, in his *Diary*, gravely tells us of his wife going to Woolwich for a little air, and to gather May-dew, 'which Mrs Turner hath taught her is the only thing in the world to wash her face with.'

In London, May-day was once as much observed as it was in any rural district. There were several May-poles throughout the city, particularly one near the bottom of Catharine Street in the Strand, which, rather oddly, became, in its latter days, a support for a large telescope at Wanstead in Essex, the property of the Royal Society. The milkmaids were amongst the last conspicuous celebrators of the day. They used to dress themselves in holiday guise on this morning, and come in bands with fiddles, whereto they danced, attended by a strange-looking pyramidal pile, covered with pewter-plates, ribbons, and streamers, either borne by a man upon his head, or by two men upon a hand-barrow; this was called their *garland*. In London, May-day still remains the great festival of the sweeps, and much finery and many vagaries are exhibited on the occasion.

The Robin Hood games and morris-dances, by which this day was distinguished till the Reformation, appear, from many scattered notices of them, to have been entertainments full of interest to the common people. Robin has been alternately styled in at least one document as the King of May, while Maid Marian seems to have been held as the Queen.

10. *Whit-Sunday*, a festival of the Church of England, designed to commemorate the descent of the Holy Spirit upon the apostles on the day of Pentecost. In Catholic countries, on this day, while the people are assembled in church, pigeons are suspended above, and wafers, cakes, oak-leaves, and other things are made to shower down upon the altar—all this as a dramatic representation of the miracle.

11. *Whit-Monday.*—A festival of the Church of England, as is also

12. *Whit-Tuesday.*—These three days together are called Whitsuntide. It forms a term, for which the 15th of May is fixed. The Wednesday, Friday, and Saturday of this week are Ember Days, and the week is consequently an Ember Week. (*See 8th February.*) This also was a period of festivity among our ancestors. They now had what they called the *Whitsun Ale*, which consisted in a meeting of householders with their families at the church, after service, to partake of a feast provided by the churchwardens, at which the young danced and played at games, while the seniors looked on. In the days before the poor were supported by rates, a collection was made on this occasion, usually found sufficient to provide for them. Whitsunday and Martinmas terms (May 15 and November 11) are those alone regarded for the leasing of all kinds of property, paying of rents, and engaging of servants, in Scotland.

17. *Trinity Sunday*, a festival of the Church of England, which always takes place eight weeks after Easter.

21. *Corpus Christi*, a festival of the Roman Church, always held on the Thursday after Trinity Sunday. It celebrates the doctrine of transubstantiation. In all Roman Catholic countries it is observed with music, lights, flowers strewed in the street, rich tapestries hung

upon the walls, and processions and plays representing Scripture subjects.

Natural History.—May is a month of the best reputation—indeed, a general favourite in imagination; but it often balks the hopes of its worshippers. In favourable seasons, it presents many beautiful appearances, as herbage and foliage of the brightest green, a profusion of natural flowers, soft and genial skies, fishes leaping, swallows twittering, bees humming, the cuckoo repeating her note, and the corn coming into blade. But these appearances are often prevented or much clouded by cold east winds, most destructive to the fruit-blossom. The greater prevalence of this wind during May than in any other month, seems to be chiefly the cause of the well-known injunction: 'Change not a clout till May be out.' The general average temperature is about 51 degrees. We are now arrived at the latest period of seed-time. In the most backward parts of the country, barley is still sown; turnip-sowing is general; and the seeds of some of the tenderer garden-plants are committed to the earth. The ash, the last budding of our native trees, comes into leaf in the latter part of the month.

JUNE.

The origin of the name June, or what is usually considered the origin, has been explained at the same time with that of May. The month was sacred to Juno, the foundress of marriage.

11. *St Barnabas the Apostle*, a holiday of the Church of England. In the old style, the 11th of June was the longest day; hence an ancient rhyme:

> Barnaby Bright,
> The longest day and the shortest night.

15. *St Vitus's Day.*—St Vitus was a Sicilian martyr. From him, though for what reason is doubtful, is named a well-known nervous affection of the limbs, proceeding from a disordered state of the visceral system. It was a popular belief that rain on this day indicated rain for thirty days thereafter.

24. *St John's Day*, the Nativity of St John the Baptist, a holiday of the Church of England. The *Eve of St John*, variously called *Midsummer Eve*, was formerly a time of high observance amongst the English, as it still is in Catholic countries. Bonfires were everywhere lighted, round which the people danced with joyful demonstrations, occasionally leaping through the flame. A certain number of citizens formed a watch, which perambulated the streets all night. It was also believed that on this eve, by fasting, waking, pulling certain herbs, and going through certain ceremonies, it was possible to obtain an insight into futurity on some important points. *Fasting St John's Fast* was a great feat of young women a century or two ago. There was also a custom of holding vigil in the church porch, precisely the same as described under St Mark's Day (April 25).

29. *St Peter's Day*, a high festival of the Romish Church, and a holiday of the Church of England. It is celebrated at Rome with illuminations and magnificent ceremonials.

Natural History.—In the central parts of our island, this is in general a dry coldish summer month. The days, however, are at the longest; and though June ranks only third highest as to temperature, drought or evaporation reaches the extreme point. June here resembles the May of more southern climes. The general average of the thermometer is 57 degrees. In the course of the month we have the flowering of a great number of fine perennials and shrubs, so that the gardens are usually in great glory. It is also the time when weeds give the gardener and husbandman the greatest trouble.

JULY.

This, being at first the fifth month of the Roman year, was called Quintilis. It became the seventh in consequence of the reform of the calendar by Julius Cæsar, in whose honour, as he was born in it, Mark Antony gave it the present name.

3. The day fixed in the calendars as the first of the *Dog-days*, the last being the 11th of August. The dog-days precede and follow the heliacal rising of the star Sirius (in the constellation of the Greater Dog) in the morning, which in Pliny's time was on the 18th of July. The extreme heat of this season of the year, although to us palpably the effect of the continued high position of the sun, was connected by the ancients with the appearance of this star in the morning. They considered the Dog-star as raging, and gave the time the appellation of the Dog-days. The liability of dogs to rabies in consequence of the heat of the season was connected with the same star, though there was nothing but accident in the collusion; and they butchered these animals without mercy. By the procession of the equinoxes, the heliacal rising of Sirius in the morning has been changed to the latter end of August, and in a few thousand years more it will take place in the depth of winter.

4. *The Translation of St Martin Bullion*, noticed as a festival in the Church of England calendar, though not observed. There is an old saying, not heretofore in print, 'If the deer rise up dry and lie down dry on St Bullion's Day, it is a sign there will be a good gose har'st;' meaning, apparently, that dry weather at this season is favourable to the crops.

St Ulric's Day.—On this day, in ancient Catholic times, the people brought fish to the altar to obtain the favour of St Ulric, and one sat there selling the same back to the public for the benefit of the Church.

15. *St Swithin's Day*—remarkable on account of a well-known popular notion, that if it rain on this day, there will be more or less rain for forty days to come. St Swithin lived a thousand years ago. He was an eminently pious and learned bishop of Winchester, and priest to King Egbert. He was the deviser and originator of tithes in England. The story runs that, being buried by his own request in the churchyard of the cathedral, the priests a hundred years after felt desirous of giving him greater honour, and commenced the work of translating his remains into the interior. This was on the 15th of July. They were stopped in their work by a heavy fall of rain; neither could they resume their duty next day, for the heavy rain still continued. In short, this rain

lasted forty days, by which time the priests became convinced that it was designed to stop them in a work which, though well meant on their part, was ill taken on that of the saint; and they gave up the point. Ever since then, it has been held as a maxim that if there be rain on St Swithin's Day (the 15th of July), there will be rain for the forty ensuing days.

20. *St Margaret's Day.*—This day figures in the Church of England calendar. St Margaret was a holy Italian virgin, martyred in 278. She seems to have been the Christian Lucina; formerly, at Paris, there was a flocking to church on this day of all women who were pregnant, or thought they might be so in the course of the year.

25. *St James the Apostle*, a holiday of the Church of England. In Catholic times, it was customary for the priests on this day to bless the apples.

Natural History.—July is the warmest month of the year, the general average temperature being 61 degrees. With us it may be accounted the most important, as its temperature in a good measure regulates the ripening of the crop—that is to say, determines whether it shall be early or late; and in our climate this for the most part may be reckoned a criterion of its value. Flora is in her glory this month. The greatest display of flowers in the whole year takes place in the course of July in our climate. The list includes all the hardy annuals and a great many others. At the same time all our small fruit are in abundance, cherries and strawberries in the beginning being followed by currants, gooseberries, and raspberries, in all their varieties. In the early part of the month, barley and oats come into ear, and sometimes, in very forward seasons, a little barley is cut before the end of July; but very rarely any other kind of grain is ready for the sickle before the middle of August. A great part of the produce of the garden comes to perfection, such as early cabbage, cauliflower, turnips, peas, beans, lettuce, &c. Early potatoes also make their appearance, but are not mature till next month.

AUGUST.

In early Roman times, this month was called Sextilis, as being the sixth of the year. The Julian arrangement made it the eighth. It acquired the name *Augustus* in honour of the second of the Cæsars, to whom it had been a fortunate period, he having in it assumed his first consulship, celebrated three triumphs, subdued Egypt, received the oath of allegiance of the legions that occupied the Janiculum, and terminated the civil wars of Rome. As already mentioned, being dissatisfied with its being a month of thirty days, Augustus took a day from February, to make it one of the longer class, like that (July) of his uncle Julius. At the same time, September and November were each deprived of a day, which was added in the one case to October, and in the other to December.

1. *Lammas-day*, called also the *Gule of August.* It is now only remarkable as a day of term for some purposes. It was probably one of the great festival-days of our heathen ancestors; and it is worthy of observation that it occurs exactly three months after another of these—Beltane. Cormac, bishop of Cashel in the tenth century, records that in his time four great fires were lighted up on the four great festivals of the Druids—namely, in February, May, August, and November: probably Beltane and Lammas were two of these. Lammas was held as a day of thanksgiving for the new fruits of the earth. It was observed with bread of new wheat. The word is a softened form of the Ang.-Sax. *Hlaf-maesse* (loaf-mass, or the loaf-festival). Till the middle of the last century, the shepherds in various parts of Scotland were accustomed to hold festive meetings on Lammas-day on the tops of conspicuous hills. The Gule of August is probably from the Celtic *Cul* or *Gul* (a festive anniversary). The early Christian priesthood finding this word in vogue, Latinised it into Gula, which means throat. This, taken in connection with its being the day of the festival of St Peter ad Vincula (instituted in honour of a relic of St Peter's chains), seems to have suggested to them to make up a story of a daughter of the tribune Quirinus having been cured of a disorder in the throat by kissing the said relic on the day of its festival. And the Celtic *gul* (an anniversary) has thus been the remote cause of a Christian festival being instituted to *Gula* (the throat), and held on the day of St Peter's Chains.

15. *The Assumption of the Blessed Virgin*, a grand festival of the Romish Church. It was instituted in 813, to celebrate the ascension of the Virgin into heaven. In Catholic countries, this day is marked by splendid ceremonies and processions.

24. *St Bartholomew's Day*, a holiday of the Church of England. Bartholomew was an apostle, but there is no scriptural account of his labours or death. The legend of the Roman Church represents him as preaching in the Indies, and concluding his life by being flayed alive by order of a brother of the king of Armenia. The day has a horrible celebrity in connection with the massacre of the Protestants at Paris in 1572.

Natural History.—The mean average heat of this month (60 degrees) approaches so near that of July, that a warm dry August often compensates for a low temperature in the preceding month. In the beginning of August we have often the heaviest rain of the whole year, termed in Scotland the Lammas Flood. July and August, always our warmest, are often our wettest months. Southerly and westerly winds have now the ascendency, but in the case of very heavy rain the wind usually falls. Harvest, in the average, commences about the middle of this month, but in late seasons not till the very end. The order of ripening of our cereal grains is—barley, wheat, oats. The earliest of our larger fruit begin to ripen this month—apples and pears, but hardly plums. The later and more tender exotic annuals now come into flower, such as the amaranths, xeranthemum, zinnia, jacobea, China asters, &c.; also the gigantic biennial shepherd's club, which sows itself, and the also gigantic annual sunflower. St John's wort, monkshood, flox, and others, also flower about this time. This month is likewise the busiest season of the herring-fishery, an important branch of industry, which affords lucrative employment to vast numbers of the working population.

SEPTEMBER.

This was the seventh (*septem*) month in the Roman year before the Julian reform of the calendar. The first two syllables of the name are thus readily accounted for; the last, which also figures at the end of the names of the three following months, is an ancient particle of doubtful signification.

1. *St Giles's Day.*—This saint's day figures in the Church of England calendar. A native of Greece, he travelled into France in 715, and became abbot of Nîmes. He literally obeyed the Scriptural injunction by selling his patrimony for the benefit of the poor, and on one occasion gave his coat to a sick mendicant, who was cured miraculously by putting it on. St Giles has thus become the patron saint of beggars and cripples. St Giles's Church, Cripplegate, London, and the High Church in Edinburgh, are dedicated to him; and he is the patron saint of the Scottish capital, as far as it can be said to have one.

8. *The Nativity of the Blessed Virgin*, a grand festival of the Romish Church, and still retained in the Church of England calendar. This festival has been held in honour of the Virgin, with matins, masses, homilies, collects, processions, and other ceremonies, for upwards of a thousand years.

14. *Holy-rood Day*, or the day of the exaltation of the Holy Cross, a festival of the Roman Church, still retained in the Church of England calendar. It celebrates the miraculous appearance of a cross in the heavens to the Emperor Constantine. The Wednesday, Friday, and Saturday after Holy-rood Day, are Ember Days, and the week in which they occur is consequently termed Ember Week.

21. *St Matthew the Apostle*, a festival of the Church of England.

29. *The Festival of St Michael and all the Holy Angels;* shortly, *Michaelmas-day*, a grand festival of the Roman and English Churches. St Michael is singled out for particular mention as being the chief of angels, or archangel.

Michaelmas, besides being one of the quarter-days in England for the payment of rents and wages, has been distinguished from an early period in that and other countries as the time for the annual election of corporation officers, magistrates, and other civil guardians of the peace.

It is an ancient and extensively prevalent custom to have a goose for dinner on Michaelmas-day. Queen Elizabeth is said to have been eating her Michaelmas goose when she received intelligence of the defeat of the Spanish Armada. Very curious and recondite origins have been assigned to this custom, but it seems to have arisen simply from the goose being in finest condition for the table immediately after it has had the range of the reaped harvest-fields.

Natural History.—This is often the finest month of the year; yet, as with other portions of our seasons, it is not to be depended on. In temperature (the general average is 55 degrees) it ranks between May and June, yet the first three weeks are often as warm as any part of the summer; but there is usually a sensible falling-off in the later part. In Scotland, the bulk of the harvest-work of the season is usually effected during this month. It is likewise the time when large fruit comes to perfection. The flower-borders have still a gay appearance, the latest exotic annuals only beginning to flower at this time. The dahlia appears in all its grandeur during September. It has been remarked that at no other period of the year is the house-fly so numerous.

OCTOBER.

As already explained, October has its name from having been the eighth month of the Roman year before the Julian reform of the calendar. In the time of the Emperor Domitian it was called Domitianus, in his honour; but after his death that name was abandoned by general consent, from a wish to sink the memory of so execrable a tyrant. The Saxons called October *Winmonath* (wine-month), from its being the vintage time on the continent.

2. The festival of the *Holy Angel Guardians* in the Roman Church.

9. The day of *St Denis*, the patron saint of France. St Denis was put to death, with some companions, in the year 272, upon an eminence near Paris, since called, from that circumstance, Montmartre (*Mons Martyrum*). According to the legend, his head had no sooner been cut off, than the body rose, and taking up the head, walked with it two miles. Portraits of the martyred saint, carrying his head in his hand, abound in old prayer-books.

18. The day of *St Luke the Evangelist*, a festival of the Church of England. This day was appointed to be St Luke's festival in the twelfth century.

St Luke was usually represented in the act of writing, with an ox by his side, having wings and large horns. The natural habit of this animal in ruminating upon its food, caused it to be selected as an emblem of meditation appropriate to this evangelist. At Charlton, a village near Blackheath, about eight miles from London, a fair is held on St Luke's day.

25. *The Festival of St Crispin and St Crispinian.*—The name of St Crispin is in the Church of England calendar. Crispin and Crispinian are said to have been two Roman youths of good birth, brothers, who, in the third century, went as Christian missionaries to France, and preached for some time at Soissons. In imitation of St Paul, they supported themselves by working at the trade of shoemaking during the night, while they preached during the day. They were successful in converting the people to Christianity, until arrested in their course by Rictius Varus, governor under the Emperor Maximian Herculius. Butler, in his *Lives of the Saints*, says: 'They were victorious over this most inhuman judge by the patience and constancy with which they bore the most cruel torments, and finished their course by the sword about the year 287.' The two young martyrs were of course canonised, and a splendid church was built to their honour at Soissons, in the sixth century. The shoemaker craft throughout the whole Christian world have from an early period regarded Crispin and Crispinian as their patron saints, but particularly the first. They often celebrate the day set apart for these saints in the calendar with processions,

in which Crispin, Crispinian, an Indian prince, and some other personages whom tradition has associated with their history, are represented in splendid antique dresses. Sometimes a coronation of Crispin is part of this ceremony, for there is a notion that he was a royal personage; and hence we find the shoemakers, in Scotland at least, assuming for their arms a leather-knife surmounted by a crown, and styling themselves 'the royal craft.' Whether they celebrate the day by processions or not, they are sure to distinguish it by giving themselves up for the time to jollity. It is to be hoped, however, for the honour of 'the royal craft,' that there is no foundation for the scandalous censure conveyed against them in the following doggrel couplet:

> On the twenty-fifth of October,
> There was never a souter sober!

28. The day of *St Simon* and *St Jude*, a festival of the English Church. Simon, usually surnamed the Canaanite, remained with the other apostles till after Pentecost; it has been surmised that he visited Britain, and there suffered martyrdom. Jude, otherwise called Thaddeus, and thought to have been a son of Joseph by a former wife, is said to have suffered martyrdom in Persia.

On this day, formerly, it was considered proper to indue winter vestments. It was always expected to be rainy. A character in an old play called the *Roaring Girl*, says: 'As well as I know 'twill rain upon Simon and Jude's day.' In another production of the Elizabethan stage, some one exclaims: 'Now a continual Simon and Jude's rain beat all your feathers as flat down as pancakes.'

Natural History.—During this month, the average temperature of which is 49¼ degrees, there are usually decided symptoms of the approach of winter; yet the weather of the month is often of a steady and agreeable character. Bare harvest-fields, some of which are in the course of being ploughed for winter-wheat, form a conspicuous feature of external nature. The foliage of the trees becomes changed from green into a variety of tints, which gives the woods a beautiful appearance, and is generally admired, although felt to betoken that they are soon to be stripped of their summer honours. The migratory birds assemble, and commence their annual flight to more genial climes—the swallow to the coasts of Africa, the nightingale to the southern shores of the Mediterranean, and the puffin and some others either to Africa or to Spain. Towards the end of the month, if high winds prevail, the trees are a good deal bared. In the gardens, less decline is to be remarked. The flower-borders still have a gay appearance; the hollyhock, dahlia, and some other flowers, being yet in good condition. This is the time of the laying up of potatoes. In England, it was the favourite time for brewing, on account of the equable temperature; and *October* is a secondary name for the yeoman's brown beverage.

NOVEMBER.

November obtained its name from being the ninth (*novem*) month of the Roman year, before the reform effected by Cæsar. Our Anglo-Saxon ancestors called it *Wint-monath* (wind-month).

1. *All-saints' Day*, a festival of the Romish and English Churches—otherwise called *All-hallow Day*. The evening of the 31st October is called All-hallow Even, or Hallowe'en, as being the vigil or eve of All-hallow Day. Hallow-tide is a comprehensive name for both days. The Roman Church designed this day to be held in honour of all those saints who had not particular days appointed for them.

It does not appear that All-saints' Day, or its eve, was ever marked by very particular observance in the Catholic Church. Nevertheless, there is scarcely any time more distinguished by the common people throughout the British Islands than All-hallow Eve or Hallowe'en. This is probably owing to the fact of November 1st having been one of the four great festivals of our pagan ancestors. The 1st of February, the 1st of May, and the 1st of August, were the other three; the ancient names of the latter two are still in vogue —Beltane and Lammas. These four days were celebrated by the kindling of fires in conspicuous places, and performing certain ceremonies. The fires of Beltane and Lammas have already been spoken of; it is probable that those of the February festival are kept up in the *Candlemas Blaze*, with a slight change of day. Fires were kindled in Wales, Ireland, the Scottish Highlands, and even in England, on the 1st of November, till a very recent period; and the custom may still be kept up in some remote places.

Pennant states as follows: 'In North Wales there is a custom upon All-saints' Eve of making a great fire called *Coel Coeth*. Every family, about an hour in the night, makes a great bonfire in the most conspicuous place near the house, and when it is almost extinguished, every one throws a white stone into the ashes, having first marked it; then having said their prayers turning round the fire, they go to bed. In the morning, as soon as they are up, they come to search out the stones, and if any of them are found wanting, they have a notion that the person who threw it in will die before he sees another All-hallow Eve.' The Welsh also practise many of those rites for divining the future which are so prevalent on Hallowe'en in other parts of the United Kingdom.

The Rev. Mr Shaw, in his *History of Moray*, written in the latter part of the last century, speaks of the Hallow-eve fire being still kindled in Buchan. In the *Statistical Account of Scotland*, published at the close of the century, the same fire is spoken of as kept up in various parts of the Highlands. In the parish of Callander, for instance, 'on All-saints' Eve, they set up bonfires in every village. When the bonfire is consumed, the ashes are carefully collected in the form of a circle. There is a stone put in near the circumference, for every person of the several families interested in the bonfire; and whatever stone is moved out of its place, or injured, before the next morning, the person represented by that stone is devoted or *fey*, and is supposed not to live twelve months from that day.'

These ceremonies appear to be amongst the earliest connected with the 1st of November. They are, or have recently been, everywhere prevalent throughout these islands. As they are obviously of a pagan character, we conclude that the notability of this season is of older date than the introduction of Christianity, and that its

character as All-saints' Day has comparatively little affected the popular mind.

We have notices from both Perthshire and Ireland of the 1st of November being partly regarded as the proper time for returning thanks for the realised fruits of the earth. The Irish, in this regard, called it *La Mas Ubhal*—that is, the day of the apple-fruit—and celebrated it with a drink or mess composed of bruised roasted apples amongst ale or milk. This drink in time acquired the strange appellation of *lamb's wool*, a corruption apparently of the name of the day in the Celtic language.

It was a custom of our Catholic forefathers to have a cake baked on this eve for every member of the family, as a *soul mass cake* or *soul-cake*. It was composed of oatmeal, and seeded; and pasties and frumenty were incidental to the same evening. In families of good condition, a number were baked and set up on a board like the showbread in old pictures in the Bible, to be given to visitors, or distributed amongst the poor. There was a rhyme for the occasion: 'A soul-cake! a soul-cake! Have mercy on all Christian souls for a soul-cake!'

Essentially connected with all these customs are those better-known ones which Burns has so well and so faithfully described in his poem of *Hallowe'en*. All over the British Islands, the festive and fortune-telling practices of this evening are very nearly the same. As some proof of this, passages from an English, an Irish, and a Scottish poet may be presented side by side:

Two hazel-nuts I threw into the flame,
And to each nut I gave a sweetheart's name:
This with the loudest bounce me sore amazed,
That in a flame of brightest colour blazed;
As blazed the nut, so may thy passion grow,
For 'twas thy nut that did so brightly glow!
—*The Spell, by Gay.*

These glowing nuts are emblems true
Of what in human life we view;
The ill-matched couple fret and fume,
And thus in strife themselves consume;
Or from each other wildly start,
And with a noise for ever part.
But see the happy, happy pair,
Of genuine love and truth sincere:
With mutual fondness, while they burn
Still to each other kindly turn;
And as the vital sparks decay,
Together gently sink away:
Till life's fierce ordeal being past,
Their mingled ashes rest at last.
—*Nuts-burning, All-hallow Eve, by Charles Graydon.*

Jean slips in twa wi' tentie e'e,
Wha 'twas she wadna tell;
But this is Jock and this is me,
She says in to hersel':
He bleezed owre her, and she owre him,
As they wad never mair part,
Till fuff! he started up the lum,
And Jean had e'en a sair heart
To see't that night.
—*Hallowe'en, by Burns.*

Nuts, besides being thus used for divination, are cracked and eaten; and hence, in the north of England, All-hallow Eve is often called *Nut-crack Night*. Apples are also extensively eaten, this consumpt of fruit having probably some reference to the heathen character of the day, as that of thanksgiving for the produce of the season. The more noteworthy of the fortune-telling customs described by Burns, besides the above, are—for a solitary female to go to a kiln, and throwing a blue clew into the pot, to wind it, expecting that ere finished it will be held back, when, by inquiring who holds, a response will be obtained disclosing the name of the future husband—to eat an apple at a looking-glass, expecting to see a vision of the future husband peeping over the shoulder—to sow hemp-seed in the yard, saying: 'Hemp-seed, I saw thee; hemp-seed, I saw thee, and her that is to be my true love come after me and draw thee;' expecting that, on looking over the shoulder, a vision will be obtained of the future spouse in the act of pulling grown hemp—to dip a shirt-sleeve in a rivulet at the meeting-point of the lands of three proprietors, and then hang it by the fire to dry, trusting to see such a visionary person come in and turn the other side—to pull stalks of deceased cabbages blindfolded, without choice, and augur, from their straightness or crookedness, the figure of the future spouse—finally, to set three dishes on the floor, one empty, one with clean, and one with foul water, and cause the company to approach them blindfolded, and dip in a hand; when he who dips in the empty one is expected to remain unmarried; he who dips in the foul one, to marry a widow; and he who dips in the clean one, to marry a female not hitherto married. The whole of these rites are as familiar to the Welsh, Irish, and Northumbrian, as to the Ayrshire peasantry. Many of them are also practised in England on St John's Eve, the 23d of June.

Hallowe'en is still observed, but the more daring rites are generally given up. Meetings of young persons take place, and a plentiful store of nuts and apples being provided, a few simple amusements are practised. The experiment of the burning nuts, to test the durability of love or friendship, is still a favourite. Ducking for apples is another. A tub being provided, nearly full of water, and the fruit thrown in, the young people endeavour to seize an apple with their teeth—a task of much more difficulty than might be supposed, and which generally puts the dress and tresses of fair experimentalists into considerable disorder. Or a cross-stick is suspended by a string from the ceiling, with a short burning candle on one end, and an apple on the other. While it swings rapidly round, lads and lasses, with their hands tied, endeavour to catch the apple with their teeth, but generally suffer a good deal from the candle before they succeed in their object.

2. *All-souls' Day*, or the *Commemoration of the Faithful Departed*.—A very solemn festival of the Romish Church, which has masses and ceremonies appropriate to the occasion, designed in favour of the souls of all the dead. 'Odillon, abbot of Cluny, in the ninth century, first enjoined the ceremony of praying for the dead on this day in his own monastery; and the like practice was partially adopted by other religious houses until the year 998, when it was established as a general festival throughout the western churches. To mark the pre-eminent importance of this festival, if it happened on a Sunday, it was not postponed to the Monday, as was the case with other such solemnities, but kept on the Saturday, *in order*

that the church might the sooner aid the suffering souls; and that the dead might have every benefit from the pious exertions of the living, the remembrance of this ordinance was kept up by persons dressed in black, who went round the different towns, ringing a loud and dismal-toned bell at the corner of each street, every Sunday evening during the month, and calling upon the inhabitants to remember the deceased suffering the expiatory flames of purgatory, and to join in prayers for the repose of their souls.'—*Brady's Clavis Calendaria.*

5. The anniversary of the discovery of the Gunpowder Plot in 1605, and of the landing of King William III. in 1688. The special service for this day in the ritual of the Church of England was abolished in 1859, by an ordinance of the Queen in Council, but there is still a popular celebration of Guy Fawkes's day. From an early hour, the boys go about collecting materials for a bonfire, or money wherewith to purchase them. In some, perhaps most places, they carried with them a frightful figure composed of an old suit of clothes stuffed with straw, to represent Guy Fawkes. They called on the passengers and householders 'to remember Guy,' or shouted some balderdash rhymes. In the evening, the bonfire is lighted, with Guy Fawkes in the middle of it, amidst tumultuous merriment.

11. *St Martin's Day*, or *Martinmas*, in the Church of England calendar. Popularly, this is one of the most remarkable days of the year, especially in Scotland, where Whitsuntide and *Martinmas* are the two great terms for leases and engagement of servants, the latter being that at which the occupation of farms usually commences. Formerly, it was a quarterly term-day in England: a payment of corn at Martinmas occurs in the Doomsday Survey. The killing of beeves at Martinmas for winter provision was formerly universal in Northern Europe, in consequence of there being no means of keeping them alive in winter; since the improvement of husbandry in some countries, the custom has been given up, and fresh meat used all the year round. The feasting upon the entrails was equally universal. So much was all this associated with Martinmas, that in Scotland a beeve killed at that time was called a *mart*, or *mairt*. In the old book of laws attributed (erroneously) to David I. of Scotland, it is provided that 'the fleshours sall serve the burgessis all the time of the slauchter of *Mairts*.' In Northumberland, also, a Martinmas bullock is called a *mart*. It appears that the contents of the puddings, as made in England, were composed of blood, suet, and groats; and there was an enigmatical proverb thence arising, that 'blood without groats was nothing,' meaning that birth without fortune was of little value. Down to near the end of the last century there was not a family above the poorest condition in the rural districts of Scotland which had not a *mart*, or a share in one, and salted meat was the only food of the kind used in winter; now, there is no such practice known.

Martin, in whose honour this festival was at first instituted, is said to have been born in Lower Hungary about 316, and to have originally been a soldier. After a number of miraculous adventures, he settled as a hermit in the hollow of a rock near Tours, in the south of France, where he was greatly venerated. He died bishop of Tours in 397. When a few fine days occurred about this time of the year, they were called *St Martin's summer*.

23. *St Clement's Day*, in the Church of England calendar. Clement is spoken of by St Paul as one of his fellow-labourers. Monkish imagination has supplied him with a history and a martyrdom. He is said to have been thrown into the sea with an anchor fixed about his neck. An anchor is therefore assigned to him as an emblem: of this the metropolis presents a conspicuous memorial in the anchor which forms the vane of the church of St Clement Danes, in the Strand. St Clement is held as the patron saint of the blacksmiths.

29. This is one of the days on which *Advent* may commence. Advent (literally, the Coming) is a term applied from an early period of ecclesiastical history to the four weeks preceding Christmas, which were observed with penance and devotion, in reference to the approaching birth of Christ. There are four Sundays in Advent, the first of which is always the nearest Sunday to St Andrew's Day (November 30).

30. *St Andrew's Day.*—The festival-day of this saint is retained in the Church of England calendar. St Andrew was one of the Apostles. The church legend represents him as martyred in the year 66 at Patræ, in Greece, upon a cross of the form of the letter X, which, accordingly, is still recognised as St Andrew's Cross. A supposed relic of this cross, carried to Brussels in the middle ages, caused its figure to be adopted as a badge for the knights of the Golden Fleece. Some relics of the apostle himself were said to have been carried by a Greek devotee, named St Regulus, to Scotland, where they were placed in a church built at a place which subsequently became distinguished by the name of St Andrews. St Andrews became the seat of the Scottish primacy; and from this cause probably it was that St Andrew was in time considered as the patron saint of Scotland. In that country, however, there is scarcely any observance of this day in any manner; it is only when Scotsmen are abroad, and have occasion to select a day for an annual convivial meeting, that St Andrew's Day comes into notice. There used to be a procession of Scotsmen on this day in London, with singed sheep's heads borne before them. There is an ancient and widely prevalent custom connected with St Andrew's Day, to which Luther has adverted. Maidens, on the eve of this day, stripped themselves, and sought to learn what sort of husbands they were to have by praying in these terms: 'Oh, St Andrew, cause that I obtain a good pious husband; to-night shew me the figure of the man who will take me to wife.'

Natural History.—In this month, vegetation experiences its death. The trees are now thoroughly stripped of their foliage. It is reputed as a gloomy month; but the temperature is sometimes agreeable in the earlier part of it, and its average is 43 degrees. A considerable number of plants remain in flower throughout November.

DECEMBER.

So called as being originally the *tenth* of the Roman year. Our Anglo-Saxon ancestors called December *Winter-monath*—that is, winter-month; but after becoming acquainted with Christianity,

this name was changed into *Halig-monath*, or holy-month, with reference to the celebration of the nativity on its twenty-fifth day.

6. *St Nicholas's Day.*—Retained in the Church of England calendar. St Nicholas was archbishop of Myra, in Greece, 342 A.D. He is regarded as the patron saint of children and of mariners, probably in consequence of his benevolent zeal in the protection of orphans and stranded seamen. Churches built near the sea are in many instances dedicated to St Nicholas. He is also said to have shewn much kind interest in the fate of young women, sometimes secretly throwing purses into the chamber-windows of those who lacked dowries. Hence has arisen a custom prevalent over a large part of the Christian world: on his eve, presents are hid in the shoes of those to whom any one wishes to give a pleasing surprise; and these being found in the morning, are jocularly said to be gifts from St Nicholas.

St Nicholas is also considered as the tutelar saint of scholars, or clerks, and of robbers. The fraternity of parish clerks have thought themselves entitled by their name to adopt him as their patron. How robbers should have come to be called St Nicholas's clerks, or St Nicholas's knights, it is not easy to see, unless it were from the coincidence of his name with one of the slang appellations of the devil.

Throughout the middle ages, there was a universal custom of electing a kind of mock-bishop on St Nicholas's Day. A boy, possibly taken from amongst the choristers, was chosen by his associates as bishop, arrayed in suitable vestments, and indued with appropriate powers, which he enjoyed for some days. He was even allowed to sing mass and to mount the pulpit and preach. Edward I. on his way to Scotland in 1299, heard vespers by a boy-bishop at the chapel of Heton, near Newcastle.

8. *The Conception of the Blessed Virgin* in the Romish and English calendars.

11. The fourteen days from this to Christmas-eve were called the *Halcyon Days*, and supposed to be, in their calm and tranquil character, an exception from the season. The term, which is now a regular adjective in our language, is derived from the bird kingfisher or halcyon, which, from the days of Aristotle at least, has been the subject of a curious superstition. The ancients supposed that it built its nest on the ocean, and brought forth its young at the winter solstice. To account for the preservation of the nest and young amidst the severity of the season, they imagined that the bird had a power of lulling the raging of the waves during the period of incubation; and this power was believed to reside in its song.

13. *St Lucia's Day.*—Retained in the Church of England calendar. St Lucia was a young lady of Syracuse, who obtained a high character for a devout and charitable life, and died in the year 304. The last of the four series of Ember Days commences on the Wednesday following this festival.

16. *O Sapientia.*—This day is so marked in the Church calendar, probably from an anthem sung on this day in the Romish Church, beginning 'O sapientia quæ ex ore altissimi prodidisti,' &c.

21. *St Thomas the Apostle*, a festival of the English Church. It was customary for women to go *a-gooding* on St Thomas's Day; that is, they went about begging money, and presenting in return sprigs of palm and bunches of primroses, probably with a view to the decoration of their houses against Christmas.

25. *Christmas-day*, observed from an early period as the nativity of our Lord, and celebrated not only by the religious ceremonies from which the name of the day is partly taken, but by popular festivities of the most joyful kind. In England, Christmas is held by the Church as a solemn festival, and distinguished by the complete cessation of business—an honour paid to no other day besides Good Friday. But within the last hundred years, the festivities once appropriate to the day have much fallen off. These at one time lasted with more or less brilliancy till Candlemas, and with great spirit till Twelfth-day; but now a meeting in the evening, little different from a common dinner-party, though sure to be marked by a roast and plum-pudding, and pretty generally followed by a game at cards, is all that distinguishes Christmas in most families.

In former times, the celebration of Christmas began in the latter part of the previous day—Christmas-eve. The house was first decked with holly, ivy, and other evergreens. Candles of an uncommon size were then lighted, under the name of Christmas Candles; an enormous log, called the Yule Clog, or Christmas Block, was laid upon the fire; the people sat round, regaling themselves with beer. In the course of the night, small parties of songsters went about from house to house, or through the streets, singing what were called Christmas Carols—simple popular ditties, full of joyful allusions to the great gift from God to man in the Redeemer. A mass was commenced in the churches at midnight, a custom still kept up in the Catholic Church.

The carols were more generally sung in the morning of Christmas-day. A contributor to the *Gentleman's Magazine*, in 1811, describing the manner in which Christmas is celebrated in the North Riding of Yorkshire, says: 'About six o'clock on Christmas-day I was awakened by a sweet singing under my window; surprised at a visit so early and unexpected, I arose, and looking out of the window, I beheld six young women and four men welcoming with sweet music the blessed morn.' It may scarcely be imagined how delightfully at such a moment would fall upon the half-slumbering ear such strains as the following:

God rest you, merry gentlemen,
Let nothing you dismay,
For Jesus Christ our Saviour
Was born upon this day,
To save us all from Satan's power,
When we were gone astray.

O tidings of comfort and joy,
For Jesus Christ our Saviour
Was born on Christmas-day.

In Bethlehem in Jewry
This blessed babe was born,
And laid upon a manger
Upon this blessed morn;
The which his mother Mary
Nothing did take in scorn.
O tidings, &c.

Christmas carols are amongst the oldest of English songs. A collection of them was printed by Wynkyn de Worde in 1521.

The religious service of Christmas-day receives but a small share of attention from old writers. In fact, the day was chiefly distinguished by the popular festivities. Its grand feature was a feast, of great abundance, and at which a few particular dishes regularly appeared, above all, plum-porridge and mince-pie. In every great hall, whether of a man of rank or of a great corporation, there was a boar's head ushered in by minstrelsy. It was customary for the rich and noble to treat their humble dependents, and to meet with them on terms of equality, as considering that all men are regarded alike by the religion of him whose natal-day they are celebrating. A sort of license prevailed. A branch of the mistletoe being hung up in the hall, or over the doorway, the youths were understood to have a right to kiss any maiden whom they could inveigle under it. It was also customary to elect a person as *Lord of Misrule*, who went about taking the lead in every kind of extravagant sport and merriment which the wit of man could devise. The election and functions of this personage were perhaps the most singular part of the festival. According to Stow, 'at the feast of Christmas there was in the king's house, wherever he lodged, a Lord of Misrule, or Master of merry Disports, and the like had ye in the house of every Nobleman of honour or good worship, were he spiritual or temporal. The Mayor of London, and either of the Sheriffs, had their several Lords of Misrule, ever contending, without quarrel or offence, who should make the rarest pastime to delight the beholders. These lords, beginning their rule at All-hallond Eve, continued the same till the morrow after the Feast of the Purification, commonly called Candlemas-day: in which space there were fine and subtle disguisings, masks, and mummeries, with playing at Cards for Counters, Nayles, and Points in every House, more for pastimes than for gaine.'

The management of the plays usually acted at Christmas in the halls of colleges and law societies fell to the care of the Lord of Misrule. The particular functionary elected in the inns of court in London, after exercising all the duties and going through the parade of royalty for a fortnight, at an expense of a couple of thousand pounds, was knighted at Whitehall by the real sovereign of the land.

In Scotland, before the Reformation, the religious houses had a similar officer for the Christmas revels, called the *Abbot of Unreason*, whose particular functions are graphically portrayed by Scott in his novel of *The Abbot*. The custom was suppressed by statute in 1555.

26. *St Stephen's Day*, observed as a festival of the Church of England. There was formerly a widely prevalent dogma that it was good to bleed horses about this time of the year, and St Stephen's Day was that chosen by most people for the purpose. On this day, also, blessings were implored upon pastures.

27. *St John the Evangelist's Day*, observed as a festival by the Church of England. Because John drank poison, without dying in consequence, it was supposed that those who put their trust in him were safe from all injury from that cause.

28. *Childermas*, or *Holy Innocents' Day*, observed by the Church of Rome with masses for the children killed by Herod. It was considered unlucky to marry, or to begin any work, on Childermas-day. The learned Gregory says: 'It hath been a custom, and yet is elsewhere, to whip up the children upon Innocents' Day morning, that the memory of Herod's murder might stick the closer, and in a moderate proportion to act over the "crueltie again in kinde."'

31. The last day of the year is called in Scotland *Hogmanay*, a word which has fruitlessly exercised the wits of the etymologists. The Scottish people, overlooking Christmas in obedience to the behests of their religious teachers, have transferred the merriment of the season to Hogmanay and New-year's Day, which they accordingly abandon to all kinds of festivity. Handsel Monday, or the first Monday of the year, is also an occasion of festivity. On the evening of Hogmanay, there are merry-makings, which are always prolonged to twelve o'clock, which has no sooner struck than all start up excitedly, and wish each other a happy new year. Small venturous parties take a kettle with hot ale posset, called 'a het pint,' or, more commonly, a bottle of whisky, and go to the houses of their friends, to wish them a happy new year. Whoever comes first, is called in that house 'the First Foot,' and it is deemed necessary on such occasions to offer the inmates both a piece of cake and a sip from the kettle or the bottle, otherwise they would not be lucky throughout the year. This is called '*First-footing*.' Next day, all people go about among all other people's houses; presents are given amongst relations; and dinner-parties close the evening. Formerly, the first Monday of the year was also much observed as a festive-day, and time for giving presents, from which latter circumstance it was called *Handsel Monday*. The Handsel Monday, old style, is still, in some rural districts, the chief feast-day of the season. In Scotland, message-boys, postmen, dustmen, &c. expect and receive a small *douceur* on Handsel Monday from the householders included in their daily rounds. On the evenings of Christmas, Hogmanay, New-year's Day, and Handsel Monday, parties of young men and boys went about disguised in old shirts and paper vizards, singing at the various houses for a small guerdon. These *guizarts*, as they were called, also acted a rustic kind of drama in which the adventures of two rival knights and the feats of a doctor were conspicuous. Almost everywhere in Scotland the festive and frolicsome observances of the New-year tide have very much declined.

Natural History.—December is the darkest but not the coldest month of the year: the general average temperature is 40 degrees. The deciduous trees are now completely stripped of their foliage, and the ground often shews a snowy covering, although it is rarely that there is much strong ice in December. Amidst the general desolation, the pines and other evergreens form an agreeable resting-place for the eye. The rose also continues to blow during this month.

POLITICAL ECONOMY.

POLITICAL ECONOMY is a social science, having for its subject the laws of wealth, and more especially the laws of the production, exchange, and distribution of commodities possessing exchangeable value.

I. GENERAL VIEW OF THE SUBJECT.

Of Value and Exchangeable Value.

In science, and even in popular acceptation, the term *wealth* is not synonymous with *money*, but comprehends whatever is necessary, useful, or agreeable to man.

There are various kinds of wealth, of all which political economy takes cognisance, though it does not need to treat of all in the same degree of detail.

Some objects of desire are incorporeal, as a mental accomplishment; others are material, as clothing, food, &c. By many, the former are regarded as beyond the province of political economy. In truth, they fall under its laws; though there is an advantage, in an elementary inquiry, in restricting attention to material objects.

Many objects, necessary, useful, or agreeable to man, are so abundantly diffused by nature, that any one has at command, without cost or trouble, as much of them as he chooses; other objects, although equally desired, are not diffused with the same prodigality, but are found either in circumscribed localities, or in limited measure, or can only be created or rendered fit for use by labour. Now, the former class of objects—those universally diffused—though in a certain sense equally valuable with the others, are found, nevertheless, to have *no exchangeable value*. The atmosphere, for example, is essential to life, but, in general, every one has a supply of it in unlimited abundance; whereas of fuel and food, which are equally indispensable, the supply is partial, and their preparation for use laborious. In these circumstances, will any one obtain a supply of coals or of wheat by offering in exchange a measure of atmospheric air? The three commodities are equally valuable, in the sense of being equally useful, but one of them is already possessed by all in full measure, no one wanting more of it than he already has: it is otherwise with food and fuel; one man has more wheat than he needs, and less fuel than he needs; another has a surplus of fuel, and a deficiency of wheat; hence a desire to exchange a portion of the surplus food for a portion of the surplus fuel, which commodities are accordingly said to have exchangeable value. Among things having exchangeable value, there are likewise specific differences, according as they are the product of unassisted nature, or the product of man's labour, or the joint product of both.

So special are the laws affecting exchangeable value, and so largely do they occupy the political economist, that many eminent writers define political economy as exclusively the science of exchangeable values, or of wealth possessing exchangeable value. A certain advantage attends this view, by rendering the science more definite, because more limited; but the advantage is gained by regarding as the basis of a definition what is truly the first and most important law of the science. Instead of commodities diffused in superabundance being beyond the cognisance of political economy, they form the subject of one of its most important laws—namely, the law, that they possess no exchangeable value. In truth, the universal diffusion of an object of desire, is but the extreme term of a scale ranging from want to abundance; and it seems as unreasonable to exclude it from political economy as it would be to exclude infinity from the cognisance of arithmetic. To the thorough understanding of a general law, it is as necessary to know its operation at the extremes, as at the intermediate terms, of its operation.

Of the Products of Nature.

As already indicated, products of nature useful to man, but which are universally diffused, and accessible to all without cost or trouble, bear no exchangeable value. To speak so, however, is to speak hypothetically, for no natural product is so universally accessible. The atmosphere and sunlight come nearest to the condition; but it does not always hold good even of these. In a crowded town, there are localities better supplied with pure air than others; and the pure air of these gives an exchangeable value to the sites commanding it. In like manner, a hill in the midst of swampy ground, or other situations noted for salubrity, possess a high market value. The warmth and light of the sun are more genial in some exposures than in others. To speak, then, of products of nature equally diffused, is to speak of a hypothetical extreme, supposed for the sake of illustrating a law. Land, especially alluvial soil, is a product of nature, very generally diffused over the globe, and very essential to the existence of man; but its extent is limited in a marked degree; and land, of course, has exchangeable value. The same may be said of the minerals it contains; of precious stones, jewels, or other useful articles found in limited quantity on its surface; and of water-falls and other forces of nature useful to man—all which have exchangeable value.

But most commonly natural products, in order to be suited for human use, must undergo adaptations through the agency of man, or, as the term is, through labour. In this case, the exchangeable value of the article depends on two elements combined. The land is tilled, and the crops reaped and made into bread; the metal is mined, and smelted, and forged into tools; jewels and precious metals are searched for, transported great distances, and fashioned into ornaments; a manufactory is built on a water-fall, and the stream diverted to turn the machinery. In all

these cases, as before, a product of nature is used, which, from its limited supply, already possessed exchangeable value; but to it labour or human agency has been added, and the result is a product partly the result of limited natural agencies, and partly the result of labour—each of which elements gives it a measure of exchangeable value. That portion of the market value assignable to labour goes to pay wages, profits, and partly interest of capital; the portion assignable to the forces of nature usually takes the form of rent, occasionally also that of tributes and taxation. A man occupies rent free 100 acres of land of indifferent quality, and finds he can by his labour raise thereon 100 quarters of wheat a year; but he hears of another lot of 100 acres of better quality, from which, with the same labour, he can raise 300 quarters of wheat a year. Of the latter ground, however, the owner will not let him have the use without compensation, and asks 150 quarters of wheat per annum of rent. This rent the farmer cheerfully gives, as it still leaves him 50 quarters a year better than he was with the inferior soil. Now, in so far as the superior productiveness of the second lot of land was attributable to the labour of cultivation previously spent upon it, the rent was truly part of the price of such labour accumulated into fixed capital; but in so far as the superiority of the soil arose from natural qualities, the rent was the exchangeable value of a limited natural product. The rent of a rich mine of coal or metallic ore, or of a water-fall, is to be regarded as almost entirely the value of a natural product, as the richness of the one and the momentum of the other have their source in the agency of nature, not in the agency of man.

These remarks on the products of nature imply ownership—that some one or more persons have the power of retaining them in their possession, or of dictating the terms on which they may be used by others. Jewels are owned commonly by the finders. Land was in early ages seized and appropriated by force; now, ownership is for the most part determined by usage and law, which the orderly citizen observes from prudence and duty, and the disorderly and the alien are compelled to observe by police and military power. Exceptional cases occur where the products of nature have not been made the subject of ownership; and in such instances the commodity possesses no exchangeable value. The most remarkable example of this exception is the ocean or high sea, which, unlike the land, is open to every one to make use of as he chooses. Had pirates contented themselves with asking from trading-vessels a moderate toll, and backed their demand by good organisation, the nations might have submitted to the exaction, and pirates been still owners of the ocean; but piracy having for the most part degenerated into indiscriminate robbery, nations have united to hunt it down.

Of Labour.

It is said that, in some tropical lands, vegetation is so abundant, compared with population, and the indigenous plants so productive of human food, that the prime necessary of life approaches universal diffusion, and almost ceases to have exchangeable value; and certainly clothing and housing, in such a climate, cease to be a necessity, and are scarcely a luxury. But in most communities, the wants of the people far exceed the supplies offered by unassisted nature. In these circumstances—the circumstances men are usually placed in—it is found that, by labour, the productive power of nature may be very much increased. We may increase the supply of commodities wanted by fetching them from a distance; we may increase the fertility of the soil by cultivation; we may change artificially the properties of natural products, and render productive and fit for use what was formerly useless.

Were labour in itself, whatever its aim, so agreeable to man as to be pursued for its own sake, the whole community would unite in producing and scattering broadcast the necessaries and luxuries of life in unlimited measure. For the pleasure of labour alone, we should readily work for ourselves and for our neighbours, no matter how hard the work. But man is not so constituted. Labour is naturally disagreeable, and we are averse to undertake more of it than we can help, or than directly ministers to the gratification of our desires. This characteristic marks human nature throughout. Whoever does not need to labour for his bread, will not, in the general case, labour for others, except for the maintenance of his own family; and this is equally true of the tropical islander and the refined aristocrat, and is still more forcibly true of those whose main strength is used up by their more pressing needs, and who are glad, therefore, to taste the pleasures of leisure in the few hours left over from their daily toil.

It is on the principle now set forth that most of the special laws of political economy depend—it is one of the dynamic axioms owing to which the movements of society fall under the cognisance of political economy, and from which the applied laws of that science are deducible.

As proximate laws of labour, we may set down the following:

1. That, if there be any other lawful means of obtaining a supply of the necessaries of life, a man will prefer resorting to those means, rather than resorting to labour.

2. That, when necessary, he will, in general, give such amount of labour, and of such a kind, as will bring to him a supply of the necessaries of life.

3. That, while doing so, he will strive that that labour shall be as light as possible, and be otherwise as agreeable as possible.

4. That, in general, man will not labour either in a large measure or in a very disagreeable manner, unless it be absolutely necessary thereby to secure the necessaries of life and the measure of comfort or luxury common to his rank.

5. That, in some circumstances, man will labour for the sake of enjoying the luxuries of life.

6. That, according as the nature of the labour becomes less disagreeable, there is a tendency to augment labour, with the view of obtaining increased command of luxuries.

7. That, in general, it is a necessary inducement for labour that it tend directly to the personal advantage or gratification of the labourer.

8. That, in proportion as the labour becomes absolutely pleasurable, the labourer, if his supply of the necessaries and ordinary luxuries of life is otherwise secured, tends to dispense with the condition that the produce of his labour shall conduce

to his own advantage, and becomes more and more disposed to labour gratuitously for the benefit of his fellow-men.

9. That the necessaries of life, its luxuries, &c., vary with the rank, race, country, civilisation, and individual character of man.

Among these principles of labour, it is apparent that those are of most importance, and are most urgent in their action, that have reference to the necessaries of life, and to the luxuries that are ordinarily enjoyed by the several ranks, and have become in a secondary sense necessaries of their condition. The condition of three-fourths of the mass of mankind consists essentially in this, that almost their whole active strength is given towards obtaining a moderate supply of the necessaries of life only. The remainder live a more luxurious or less laborious existence; but even of these, the larger portion—the middle classes—give about three-fourths of their energies to the same essential object; and the class who are entirely relieved from the need of labour is comparatively limited.

Labour may be applied either individually or collectively; each individual may raise and manufacture his own food, clothing, housing; or these may be prepared by the community through combined action, and distributed among individuals according to bargain or usage. Labour, too, may be skilled or unskilled; may be aided by machinery, or by the moving powers of nature; may be self-subsistent, or may be maintained by capital; may be productive or unproductive. These differences in the modes of applying labour will be considered below.

Of Capital.

Capital is the sum of wealth at any given time, and the term is applicable to the wealth of individuals as of nations. In the widest sense of the term, capital includes all kinds of wealth; but, as before, our special attention must be drawn to those kinds the supply of which is limited either by nature or by dependence on labour—and which alone, therefore, possess exchangeable value. In this restricted sense, capital is the sum of those species of wealth the supply of which is limited either by nature or by their dependence on labour. And capital, as so defined, possesses exchangeable value. For convenience, it is usual to express that value in money; but money is only a small portion, though it is a portion, of capital or wealth: all the precious metals possessed by man would not equal, in exchangeable value, a tithe of the capital of the world. Nevertheless, for reasons to be afterwards given, it is convenient to express value in money, since—though the latter is never equal to the rest of the world's capital taken together—transactions are continually occurring by which a limited portion of each commodity is being exchanged for money, and hence we have a common standard by which to judge the exchangeable values of all.

It is no easy task to *accumulate* wealth. Man is indisposed to labour more than he finds absolutely necessary; he seeks to obtain as much enjoyment as possible with as little trouble as possible—the chief trouble being labour. Hence the aversion to produce a supply beyond immediate wants; the difficulty of saving—of setting apart something for future use. It bridles present enjoyment, and entails labour beyond immediate needs. A main object in education, industrial training, and civilisation, is to implant habits of labour; but it is a struggle with pleasure-loving and ease-loving nature, and the disposition to spend is constantly dissipating the stores laid up by the more prudent. Above all, there is the natural tendency of a population to increase its expenditure by multiplying its numbers.

From these causes, accumulated wealth is by no means a common possession, and is, for the most part, found in the hands of a small, though constantly increasing number, with whom it descends from generation to generation—giving rise, in certain forms, to hereditary rank. In the landed aristocracy, and among our most successful merchants, hereditary fortunes assume enormous proportions; in the middle ranks, the patrimony is more moderate, but, on the whole, there is a large amount of accumulated wealth in such a country as ours, so remarkable for its industry and enterprise.

In truth, there is a double motive to save. Not only is the wealth saved available for future use, exactly in the same way as it is available, if wanted for present use, but it admits of being applied to important purposes in the interim, and in such way as to return itself to the owner with a profit.

Accumulated wealth may be applied for the use of people living in idleness; or for the use of people employed in new labour; and in the latter case, the labourers maintained by capital may be engaged either in producing the necessaries of life, or in producing the luxuries of life.

II. CONSUMPTION.

Consumption is the name given to the application of wealth to its uses, which vary with the wants or desires fulfilled. There are wants the fulfilment of which is a condition of life; the demand for food, clothing, and shelter, being of all the most imperative. People in starvation will give anything they possess in exchange for food; and the need of clothing and shelter is only a degree less pressing. But however imperative the demand for food, clothing, and shelter, the means of satisfying these wants are not always at command; there sometimes is not enough corn to satisfy all; and even when there is enough for all, to many it may not be accessible. In this and other civilised countries, an effort is made, by means of poor-laws and otherwise, to provide against a calamity so extreme; but in uncivilised countries, millions sometimes perish of famine.

If few, however, directly die of starvation among civilised people, the same end more frequently comes about from ills engendered by poverty. A pittance of food may be earned to tide over the passing day; but the strength and health may be undermined by innutritious diet, cold, or the bad air of an overcrowded lodging. In penury such as this, a large mass of our population constantly struggles, especially in times of scarcity or slack trade.

Above this extreme of straitened living, every variety is to be found in the measure of consumption. That is most to be desired which maintains health in body and mind, and the comfort and culture to which the individual has been born. As a matter of fact, however, people commonly

desire to increase the scale of their consumption, rather than diminish it, or remain at their original level. As life advances, they aspire to new comforts, and they train their children to tastes more luxurious than their own. The prudent curb this craving, and especially guard against implanting it in their families.

It will be observed that consumption includes not merely the use of food and other such commodities, but the use of everything possessing exchangeable value, from the products of muscular labour, to the highest products of art and intelligence.

In the middle ranks, the measure of consumption is much larger than among the working orders, and in the higher ranks it is sometimes enormous. The personal service afforded by the retinue of domestics in a rich man's establishment is no small item of that *consumption*—the labour being entirely spent on the comfort or gratification of the master and those dependent on him—in technical language, the product of their labour is thus consumed.

There is a very rich class, whose means of living so far exceed their wants, and even their desires, that in no period of scarcity are they ever called on to economise; but between these and the hard-working operative there are few that, like the latter, do not feel the pinch of bad times. The middle classes do not live from hand to mouth; they have a moderate measure of capital, and they can also more readily get the loan of spare capital from their neighbours. During a backward season, therefore, the middle-class man may continue his former consumption by drawing on his own or his neighbour's capital. While this very much promotes his comfort, it is attended with its own dangers. It is justifiable, as a means of tiding over a short period of depression; but is too often made the means of maintaining a large measure of consumption not of one's own but of one's neighbour's wealth, till bankruptcy discloses its real source. In general, however, while the need of food, clothing, and shelter is as imperative in the middle as with the working classes, and even more so, since, with their up-bringing, they can less bear want, and require a supply of a more costly sort, there is nevertheless a large margin of the consumption of a family in the middle classes that varies with the means at command for the time or within prospect; and in no class is economy or the moderation of consumption practised so much.

We have spoken of consumption for one's own wants or gratification; but all consumption is not of that description; wealth may be destroyed by accident, as by fire, or flood, or shipwreck; or by war, or in mischief; or people may from some cause or other cease to desire the use of the species of wealth held in store, as when a machine or a fashion becomes obsolete—all which fluctuations involve the loss or consumption of the specific wealth owned by the individual or the community at the time.

But the owner of wealth, instead of consuming it himself, may give it away for use or consumption by others; and here arises a host of distinctions, according to the conditions on which it is given to be used or consumed, and the objects in view to effect by means of its consumption. For, while wealth is being consumed, it is most important to inquire in what manner the consumer is himself employed, and in particular whether during this period he spends his time in idleness or in labour; and if in labour, whether that labour is applied toward the production of the necessaries, or of the luxuries of life; and with what degree of success.

There is a very important branch of consumption which is of another sort—namely, the use of tools, machinery, shipping, or other indirect appliances for accomplishing work. The machinery or vessels, in being used, are said to be consumed, more or less rapidly, according to the length of time during which they serve their purpose.

III. PRODUCTION

Is the name given to the economy of labour as applied to the preparation of commodities useful to man, either in combination with the forces of nature, or independently of these forces. The motive of the producer or labourer we have seen to be the desire to gain a livelihood for himself, to obtain a share of the necessaries and luxuries of life. If his wants are satisfied without the need of labour, he has no motive to produce; but with most people it is necessary to labour in order to supply their wants and gratify their desires.

In a primitive condition of life, each individual is dependent mainly on his own exertions to raise and prepare for use the several commodities he requires—to hunt for his own food, build his own hut, make his own dress, manufacture his own tools; but by-and-by, the strong compel slaves and women to do the hardest of the work; and the community come to see it for the general advantage to combine their labour in order to obtain a larger result; population increases, and drives men to endeavour to increase the produce of nature by artificial means, and to aid the operations of men's hands by tools and machinery. Under such arrangements, the food, clothing, and housing consumed by the several individuals of a community are seldom produced or manufactured by themselves—each takes a branch only upon him in the general thrift: some make shoes, others bake bread, others weave, others till the ground; and from time to time the shoemaker, in exchange for his shoes, receives a proportion of the bread, of the cloth, of the butcher-meat, on which his neighbours expended their labour; and so with the others in their turn. The principles that govern this system of exchanging one commodity for another will come to be further explained by and by.

Productiveness of Labour.

In order that labour may be productive, it is in the first place necessary that it be directed to some useful end: it must be intended to serve the person who labours, or other persons. Rolling stones up a hill, that they may roll back again, or turning a wheel which sets no machinery in motion, is not productive labour, however disagreeable, and however much it may exhaust the person occupied. For the same reason, any exertion undergone to produce what already exists without effort, is thrown away. No artificial light can excel the light of the sun. Were we to shut this out, and light our houses with gas while the sun is shining outside, there would be exertion thrown

away and lost. In the same way, if a labourer removing stones has a barrow at his disposal, and can hurl away four hundredweights as easily as he can carry half a hundredweight, yet persists in rejecting the barrow, and carrying the stones in half-hundredweights, here is exertion thrown away; and however great it may be, and however much it may exhaust the poor man, it does not give the world the advantage of labour. This consideration possesses great importance in connection with machinery.

The comparative productiveness of simple labour depends, in the first instance, on the muscular strength, energy, adaptive faculty, intelligence, and information of the labourer; and the measure possessed of these is traceable partly to the civilisation of the time and country to which the labourer belongs, partly to the individual training he has received, and partly to his own character and disposition. An active workman will, in the same time, produce more than an indolent; and for the execution of most commodities a greater or less measure of intelligence is requisite.

To acquire skill, great patience, exertion, and perseverance are necessary. It is generally acquired at the time of life when the faculties are fresh and strong, and capable of great effort without exhaustion—that is, in the period of youth. The education or the professional training which young people undergo is the acquisition of skill, to enable them in after-life to work with great effect and with comparative ease. There are many who have opportunities of acquiring skill which others have not; but every one should acquire as much as he can. It can only be gained by great exertion and attention, and these are faculties which indolent people do not possess. It is much easier, for the time, to carry so much mortar silently on the back, or dig up so many spadefuls of earth, than to be noticing at the same time how walls and houses are constructed, or how fields can be best manured and cropped; but those who pay attention to what they see, and work with their heads, and acquire skill, lay up the means of raising themselves and accomplishing superior ends. If any one still doubt that skill is an advantage, it may be sufficient to add, that he who has not skill, cannot assume it when he pleases; but he who has skill, may dispense with it, and do unskilled labour. An engineer who has studied the structure of machinery, and can make an improved weaving-machine, would be quite able to work as a handloom weaver; but he is not likely to find that necessary. A skilful designer of patterns for damasks or printed calicoes would be quite able to stand at the door of the shop where they are sold, holding a placard in his hand; but, fortunately, such a person seldom requires to descend to so humble a means of employment. When skilled labour is aided by machinery and other capital, and guided by the discoveries of science, there is almost no limit to the increase of its productiveness.

Machinery.

Machinery is a general term designating the material contrivances devised by man to aid him in the use of his own strength or faculties, or in adapting the powers of nature to his purposes.

The most useful of the moving powers of nature are air, water, and steam. For the application of these powers, especially of the last, an enormous variety of machinery has been invented.

Steam possesses advantages over every other agent. It is capable of exerting any degree of force, from the least to the greatest; it may be used as a stationary or a locomotive power; it may be used on land or on water, and it may be placed perfectly under human control.

Inanimate agents are in general preferable to animate agents in most of the appliances for which power is required. The reasons of this will be readily comprehended.

1. They are cheaper. A steam-engine of a hundred horse-power will cost less than the horses necessary to do the labour which it performs, and will cost much less to keep it at work.

2. They labour without cessation, while animals require rest and refreshment.

3. They are safer. They have no passions, and are governed by fixed laws.

4. We can use them without the infliction of pain, while animals frequently suffer from hard work.

5. They are capable of much more rapid action.

6. They possess a power that cannot otherwise be obtained.

Besides the moving powers of nature, there are other qualities of things of great use, and which are for the most part turned to account by means of machinery. Thus, some metals, when heated, readily melt; and if poured in this state into a mould, retain the shape of the mould with more or less precision. By this device much labour is saved, or a given amount of labour is rendered much more productive. Were it not for this quality of type-metal, every type must be cut by the hand.

Machines devised in aid of manual labour are for the most part denominated *tools*.

The productiveness of machinery is very great; and though its introduction, by superseding manual workmanship, often throws large numbers of labourers temporarily out of employment, the cheapness of its products soon stimulates increased consumption, and in the end the demand for labour is increased. Beasts of burden, and even slaves, must be regarded as little else than machines or tools used by man for the purposes of industry.

Division and Combination of Labour.

Division of labour, in general, means employing one individual upon one kind of labour, instead of employing the same individual upon several kinds of labour. A savage does for himself whatever he requires to be done; but civilised men divide the various occupations, so that one man labours wholly in one, another man labours wholly in another employment; the products of which they afterwards exchange mutually. But the division of labour is soon carried further, by distributing among different workmen the production of the several pieces of which a commodity is composed. In order to make a clasp-knife, the blade must be formed and polished, the handle must be formed in pieces, rivets must be made to bolt these; and after the pieces have been prepared, they must be put together. Division of labour so apportions the work that each workman shall labour at one part only of the manufacture.

This sort of division of labour is found to have a much greater influence on the productiveness of industry than could possibly have been supposed.

The chief reasons are as follow:

1. It saves waste of time and skill in frequently passing from one process to another. After labouring for some time at one thing, a man has 'got his hand in.' If he turn to a different thing, his 'hand is out.'

2. When a variety of operations are to be performed by the same individual, he must frequently readjust his tools, or pass from the use of one kind of tools to another. This occasions a great waste of time. By performing the same operation continuously, the tools are always ready adjusted. The saving is the greater where the adjustment of tools requires not only time but expense, as in heating a furnace. If the smith heat it, and leave for the purpose of doing some other work, the fuel consumed in the interval, as well as that necessary to bring it again to temperature, is lost.

3. When men confine themselves to a single operation, they acquire a degree of dexterity, rapidity, and nicety that is otherwise unattainable.

4. Division of labour suggests the invention of tools and machines, by which labour may be rendered still more productive. As soon as an operation is analysed into its separate processes, it is comparatively easy to contrive machinery by which to perform them.

5. There is great diversity in the skill required for performing the various parts of a process. Some parts of the operation require great dexterity and training; others can be performed by the untrained, and even by children. Some parts require labour worth many shillings, others can be done by labour worth as many pence per day. Without division of labour, all must be performed by labour at the higher price. By judicious division of labour, the manufacturer can employ just the amount and just the kind of labour he needs. This greatly reduces the cost of production.

The effect of all this is seen in the very low price at which almost all articles of general use may be obtained. For instance, suppose a lady wanted a dozen needles, and applied to a jeweller or other workman to have them made for her, she could not obtain them at much less than a shilling apiece. But needles are sold at about four for a halfpenny; and this entirely through the advantage derived from the division of labour.

But to this division of labour there is a natural limit. This limit depends upon several circumstances. For instance:

1. A given process consists of no more than a certain number of operations. When it has been divided into as many parts as there are distinct processes, and one part is assigned to each individual, this is as far as division of labour can go. There would be no economy in any further division.

2. Again, the practicability of division of labour depends upon the capital of an individual or of a country. A man must have accumulated some considerable amount of capital before he can carry division of labour into an occupation. For instance, suppose that the division requires the labour of ten men, he must have materials and tools sufficient to employ ten hands. Nor is this all: suppose that it take ten days to finish his product, he must have material sufficient to employ them during all this time before he receives anything in return for that product. And if it take a fortnight more before he is able to sell his goods and obtain a fresh stock of material, he must have a capital sufficient to employ them during this time also.

3. Division of labour can only be carried on where there is sufficient demand for a product to consume it as fast as it is manufactured. If it would take *ten* men to manufacture pins by division of labour, but only so many pins could be sold as could be made by *one* man, the labour could not be divided. This, however, depends upon several other circumstances. For instance, the demand depends upon the number and the wealth of a community. There is a larger demand for hats in a town of ten thousand inhabitants than in a village of one hundred inhabitants. There is also a greater demand for hats among a thousand rich men than among a thousand beggars. This is another reason why division of labour and manufactures naturally increase with the growth, and age, and wealth of any country.

And hence, we see why roads, canals, and railways are so beneficial to the industry of a country. Facility of transport increases the number of consumers, and by thus increasing the demand, renders practicable the division of labour in cases where before it was impracticable.

Again, it is evident that demand must be greatly affected by the cost of the article manufactured. Costly articles are purchased only by the rich. But the rich are only a small part of the community. Hence the demand for such articles is but small. It is those articles which every one wants, and which every one can buy, that create such a demand as will enable them to be made at the cheapest possible rate. Hence we see that division of labour, and the reduction of price which it occasions, benefits the poor much more than it does the rich. We do not suppose that jewellery, trinkets, rich laces, are much, if at all, cheaper than they were forty or fifty years ago; while cotton cloth, hardware, woollen goods, and all the manufactured necessaries of life, have fallen in price from one-half to three-fourths. This is an immense benefit to those of us who are obliged to spend our money on necessaries and comforts, and have none to spend on trinkets.

Of Capital employed Productively.

We have already explained the difference that subsists between consumption that is unproductive, and consumption that is productive; the individual, while consuming his supply of commodities, may be occupied in producing by his labour fresh commodities, which possess exchangeable value; or he may spend his time entirely in consumption, and without producing new and useful commodities. To the extent his consumption enabled him to produce new articles, it is regarded as productive; to the extent it was not applied to maintain productive labour, his consumption is regarded as unproductive. A like distinction extends to the employment of capital. To the extent capital is employed in aid of the production of new commodities, it is employed productively; to the extent it is employed apart from such an object, it is unproductively

employed. Elegant mansions, deer-forests, equipages, works of art, costly wines, are capital employed unproductively, being used for the most part as instruments of enjoyment. But where land is used to raise crops; or a water-fall is made to turn a mill; where wages are paid not to a retinue of domestic servants, but to spinners, or weavers, or bakers, or road-makers, capital is employed productively.

Capital productively employed is usually divided into fixed and floating capital. It is impossible to draw an exact line of distinction between the two, but there is a well-recognised difference.

Most of the natural agents, used productively, are to be regarded as fixed capital; such as land, or a water-fall. There is also a large mass of fixed capital, the product of labour accumulated in the soil, as the accumulated tillage of land, canals, railways, and roads. An enormous amount of fixed capital is also accumulated in the multitudinous variety of machinery employed in the arts and manufactures. The use of such agents, natural or artificial, largely contributes to, and is essential to any considerable measure of production. It is the permanence of these agents of production that leads to their being denominated fixed capital; land is as useful one year as another; a railway is not quite so lasting, but, at the expense of a certain outlay, may be maintained for an indefinite period; a steam-engine is worn out sooner, nevertheless it lasts for a considerable number of years; and there are all varieties in the scale. Probably, it would not be far from the mark to denominate, as fixed capital, anything used in aid of production, which is not thereby consumed within the usual period of balancing business accounts. In different branches of business, the period varies, but in many it is a year. Moreover, what is fixed capital to one man, is floating capital to another. A steam-engine, or a ship, is fixed capital to the user, but was floating capital to the engineer or ship-builder who produced it.

The *materials* used in manufacture are an important part of floating capital. These, for the most part, are consumed by being used once. The other great division of floating capital consists in wages paid for labour expended on commodities intended for the market.

So long as a man produces each day by his own labour enough food, and other necessaries, to maintain himself for the day, there is no need of capital to support labour; but if labour is interrupted, as in the winter of many climates, man must at the proper time lay by a store to meet the season of want. And if, in a civilised community, a man's labour is confined to one commodity, and that, perhaps, not a necessary of life, some lapse of time must occur between the manufacture of the commodity he produces, and the opportunity of exchanging it for articles manufactured by others, such as he desires to have. It is necessary, therefore, to be able to maintain himself while preparing for the market the commodities he manufactures.

As civilisation advances, this effort is found to be quite beyond the unassisted means of the mere labourer. The commodities he produces may have to be exchanged with cotton grown in America, the tea and coffee of Asia, or other article produced at a distance; it may be years before the exchange be effected, and the means of effecting it may be unknown to him.

Suppose a man produces cloth, and that the article he desires to have in exchange is coffee. It will take several months for his cloth to be carried to Ceylon, and several months to bring back the coffee. Our producer, therefore, must wait a full year before he obtain what he desires to get in exchange for the produce of his labour. But in the interval, till the coffee reach him, he must have other means of obtaining a supply. By economy, he may have produced a store of cloth, a year previously, and may have despatched it to Ceylon in anticipation, so that the supply of coffee may now be coming in; or if he did not himself save enough of cloth for that purpose, he may have borrowed a supply from others.

All commodities take a longer or shorter period to pass from production to exchange, and from exchange to consumption; and according to the time so occupied, the community must have a sufficient supply beforehand, to meet people's wants in the interval.

Thus during the interval between production, exchange, and consumption, commodities form an important portion of floating capital. And as they are held solely for the purpose of being exchanged, the more speedily that is effected, the better. The shorter the interval between production and exchange, and between exchange and consumption, the less value of commodities is it necessary to have at one time, compared with the number of exchanges; and some of the severest crises in commerce occur when, from any cause, the period betwixt production and exchange, or between exchange and consumption, is prolonged beyond the usual limits.

For, be it remembered, that the object for which these goods were manufactured was by exchange to fetch other goods in return, a supply of which is really wanted. The store saved to provide for such wants during the usual interval of exchange, is in the case supposed exhausted, and now they reach a famine price; while the goods held for exchange are for the time useless towards effecting the purpose for which they were made.

But how fares the mere labourer in all this? He cannot wait till the produce of his labour be sent to foreign parts; he can seldom, indeed, wait beyond a fortnight or so to get a return for his work in kind; his only store consisting of his clothing, his furniture, and perhaps a few tools. He has no stock of comestibles from which to support his family in the interim, nor anything to purchase a supply. He therefore makes an arrangement with his employer to give the latter the benefit of his labour, on condition that he receive in return the means of obtaining the necessaries of life, and this the employer gives him in the form of a money-payment, wherewith to purchase these for himself—it being the part of another set of capitalists to maintain a store of such necessaries sufficient for the wants of the community till a fresh supply comes in.

Production, therefore, depends greatly on capital: first, on fixed capital in the form of the natural agents; second, on fixed capital derived from labour, expended either on the natural agents themselves, or in the construction of machinery; third, on floating capital expended on materials, or retained in the form of manufactured goods; and, fourth, on floating capital expended on wages.

The employment of labour is therefore, in more than one respect, measured by the amount of capital available for productive employment. In the first place, it is dependent on fixed capital, seeking to be employed productively, without which, in the shape of natural agents or of machinery, the demand for labour would be small. In the second place, floating capital is required in the form of materials, manufactured goods in the course of being exchanged, and wages; and the amount of capital devoted to each of these purposes must be arranged so that they may work in harmony.

The amount of capital productively employed, or seeking to be so employed, is itself continually fluctuating; and although many of these fluctuations occur independently of the agency of man, yet many are directly attributable to his resolves; as must be pretty obvious, when it is considered how free man is to direct his labour towards the production of any one in preference to any other object of desire; nor is it wonderful that frequently he should fall into misapprehensions and miscalculations, sometimes attended with disastrous results. A common mistake is a too rapid increase in the fixed capital of a country, as compared with the floating capital. Instead of applying labour to the production of commodities required for the direct support of the community, people may apply an excessive proportion of that labour to the construction of railways, canals, and machinery; and though these may be of great permanent use, yet serious derangement may result for the time from pushing their construction too far, straitening the capital available for the support of present labour. Railways, machinery, and other fixed works are useful only in aid of, or by acting in conjunction with, ordinary labour, and a restriction of the latter nullifies the value of the former. Besides, if there be not sufficient capital left to support the ordinary labour on which the community is dependent, severe calamity may arise, even amounting to famine. A like disaster occurs when capital is lost by producing what may be supposed at the time to be marketable, but is afterwards found to be unsaleable; or by any other causes diminishing or destroying the capital available for the labourer's support.

Credit.

Many manufacturers and merchants are their own capitalists, but it is not always so. They frequently receive loans, and as frequently give them. To say that a man has a loan, is substantially to say that the various commodities he possesses belong to a certain extent to the person from whom the loan is obtained. A merchant holds goods to the value of £1000; the circumstance of his having a loan of £600 from another person does not increase or diminish the capital of the community; the lender just has a substantial right to £600 worth of the borrower's goods.

The amount of floating capital belonging to a merchant is the goods in his possession at any one time in the course of their passage from the persons from whom he buys to the persons to whom he sells. But this rule only holds good, supposing the purchase or sale to be a real act of exchange. If *credit* be given by the person from whom the goods are bought, they still substantially form part of that person's capital, and so if the merchant sell to others on credit.

A capitalist may lend to a person who may employ the means productively, or to one who may employ them unproductively. In either case, the capitalist receives interest for the use of his capital, and to him, in either case, it is productive in that sense. But taking the resources of the community as a whole, we must regard the end to which the funds lent are ultimately applied. A capitalist lends some thousand pounds to a land-owner, who spends the sum in riotous living. In these circumstances, the capital originally consisted, first, of the land, second, of the cash given by the lender; the latter sum, being spent by the borrower in riotous living, is spent unproductively, and is extinguished. The land remains; but the lender has a substantial right to it to the extent of his loan, and to the revenue of that land to the extent of his interest. The land, again, so far as used by the landowner as a pleasure-ground, is used unproductively; so far as it is tilled, it is used productively, the produce being divided between the landowner and the lender, according to their rights.

Benefits of Increased Production.

It is not beneficial for the individual only to increase the productiveness of his labour; it is beneficial to the whole community that the sum-total of industry should be as productive as possible. It would be a benefit, if the crops of wheat, and cotton, and rice, the produce of the fisheries, of the mines, and of the manufactories, during the next year, should with the same labour be *doubled*, so that we might by a day's labour procure twice as much bread-stuffs, fuel, clothing, and of every necessary and comfort of life, as we are able to procure at present. The aim of machinery and of division of labour is to bring about such a result.

Yet more—the benefit of this change is specially realised by the labouring-classes. The rich in all countries always have commanded an abundance of comforts and luxuries; and comparatively, therefore, they are but slightly benefited by an improvement in the productiveness of labour. It is the labourer who is chiefly benefited. Every improvement brings within his reach some convenience which was previously beyond it. What difference does it make to a man worth a hundred thousand a year, whether coal cost one pound or two pounds a ton, and cotton cloth fourpence or two shillings a yard? At either price, he can procure abundance. But to the man worth but fifty or a hundred pounds a year, the difference is of immense consequence; at one price he can supply himself abundantly, at the other price he can supply himself but scantily—if at all. Hence, improvements in machinery, by which the productiveness of labour is increased, are specially for the benefit of those obliged to work for their bread.

But by increasing the productiveness of labour, do we not diminish the demand for labour, and throw labourers out of employment? This question deserves consideration, as it has led not only to erroneous views in theory, but to serious mistakes in practice.

Let us examine the facts. What are the manufactures which now employ the greatest number of workmen, and in which the number of workmen

has within the last forty years the most rapidly increased? Any one will answer, the cotton and the iron manufactures. But if we were asked in what branches of manufacture has labour-saving machinery been most extensively introduced, we must also answer, the cotton and the iron manufactures. Moreover, if we compare any manufacture in which machinery has been introduced only to a small extent with a manufacture in which machinery has been extensively introduced, we find that the labourers in the former are poorly paid, and diminishing in number, while the labourers in the latter are well paid, and are increasing in number. These facts abundantly demonstrate the benefit of machinery, even in increasing the demand for labour.

The reason is easily seen. Suppose that only 10,000 yards of cotton at a high price could be sold in a given district, and it required 100 men to make them. If, by introducing machinery, these 10,000 yards could be made by 50 men, it is evident that 50 men would be thrown out of work. But suppose that, by the change, the cotton cloth which was sold at 2s. could be sold at 1s., so that *twice the quantity* could be purchased with the same money, and that, owing to the great fall in price, 20,000 yards were now wanted, there would be a demand for just the same number of workmen as before, so that the workman would be just as well off as he was before. Suppose, further, that when cotton was at 2s. a yard, only those worth £200 a year could afford to purchase it, while now it is at 1s., those worth £100 per annum can become purchasers. The number of persons in a community worth £100 a year is more than double those worth £200. Hence the demand of this class alone would place the labourer in as good circumstances as he was before. But there must be added the demands of those worth £120, £150, and £200; and each one of these classes will now use more cotton cloth than the class of £200 did formerly. Again, by the reduction of price, cotton cloth may now be used for purposes for which it would not formerly have been thought of. In short, the greater the productiveness of industry, the cheaper will be its products, and the greater will be the demand for them; and, in general, the more extensively labour-saving machinery is introduced into any department, the greater will the demand be for labourers in it.

While the labourer is thus benefited in his wages by the use of machinery, he is also benefited by the cheapening of commodities. Every one knows how much cheaper woollen and cotton goods, carpets, newspapers, books, and most of the necessaries of life now are than they were a few years since. Not only are they cheaper, they are also better. These benefits the labourer shares with the rest of the community. He has therefore a double advantage. His wages are raised, and the price of what he purchases with them is reduced. The rich man receives no higher interest for his capital than before—his wages remain the same: his only advantage is, that with the same money he can procure what he wants at a cheaper rate, or in greater abundance.

Of Conditions of Society Favourable to Productiveness.

It is essential to the promotion of industry that a man as far as possible be allowed to labour in the way he finds most productive, and to use as he pleases all that he gains, provided he do this without hurt to his neighbour.

It is for the most part necessary that property be vested in individuals, that each particular thing belong exclusively to some one person. Unless the land belong to some one, it will not be properly tilled. We see this in a country of savages, where property is in common; and in most *commons*, so called, where—no one having a particular interest in any one part—no part is cultivated.

It is not enough that property be divided; it must be *protected*. It is for the interest of every man in a community to see that none interfere with another man's property. And the community have committed the charge of this to the government. It is the special business of government to protect individuals from violation of the right of property; and the industry of a country depends very much upon the goodness of its laws and the faithful execution of them. If laws allow violation of property, many become thieves instead of labourers; and as thieving produces nothing, there is soon left little to steal. If, through neglect, the laws be not put into execution, the result is the same as if there were none.

The right of property may be violated by *individuals*, as by robbing, stealing, house-breaking, &c. Were this allowed, no one would labour at all; no one would labour for the sake of seeing his property plundered and wasted by thieves and robbers. The case is the same when property is plundered and destroyed by mobs. If a man would not labour for the sake of seeing his property destroyed by one robber, he would not labour any the more for the sake of seeing his property destroyed by five hundred robbers.

Governments themselves sometimes violate the laws and rights of property, as in many despotic governments, and in times of civil disorder and war. When this is so, a people becomes dispirited, disorderly, and indolent. A man will not labour his ground if he knows the crops will be plundered. We see some of the most fertile regions of the earth, under such a government, lying almost uncultivated; the inhabitants few, and these poor and spiritless. Hence the importance of good government.

An important condition of society favourable to productiveness is the intelligence of the people. If ignorant, they neither are sensible of the importance of industry, nor know how to use it. It is of consequence, therefore, that all should be, as far as possible, enlightened by education and suitable training.

IV. EXCHANGE.

We have seen that few people or none receive from nature, or produce by their own labour, all the commodities they desire to possess. One inherits land, another raises corn, another builds houses, another weaves cloth, and in due time each exchanges what of these he does not require for such other articles as he may desire out of those owned by his neighbours. It is found in the long-run that by such arrangement the supply of commodities is indefinitely multiplied, and that the community fares far better than if each member of it had by his own labour to manufacture whatever he wanted for himself. It is now proper

that we inquire into the laws according to which this system of exchange operates.

An act of exchange implies at least two persons, each owning certain commodities, each willing to part with them for a consideration, and each desiring to possess something owned by the other. It matters not in the first instance whether the commodities are simple products of nature independent of the agency of man, or are the products of man's labour; it suffices that they are owned by some one, and that they are offered and desired for exchange.

The exchangeable value of any one of these commodities is expressed in the quantity and quality of the thing for which it is exchanged. If a horse is exchanged for ten quarters of wheat, the marketable value of the horse is that measure of wheat, and the marketable value of ten quarters of wheat is one horse of a quality like to that in the case supposed. That ten quarters were given for such a horse, and not twenty quarters, depends proximately on the tastes and wants of the traffickers. The one wanted a horse, and could spare ten quarters of wheat, but perhaps could spare no more, and therefore offered that measure of wheat for the horse; the other wished to part with the horse, and was in want of ten quarters of corn—perhaps less would not supply his wants. In a word, each of the traffickers, in view of his particular wants and abilities, was willing to make that exchange, though the one might not have been willing to offer more, nor the other to take less, than what they bargained for.

The case is varied if more than one person desire to possess the commodity offered for exchange. If the owner of a horse expose it for sale to the highest bidder, one may offer eight quarters of wheat for it; another, nine quarters; and a third, ten quarters. Of course, the seller will take the highest offer. Or there may be many persons owning horses, and anxious to sell, in which case the competition will take an opposite direction—the buyers endeavouring to bid down the sellers. This mutual bidding of purchasers and sellers is called competition—the object on either side being to part with as little as possible by way of consideration for the commodities to be received in exchange; and to secure as much as possible in exchange for what is given.

It must be recollected that, owing to the complex structure of society, it is not a matter of indifference to the owner of a commodity whether he be able to find a purchaser or not, for he is dependent on the exchange as the means of purchasing for himself in turn the various other commodities of which he stands in need. In a word, within a very limited time, it is in general absolutely necessary for a man to sell whatever goods he may have produced for the market. The competition, therefore, among owners to effect a sale, is an agency as important as the competition among buyers to effect a purchase. In truth, buyers and sellers are just persons desirous to exchange commodities with each other; they are under the same necessity of exchanging within a limited period, and are anxious to effect the exchange on terms as advantageous as possible.

Let us consider further the action of these motives. Suppose that horses are reared only by one person in a district shut off from other districts, and that they are eagerly sought after for purchase. Suppose this person can rear twenty horses a year, and that the limits of his capital compel him to sell within the year. Suppose there are ten purchasers willing, if better cannot be done, to give thirty quarters of wheat for each horse, and twenty purchasers willing to give ten quarters of wheat for each horse. In these circumstances it is clearly for the interest of the seller that he restrict his breeding to ten horses annually, and sell to the ten persons who are each willing to give thirty quarters of wheat; for were he to attempt to dispose of more than ten, he could only effect that object by reducing his price to ten quarters, a reduction of which even those purchasers willing, if need be, to give thirty quarters, would avail themselves; and the profits of the breeder would consequently be lower than if he restricted his sales to the higher purchasers only. If, on the other hand, he could find twenty purchasers willing each to give twenty quarters, it would be better for him to sell his twenty horses to these, and abandon all attempts to obtain a higher price for a smaller number. Vary the case, and suppose a second breeder having an equal motive to sell, and each of the two able to breed twenty horses. If, in these circumstances, there be a demand for twenty horses at thirty quarters of wheat of price, or of forty horses at ten quarters, it is, as before, for the interest of the two sellers to combine, and each rear only ten horses each. Sometimes, as a matter of fact, such combinations take place; at other times, however, each of the two breeders tries to supply the high-price demand to its full extent, and a competition takes place between them, resulting very likely in the forty horses being all sold at the lower price of ten quarters of wheat.

It is by such a process that the exchangeable values of different commodities adjust themselves. Certain quantities of a commodity, possessed by different individuals, are exposed in the market, and *must* be sold within a limited period; and according to a diminishing scale of price there is an increasing number of buyers. The exchangeable value of the commodity tends to that figure at which the demand exactly corresponds to the supply. There are a million quarters of wheat for sale, and suppose that at 60s. per quarter there would be purchasers to buy half a million quarters; that at 50s. per quarter there would be purchasers to buy three-fourths of a million; that at 40s. per quarter there would be purchasers to buy the whole stock for sale; that at 30s. per quarter there would be purchasers to buy two million quarters; and that at 20s. per quarter, the purchasers would take five million. The market price, in these circumstances, would be that at which the demand and supply are equal; or, more properly, competition between buyers and sellers constantly tends to bring prices to that point.

Of Exchangeable Value.

Where the supply of a commodity is absolutely limited—for example, the frontage of a particular street, the acreage of a particular vineyard, the number of diamonds in the world—there is no limit to the exchangeable value of the commodity, except what is implied in the desire of a purchaser to obtain it, and his ability to offer such a price

as will tempt the owner to part with it. Fabulous prices are accordingly sometimes paid for unique wines, jewels, and similar valuables.

Where the supply is practically limited, by the owner or owners possessing either a natural or an artificial monopoly, the exchangeable value depends, in the manner already explained, on the amount of price the purchaser is willing to give; and on a calculation by the monopolist whether it will be more profitable, by limiting the supply, to obtain a higher price, or, by increasing the supply, to effect larger sales at a lower price.

When, however, the commodity is entirely the produce of labour, unfettered either by natural or by artificial monopoly, another important agency comes into play, for it will be recollected that, while the market value depends on the supply as compared with the demand, the supply of any particular commodity will, in the case supposed, depend on the labourer giving his time to its production, and that the prime end of the labourer is to obtain, in return for the produce of his labour, an adequate supply of the necessaries and comforts of life. Accordingly, so soon as a commodity ceases to fetch in exchange enough to meet this prime purpose for which the labourer made it, he will leave off producing, till the decrease in the supply so caused induces those who are willing to pay a higher price to overbid others in order to obtain the article, and till the labourer be thus once more remunerated adequately. It is the same with the employer of labour and the capitalist; as soon as a commodity ceases to bring the price, to obtain which was the purpose of the manufacturer and the capitalist in spending their money on its manufacture, they will stop producing that commodity.

From all this, it follows that the minimum exchangeable value to which a commodity tends, in so far as referrible to the labour bestowed upon it, is the amount that will adequately remunerate the labourer—that is, will enable him to supply himself with the necessaries and ordinary comforts of life.

On the other hand, when the exchangeable value of any commodity manufactured by labour exceeds for a time what will afford the labourer a fair remuneration, other labourers are tempted to share in the benefit thus held out; and soon, by increasing the supply, the value of the commodity is reduced to its normal measure.

If the market value of every commodity manufactured by labour tends, in its constant fluctuation, to that medium which fulfils the prime object of labour—namely, the comfortable maintenance of the labourer—it follows that the marketable value of all articles produced by labour may, in the long-run, be measured by the amount of labour bestowed upon them, and that they will exchange with each other accordingly. But though all tends to this normal level, market values are in fact in constant fluctuation, articles of rude manufacture occasionally fetching high prices, of fine manufacture being occasionally unsaleable; for the passing moment, the price depends strictly on the immediate supply and demand; it is only in the long-run that the tendency to a level is seen.

A similar course of remark might be offered on the part capital has in determining exchangeable value. It presents a mixed case—according as capital is composed of natural objects existing independently of labour, or is itself composed of savings from the products of labour. In the first case—being limited in supply—it follows the rule applicable to the exchangeable value of natural products; in the latter case, it is dependent on the exchangeable value of labour. In either case, however, it must be recollected that for the time the price of the use of capital depends, like the price of any other commodity, on the mutual relation of supply and demand.

Of Money as an Instrument of Exchange.

In several of our illustrations of exchangeable value, we have supposed one useful commodity to be directly exchanged for another—cloth for coffee, fuel for wheat, &c.; but such a mode of exchange—known as barter—seldom takes place in practice. Purchase and sale are usually effected in money, the amount of which, given or received, is termed the price of the article.

Money is substantially a certain weight of the metals, gold or silver, in a certain degree of purity—such, at least, is the money of civilised countries; in barbarous countries, it consists of shells and other substances.

Gold and silver, in themselves, possess marketable value, apart altogether from their use as a means of exchanging other goods, and that value originally contributed to their usefulness as a medium of exchange; though now, perhaps, the chief demand for them arises from their usefulness as a medium of exchange.

The qualities fitting gold and silver to serve as instruments of exchange, are chiefly these: high marketable value in comparison with their bulk and weight; great durability; and uniformity of marketable value.

It will be at once seen how advantageous such qualities are in instruments of exchange. Grain, for example, compared with them, is bulky and difficult of transport, very perishable, and subject to rapid and constant fluctuation in price.

The high marketable value of gold and silver—as is also the case with diamonds and other jewels—originally arose from the scarcity of these metals, combined with their beauty and their durability; but since gold and silver mines were wrought on an extensive scale, the supply is comparatively abundant. Fortunately for the interests of commerce, along with this increase in abundance, first, the demand has kept about an even pace with the supply; second, labour in mining for the precious metals cannot be indefinitely reduced by artificial means; and, on the whole, the normal level of their exchangeable value, as measured by the labour required for their production, remains much the same. It can at least be said, that in the supply and demand of gold and silver, and in the labour required to produce them, there is, *within the limits of each generation of man*, less fluctuation than in any other commodity whatever.

Hence the great fitness of these metals for serving as a medium of exchange. In place of each commodity being bartered for a measure of other commodities, it is sold for money, which in turn serves to purchase these other commodities.

Of Credit as an Instrument of Exchange.

The nature of credit has been already explained incidentally; we have now to regard it in its bearings on exchange.

Two persons resolve to exchange certain commodities with each other: one of these delivers his commodity at the time; the other does not deliver his, but engages to do so at a future time. In this case, credit is given to the second trafficker for the goods he engages to deliver. A man contracts to build a ship; he receives payment in advance, and engages to deliver the ship in a given time. This man receives credit for the ship.

But more commonly, instead of credit being given for a specific commodity, the value of that commodity is expressed in money, and credit is given for the money. A horse is exchanged for ten quarters of wheat; but the horse is reckoned as worth £40 in money, and the wheat is reckoned to be worth £40 in money. The horse is delivered, but the wheat is not delivered: and the one man is said to be due the other a sum of £40. We put the illustration in this form, because substantially, and taking all the transactions of society together, the exchanges are of commodity for commodity. Money is merely a stepping-stone towards that object. The market may embrace two persons or a thousand; each finding in the end that a little of his commodities finds its way to each of the other 999 persons composing the community; nevertheless, the transactions of each individual with his neighbour were expressed in the money value of the several commodities.

When the exchange of the several commodities is completed according to the prime object of exchange, all the money values would compensate or extinguish each other. If I exchange a £40 horse for £40 worth of wheat, there is no need for any money to pass between us, the debit having compensated or extinguished the credit. Or, in place of paying for my purchase directly, I may sell my commodity to a third person, or to a fourth, or to any person in the system of exchange who happens to possess £40 worth of commodities wanted by the person from whom I made my first purchase, and willing to sell these to him. The exchange thus effected will extinguish the several money debits created by these transactions, all without the need of money actually passing. But whenever such exchanges cannot be effected, as will directly or indirectly compensate or extinguish these various money debits and credits, the difference becomes a debt exigible in money itself—that is, the difference is exigible in bullion. So complex, however, is the system of commercial exchanges, that it is only for the most part in the dealings of great banking-houses, and in the exchanges with foreign countries, that balances fall to be settled in specie. In general, and taking all the transactions of society together, debits and credits extinguish each other. The chief use of specie among the ordinary population is to settle in ready money small purchases from trades-people, to whom the purchaser happens to be a stranger, or with whom his transactions are too few to justify the trouble of opening a credit account.

Credit is given in various forms, as bonds, bills, bank-notes, credit accounts, open accounts, &c.

Of Prices.

Enough has been said to warn the reader against the assumption that the price of a commodity is one and the same thing with its exchangeable value. Price truly measures its exchangeability with one commodity only—namely, money—that is, gold or silver. Were mines of gold discovered as prolific as coal-mines are of coal, the value of money would collapse, and prices would mount enormously; yet the exchangeable value of commodities in general would remain unaltered.

As already explained, the exchangeable value of money has hitherto within certain limits maintained uniformity in a wonderful degree; and on that quality has rested its great usefulness as a medium of exchange. Like other commodities, however, the exchangeable value of money fluctuates. When bullion is scarce, prices fall—that is, the exchangeable value of gold measured against all other commodities, rises; and when bullion is abundant, prices rise.

The expansion or contraction of *credit*, which, like gold, serves as a circulating medium, and which is almost uniformly stated so as to be convertible into money, affects prices just as they would be affected by an abundance or a scarcity of bullion. When credit is freely given, prices rise—that is, the value of the circulating medium falls; when credit is withdrawn, prices collapse—that is, the value of the circulating medium rises.

Of Commerce.

Since there is so great an amount of business to be done in the exchange of commodities, it is evident, from what was said about division of labour, that the business will be better done, and the labour of the whole society be more productive, if some portion of the community devote itself to the business of conducting exchanges. If in a given town a hundred families are engaged in the various kinds of production, and require for their convenience a great many exchanges with each other, it would be a saving of time and labour if some individuals give up all other business, and employ themselves entirely in the business of exchanging. They would receive the various products of the different producers, keep them on hand, and offer them in barter to such as wanted them; and, if in a rural district, they would carry these productions to a city, and exchange them for what might be wanted by their friends at home. The men who thus employ themselves in exchanges are merchants (and are usually spoken of, in the language of commerce, as retail and wholesale merchants).

Retail merchants purchase in large quantities of importers or wholesale merchants, and sell again to consumers in such small quantities as they may desire. The wholesale dealer could not afford to open a barrel of sugar to sell a pound. The consumer could not afford to purchase a bag of coffee, or a barrel of sugar, or a whole piece of broadcloth. Besides, in the varied stocks of the retail dealer, the consumer has an opportunity of inspecting, trying, and selecting his purchases.

The *wholesale merchant* imports in large quantities from abroad, or purchases in large quantities from producers at home, and sells to the retail merchant, who, as we have said, sells to the

consumer. The retail merchant could not import from abroad in so small quantities as he wishes to purchase, unless at proportionally great expense. A wholesale merchant imports as much as will supply a large number of retail merchants, and with but little more trouble than would be required of one who only imported the small quantity he needed for his own use.

Conditions favourable to Exchange.

The more rapidly exchanges are made, the better it is for the merchant and for the community. The better for the *merchant*, because he thus, with the same capital, makes a greater number of exchanges in a given time, and a greater annual profit, though charging a smaller profit upon each exchange. And it is better for the *community*, because the less the profit he charges, the less is the price they have to pay.

The extent of commerce depends on many circumstances.

1. *The Intelligence of a People.*—There are many pleasures within people's reach, if one only knew of them, and how to get at them. Newspapers, travelling, and the other means by which information is circulated, have a great influence in stimulating people to improve their condition, and to labour more industriously in furtherance of that end.

2. *Productiveness of Industry.*—It is not enough that a man be desirous to exchange; he must have something to offer in barter. If I desire a barrel of flour ever so much, I cannot obtain it unless I can offer to the flour-merchant something he will accept in exchange for his flour. A rich man is able to make a great many more exchanges in a year than a poor man; a labourer who earns high wages can make many more exchanges in a year than a labourer who earns but low wages. A farmer buys many more articles of comfort in a productive than in an unproductive season. A wealthy country makes more exchanges, both internal and external, than a poor country; and the same country in a period of success than in a period of misfortune.

3. *Moral Character.*—No one who can help it will have any dealings with a rogue, especially in transactions on credit; and when men fall into roguery, and when property is insecure, exchanges diminish. Laws help to make rogues like honest men; and when laws are just, and are well administered, exchanges are more abundant than when they are unjust, partial, and unfairly administered. But on the moral character of a people depend, not only their personal honesty, but also the soundness and efficiency of their laws.

The same principles apply to our exchanges with foreigners. If we treat them justly, and allow them reasonable means of protecting and enforcing their rights, they will come and exchange their products for ours, in preference to going to another country where they would be less favourably treated; and thus we procure, on the most favourable terms, whatever we need from other nations. An exclusive policy is as self-destructive for nations as it is for individuals.

V. DISTRIBUTION.

Under this title are expounded the laws which govern the distribution of commodities (or the price or exchangeable value of commodities) among those who contributed to their production.

Where each producer owns the land on which the commodities he consumes are grown, owns the floating capital and machinery requisite for their production, and needs no labour but his own in the process of production—he is, of course, entitled to the whole commodities so produced; and there is no distribution of them except to himself. But in the general case one man contributes the use of land, another the use of capital, others the various sorts of labour required; and it becomes a problem to trace how much of the ultimate price or exchangeable value of any commodity goes (or is distributed to) the landlord, how much to the capitalist, how much to the various sorts of labourers, who all contribute to the production of that commodity, and in what shape each draws his share. We are thus led to the subjects of Wages, Rent, and Interest.

WAGES.

The exchangeable value of labour is not quite synonymous with wages. Wages are the *price* of labour, or its exchangeable value in money; its true exchangeable value is the aggregate of necessaries or comforts that that price will command for the time—money being merely the instrument for exchanging the one with the other—labour for food, and house accommodation, and clothing.

Of the Supply of Labour.

The motive of the labourer is to obtain what he needs or desires to consume.

What are the necessaries of life on the consumption of which a supply of labour depends?

1. Food, clothing, and shelter.

2. A certain measure of luxury, which may be deemed almost a necessary of life.

3. Maintenance of one's children till their strength and faculties mature.

4. The power of saving something towards the support of one's self and the inmates of one's family, in sickness and old age.

A labourer will, in general, share the last morsel of bread with his wife and children, and by law he is bound to do so; and, though not with the same efficiency, affection and law compel us to support the sick and aged of our families. Hence the maintenance of wife and children, and of the aged and infirm, is part and parcel of the cost of maintaining the labourer himself.

In one sense, the cost of bringing up children till they are able to maintain themselves by labour, may be regarded, even in the case of unskilled labour, as an expenditure of capital; much more so in the case of skilled labour. Skilled labour is mostly the result of capital expended to acquire special training in the industrial arts. The supply of such labour is thus limited by the number of families able to bestow the necessary training on their children; and the wage or remuneration of skilled labour goes partly in repayment of the capital expended in producing it. Many labourers, from natural genius, train themselves, and rise to skilled work without previous outlay of capital; but these form exceptions, not the rule.

With fluctuations in demand for skilled labour, the supply tends to increase or diminish. Increased remuneration tempts unskilled labourers to train themselves for the various arts; and a fall

in the demand for skilled labour drives many artists back into the ranks of the unskilled.

In unskilled labour, a fall in the demand results, either in labourers emigrating, or in sickness and death thinning their ranks till the supply be so far within the demand as that the number left may earn wages sufficient to support them. On the demand for labour rising, wages rise, and tempt labourers to immigrate from foreign countries. Marriages also occur more frequently, and the number of births increase, till the supply of labour again reach the normal level.

Of the Demand for Labour.

It is a general law that the demand for labour depends on the amount of capital seeking to be productively employed. The employment of labour—where the labourer does not consume his own produce—depends on the existence of capital in the form of the necessaries of life, or the means of purchasing these necessaries, and on that capital being made available for the support of labour.

A capitalist may employ his capital productively, by supporting the labourer till there be time afforded for exchanging or bringing to market the new produce of his labour. But, while the ability to exchange commodities at all depends on capital, it is also true that, with an increase in the application of capital, exchanges will be indefinitely increased. The owners of capital are incessantly devising new commodities to exchange, and new peoples with whom to exchange; and exchange being the main motive of production, capital affords at the same time an indefinite stimulus to production, and increases the demand for labour.

It does so when employed as floating capital. It does so also as fixed capital, not only in the demand offered to labourers for the construction and maintenance of machinery, means of conveyance, &c., but many of these investments of fixed capital add permanently to the demand for labour; for water-power is too valuable, and machinery too costly to be allowed to lie idle.

From all these considerations, the great law is arrived at, that the demand for labour varies with, and is measured by, the amount of capital seeking productive employment.

The only qualification of the law is, that the capital in question must consist, to a certain extent, of the necessaries of life; in other words, there is an absolute limit to the employment of labour in the available supply of food and the other means of existence.

Doubtless, the application of capital may itself be instrumental in providing an increased supply of food, clothing, and shelter; but owing to the sources whence food is drawn, there is a limit to the productive application of capital towards increasing that supply: do what you may to improve a given measure of land, you cannot increase its productiveness indefinitely; and the same may be said of the supply of other necessaries of life.

On this fact rest the stern laws of population, so universally associated with their first expounder, Malthus. In a newly settled country, there is so much land to be brought under tillage, that however rapidly the increase of population takes place, the supply of food and of the other means of subsistence may be increased proportionally; and in such circumstances, it is found that population doubles itself every twenty-five years. But in an old country, where the land is fully occupied, there is not the same elasticity in its resources. The productiveness of land may be improved by capital and skill, but not in the geometrical ratio in which population tends to increase. The population of old countries, therefore, must either be kept down voluntarily by lateness of marriage, by continence, and by emigration; or otherwise it is kept down by the spontaneous and unpitying action of natural laws—by poverty and famine, infantile diseases, and social epidemics.

Of the Price of Labour in General, and in its Several Branches.

The price of labour at any given time depends on the relation of supply and demand; but in the long-run it gravitates to the income necessary for the maintenance of a family in the ordinary comforts of the rank to which the labourer belongs—affording, in the case of unskilled labour, the bare necessaries of life; and affording, in the case of skilled labour, some return for the outlay on education, and that amount of comfort necessary to keep up a flow of spirit and intelligence.

In order to get at the true exchangeable value of labour, wages must be regarded not as the end, but as the instrument; and must be interpreted by the price at the time of the articles of food, clothing, &c. in the purchase of which they are applied.

In warm climates, where little fuel, clothing, or shelter is needed, and where vegetable food is chiefly used, the cost of labour is low; but at the same time, the physical system is weak, and labour comparatively worthless. In a temperate climate, the labourer consumes more food, fuel, shelter, clothing; but his labour is energetic and productive in a corresponding degree.

Taking the several branches of labour separately, like principles regulate the price of labour as regulate the labour market generally. But in each case there are special circumstances affecting supply and demand. From many branches of business, capital may be deterred by insecurity or other apprehensions; on others, there may be quite a run of capital; some capitalists are constantly shifting their investments from one branch of trade to another. And on the side of labour, besides the element of skill, there may be other influences affecting the supply; the employment may be laborious or light, agreeable or nauseous; it may be constant or intermittent; it may require trustworthiness of character, or no testimonial of character whatever.

In conclusion, it may be remarked that whereas fluctuations in the price of ordinary commodities are undisturbed by any immediate view of the consequences that may result to individuals, the fluctuations in wages are peculiarly open to be seen face to face with their effects on the contracting parties, and, whatever *laissez faire* political economists may say, wages are modified in some measure by considerations arising from that source. In periods of distress, masters, we doubt not, are often led to pay higher wages than they can well afford, and labourers are occasionally equally lenient with their masters. In strikes and lock-outs the opposite temper is sometimes displayed.

In this section, while speaking of labour and

the wages of labour, we have used terms referrible only to the ordinary labourer. But the same principles apply to skilled labour in all its grades —to the mechanic, to the merchant, to the physician, to the lawyer; with this qualification only, that a considerable proportion of their remuneration goes to compensate the cost of special education.

LAND AND OTHER NATURAL PRODUCTS.

Supply of Natural Products.

We have already seen that some of these are nearly unlimited in supply, and are diffused to all that want them; that others are obtained in limited measure, or from a particular source, and that when these are owned in law or in fact by particular individuals, they acquire exchangeable value.

Most commodities are the produce partly of nature and partly of labour. Wheat grows by nature, but the ground must be tilled, and the crop sown and reaped. It is of importance, then, to trace how the price of the article may be apportioned to labour and to nature respectively. When the natural agency employed is universally diffused, such as air, it bears no exchangeable value; but land and some other natural agents are limited in supply.

Of Rent.

A lot of 100 acres of land, by means of a certain amount of labour, yields 250 quarters of wheat; another lot of like measure yields with like labour 350 quarters. Whatever portion of the first 250 quarters is due to the labour and capital spent in raising it, this we see that 100 more quarters is attributable to the agency of nature in the latter than in the former case. But suppose a third lot of land of 100 acres, yielding with like labour 100 quarters of wheat, and that this last produce—100 quarters—just suffices to remunerate the labour and capital spent in raising the crop. The amount of labour spent in raising a crop on all the three lots being the same—there is left in the first case, 150 quarters, in the second, 250 quarters, in excess of the cost of producing the crop; but in the third case there is left no excess whatever. The excess thus brought out is regarded as the share of the exchangeable value of the crop attributable to nature, and is the source and the limit of the exchangeable value of the use of the land for the year in which the crop is raised.

The source of rent is this produce of land in excess of the cost of the labour and capital requisite to raise crops upon it. But will this surplus go all to the landowner? If the landowner himself till the ground, he, of course, will have all the produce; but if he let the ground—that is, give the privilege of cropping to another—who will receive the surplus over the cost of labour?

As in other cases, this will just depend on the relation of supply to demand. In a newly settled country, where land is abundant in comparison with population, land will scarcely fetch any rent. It is the labourer, or the employer of labour, that reaps all, or nearly all, the surplus produce. In an old country, again, where the supply falls far short of the demand, the landlord may put a rack valuation on his land; often he does so, sometimes he chooses not to do so, willing rather that his tenants should sit easy. And there are all degrees in the scale between the two extremes.

On principles regulating the application of labour, no land will be cultivated for the sake of raising food unless it is believed that the produce will repay the labour; and all excess of fertility beyond the fertility that will barely pay the labour, is a source of income to the landowner. On the other hand, there is a tendency to turn to account and bring to market all land which, with the improvements and appliances known at the time, may be supposed capable of yielding produce sufficient to maintain the labour spent in cropping it.

We may next ask in what *form* the surplus will be paid? The form in which landowners receive remuneration for the use of land varies much in different grades of civilisation. In countries where serfdom prevails, tenants are bound to their possessions from generation to generation, and, for the use of these possessions, give one-half their labour to the cultivation of the landowner's farm. In other countries, the *métayer* system prevails—the tenant giving to the landowner yearly one-half the gross produce of his farm. In our own country, not long ago, rents were payable for the most part in kind—as so many bolls of meal or grain—a system which still prevails to some extent among us; but nowadays, the prevalent arrangement is for the tenant to pay a rent in money.

The further removed from the consumers the land is, the rent will be the less, although it be equally fertile with land situated nearer the consumers' market—in the former case, the cost of bringing the grain to market being greater than in the latter. The rent of land situated near a large town is sometimes enormous; and so with some sites for buildings.

It is needless to follow in detail the other uses of land, as affording water-power, sites for building, &c.

Demand for Natural Products.

This demand is very wide and urgent. Most commodities, indeed, fall to some extent under the class of natural productions, though they vary in the amount of labour bestowed in their extraction, in their manufacture, or in bringing them to the consumer. According to the amount of labour bestowed upon them, is their value to be attributed to labour or to the use of natural agents; and it is noticeable that, in the matter of *food*, a large proportion of the exchangeable value is attributable to the use of natural agents. In a peculiar degree, therefore, the demand for food is a demand for a natural production. It is so also to some extent with the other necessaries of life. The demand for natural productions is, therefore, great and urgent, and increases directly with the number of the population.

To satisfy demand and supply, it is necessary that the object be brought to the consumer. It matters not to the consumer of wheat that America be full of it, if nobody will bring it to him; it availed nothing to the townsman, before the days of railways, to know that twenty miles inland there were plenty of butter, eggs, and milk; his demand is that these things be brought within his reach.

CONSIDERATION PAID FOR THE USE OF CAPITAL.

In last section we saw how land is let to a tenant from year to year in consideration of rent. It was truly, however, a case of capital, the use of which was given to the tenant, rent being the annual consideration or price paid to the owner. But though land be a portion of the capital of a country, capital embraces much besides land, and much besides natural products. A large division of capital consists, as we have seen, in the produce of labour, either in a floating or in a fixed form. Indeed, a large portion of the value of land itself is referrible to the labour permanently laid out upon it, as in the reclamation of waste land, in drainage, in inclosures, in farm-buildings, &c.

The main distinction between capital that consists in natural products, and capital that is the produce of labour, is, that the former is limited in its measure; and that the latter, or the produce of labour, may be accumulated to any extent. If, for a time, the employment of capital be very remunerative, people have a strong inducement to save, and so increase their stock; and this takes place till capital becomes abundant in comparison to the labour open for its employment. The supply then exceeds the demand; the price got for its use declines; people become reckless in its application or investment, and its surplusage is often thrown away on bubble undertakings, and otherwise lost.

Our illustrations on the subject of rent explain the principle on which the use of capital is remunerated. Labour, without the use of capital, has a certain productive power; but with the use of capital—that is, of fixed machinery, railways, shipping, and other fixed capital, and of stored goods, consignments, and other floating capital—is much more productively employed than it could have been had the same amount of labour been employed without the aid of capital—that is, each labourer producing commodities for his own consumption. This excess of production is regarded as the produce of capital, distinguished from the produce of labour, and is called the profits of capital.

When the capital is owned by the labourer, all the produce, including the profits of that capital, go, of course, to the labourer himself. When the capital belongs to a person who gives its use to the labourer, the maximum remuneration that the capitalist can expect is the surplus produce over the cost of the labour in aid of which the capital is applied; but the remuneration he actually receives ranges according to the general law of supply and demand.

In the case where the labourer—whether skilled or unskilled—makes use of his own capital, the rate of profit varies according to the success of those processes of production and exchange in aid of which he applies it, and, indirectly, according to the prosperity of trade in general, for exchanges are so interwoven, that one cannot suffer injury without affecting all.

Subordinate to these general considerations, the profits of capital invested by its owner vary very much with such particulars as the following—namely:

1. The risk he runs.

2. The rapidity with which his fixed capital is worn or consumed. A spinning-frame or a ship is useful only for a few years, and the profits made must replace them within the period.

3. The security afforded by the laws of a country, and the business probity of a community. These, by diminishing the risk of loss, enable the trader to charge a lower profit than he could have done if out of that profit he had to compensate himself for spoliation and fraud.

4. But at best the trader has always to provide against some amount of loss—as by fire and shipwreck, and against other occasional losses. To meet this, he must set aside a percentage from his profits, called insurance. Sometimes the trader is his own insurer, sometimes he contracts with an underwriter or an insurance company, whose business it is to guarantee people against certain risks, in consideration of a premium paid.

When the capital does not belong to the labourer, but is lent him by a capitalist, the loan usually takes place not in kind, but in money, leaving the borrower to convert that money into such articles as he is truly in want of—and of which capital is chiefly composed—such as machinery and goods. In this case, the compensation afforded to the capitalist also takes a money form, and is termed interest, the rate of which is said to be so much per cent. per annum—that is, so much *price* for a year's use of each hundred pounds.

The limits within which the rate of interest varies have been already shewn, the actual interest for the time being determined by the law of supply and demand. But as in the case of profits themselves, the rate of interest varies with the risk incurred. For loans in which the return of the loan can be securely relied upon, there is always a certain class of lenders at low rates; and according as the risk increases, we have other lenders at higher rates. The rate of interest for each class of loan depends on the supply and demand for the time as applicable to that sort of loan. Of course, when profits are high, the demand for loans of capital increases, and interest rises.

According to the market rate of interest for the time, a permanent source of rent, revenue, or interest is sold or exchanged for a capital sum, or a capital sum is sold or exchanged for the right to a permanent revenue. If the revenue be secure, as the rent of land, or the perpetual annuities payable by a well-established government, the capitalised price is high; if the revenue is fluctuating, as when it is derived from mines or fisheries, the capitalised price is comparatively low.

From the course of our remarks, it will be apparent that in estimating the capital a person is possessed of, we must deduct the amount he is owing to capitalists who have lent him money, and who really, to the extent of their loans, are proprietors of the capital represented by those loans; and that, in like manner, from the revenue of any one must be deducted the interest he pays on sums borrowed by him. In the case of the national debt, it must be regarded as a loan due by the community distributively, and must be deducted from the capital of each proportionally, just as the interest of it is charged on each of us proportionally in taxation.

COMMERCE—MONEY—BANKS.

COMMERCE.

THE practice of exchanging one commodity for another is doubtless coeval with the first herding of mankind together. No man, even in the rudest savage state, who lives in society, can rest satisfied with such objects as he can procure or fashion by his own labour.

As mankind advance in their social condition, the practice of exchanging increases; the desires and necessities become more urgent; each person finds it more profitable and agreeable to adopt and hold by one fixed employment, and to sell the produce of his labour for a variety of articles made by others, than to attempt to make everything for himself; and, finally, for the sake of convenience, a class of persons are engaged to conduct the exchanges. In this improved condition, the production of articles of general consumption is called *manufacturing;* while that department of industry in which the exchanging is transacted is called *trade* or *commerce.* For still further convenience, the business of exchanging is committed to several orders of traders—the wholesale merchants, who, in the first instance, purchase large quantities of goods from the producers; the retail dealers, who have been supplied in smaller quantities from the merchants, and sell individual articles or minute portions to the public; and to these sometimes an intermediate dealer is added. In this manner the transfer from the workshop of the manufacturer to the house of the actual consumer is interrupted by several distinct processes of exchange, in which each seller obtains a certain profit at the expense of the person who has ultimately to buy and use the article. Though in this way the price of the article is increased to the consumer, yet the article, notwithstanding this increase, costs him less than it would have done, had there been no intermediate dealers. It is evident that if any man wish to buy a handkerchief, he may procure it much more cheaply from any shop in which such things are sold at an advance upon the original cost, than if he were to travel perhaps hundreds of miles to the house of the manufacturer, and there make the purchase. The use of an intermediate class to conduct exchanges is thus very conspicuous; and any attempt to revert generally to the original practice of causing the maker to deal with the consumer, would be entirely incompatible with an enlarged system of trade between different countries, or even between different places in the same country. We say generally, because there are instances in which makers may, with advantage to themselves and the community, sell their produce in small quantities or single articles to the public; but these are exceptions to a common rule. It is of the greatest importance in matters of trade and commerce *never to prevent men from dealing in whatever manner appears most beneficial and convenient to themselves, provided it be conformable with strict justice.* Sellers, of whatever grade, being left to consult their own interest and inclinations, the public in the end, though probably in a way not easily recognisable, reaps the advantage.

In order that manufactures may be produced, and commerce brought in to disseminate them both at home and abroad where they are wanted, no species of legislative enactment is requisite either to encourage or direct. The law which governs production and consumption is a law of nature—it is the overruling principle of *self-interest,* by which, in the long-run, only that quantity of manufactures is produced which can be advantageously disposed of, and only those commodities purchased and consumed which the wants of individuals require. And, curiously enough, this principle of self-interest, if allowed free scope, is uniformly competent to regulate both the production and consumption of commodities, to a degree more nice and satisfactory than could be attained by the best devised statutes which the wisest legislators could enact. The grand principle, therefore, which can alone regulate commerce and manufactures is found in the natural passion for gain; and the sole essential requisite for the successful advancement of mercantile and manufacturing industry and wealth among any people, is for that people to be unfettered by enactments; each one buying and selling when, where, and at what price he pleases.

Evident as these principles now are, and remarkable as have been the advantages that have accrued from the opportunity given of late years, by British legislation, for their practical operation, they have been generally lost sight of by both governments and peoples in all ages of the world, and plans have been contrived to regulate that which, if left alone, would have much better regulated itself. To such an extent have regulating and restrictive laws been carried in some countries, that they have nearly annihilated both manufactures and legitimate commerce, and reduced masses of the people to the condition of paupers, besides encouraging the pernicious and demoralising pursuits of the smuggler. The restrictions and regulations imposed by the state upon commerce originate chiefly in the necessity of raising money to meet the government or state expenditure. For this end, duties are imposed on certain commodities much in demand, and at various stages of their manufacture, transmission, and sale. When the duties are imposed upon the imports from foreign countries, as is frequently the case, for the additional purpose of protecting home manufacturers or producers, the imposition benefits only a class, or a few persons, at the expense of the whole community, and therefore all such duties are in the main as detrimental to trade and the public welfare as those imposed for the liquidation of national expenditure.

PRINCIPLES OF COMMERCE.

The practice of commerce is in a great measure dependent on mutual good faith, and the integrity of seller and buyer, and can never permanently flourish where these fundamental qualities are wanting. The first or great leading quality, therefore, in the character of a merchant ought to be scrupulous honesty in word and deed. The article which he proposes to dispose of must be exactly what he declares it to be, not inferior, nor in any respect unsound in its nature. If it possess any blemishes, these must be announced to the buyer before the bargain is concluded. The merchant is not less called on to be faithful in the fulfilment of all promises which he may make, whether with respect to goods or their payment; because those to whom the promises have been made, may on that account have made similar promises to others, and therefore the breaking of a single promise may prove injurious in every link of a whole train of transactions. Perfect honesty or integrity is a fundamental principle of trade; and the next most important principles are strict regularity in all proceedings, according to established usage, and steady perseverance. The merchant must give regular attendance during the hours of business; be regular in executing all orders and answering all letters; regular in the keeping of his books, and in the reckoning of his stock and moneys: in short, he must be methodic and careful in all branches of his concerns, for without this attention, the best business must become confused, and be ultimately ruined. What is true of individuals, holds true also when applied to a whole nation. No people have ever attained opulence and high mercantile consideration who have not possessed a character for integrity and regularity in all their dealings.

Besides these indispensable qualities in the character of a merchant or tradesman, there is required a happy combination of enterprise and prudence with the utmost coolness—enterprise to embrace favourable opportunities of buying and selling, and prudence and coolness to restrain from engaging in over-hazardous and ruinous speculations. In all his transactions, the man of business is understood to proceed upon a cool, inflexible principle of doing that which is most advantageous for himself, without fear or favour; because in commerce each party is supposed to be governed by motives of self-interest—always within the rules of honesty and propriety—and is under no obligation to deal from mere personal regard, or any kind of friendly consideration. In commerce, there is, strictly speaking, no friendship, in the ordinary acceptation of the term. If there be friendship among the parties concerned, it is aloof from business transactions—a matter of private arrangement—and is only to be regarded as so being. On this account, even among the most intimate friends, there must be an exact mode of dealing, and the most accurate counting and reckoning.

The British, for several centuries, seem to have been endowed above all other nations with those qualities of mind which are suitable for the conducting of commerce on an enlarged and liberal scale. Their integrity, persevering industry, enterprise, prudence, and liberality of sentiment have never been excelled, although not unfrequently, and more especially in times of commercial excitement, a great want of integrity, and a great degree of recklessness, have, in exceptional cases, manifested themselves. In patient industry, they have been rivalled by the Dutch; but in point of enterprise and liberality, that people have fallen far short of them, and their trade has languished accordingly. The British are pre-eminently a commercial as well as a manufacturing people. Taking them generally, they possess a spirit of restless industry, which renders them actually unhappy unless when busily engaged in some pursuit calculated to enrich them, or at least to produce for their families the means of a respectable subsistence. The Americans, who are but a branch of the same British stock, are equally remarkable for this fervent spirit of industry; and though only set up as a separate nation within a comparatively recent period, and less distinguished for their integrity and prudence than the English, have already distanced many of those dignified European principalities and powers which first discovered and colonised their country. The French, the Germans, the Spaniards, the Portuguese, the Italians, and others, though each possessing some extent of manufactures and commerce, are obviously deficient in the eager spirit of industry which is so characteristic of the people of Great Britain.

COMMERCIAL TERMS AND TRANSACTIONS.

The following explanations of the principal terms used in commerce will illustrate the mode of conducting business transactions:

Firm.—Every business, whether private or public, is conducted under a specified designation or title, called the name of the firm. This name may be that of an individual to whom the business belongs, or of two or more individuals, or any title which it may be found advisable to adopt. Sometimes the name of a firm remains long after all who are indicated by it are dead, or, if alive, have ceased to hold any interest in it—the new proprietor, or new partners, retaining the old and well-known title of the firm, with the view of preserving its business connections, or 'the good-will of the business,' as the phrase is. A particular firm or business concern is sometimes personified in the term *house*—as, Such a house does a great deal of business, &c.

Company.—Two or more individuals engaged in one business constitute a company or copartnery, each individual being called a partner. Companies are of two kinds—private and public.

The following remarks upon companies are more immediately applicable to those in Great Britain than elsewhere; but they are in a great degree, and generally speaking, also applicable to those existing in other quarters of the commercial world.

A private company is organised by a private arrangement among the partners, each having certain duties to perform, and a certain share in the concern. It is generally arranged, at starting the company, that it shall subsist for a definite period; so that, at its expiry, if the parties do not agree to continue it, the company is dissolved, and its affairs wound up.

The profits or losses of partnerships are divided

according to a specified agreement or deed of copartnery. He who draws the smallest fraction of profit, failing the others, may be compelled to pay the whole debts. On this account, every partner, on leaving a company, requires to give notice that he no longer belongs to the firm of which he was a member; he is then responsible for no debts incurred subsequent to the announcement. But although the partners are each liable to the company's creditors for all its debts, the partners, among themselves, are liable only to the extent of their respective shares in the company.

Public companies are very different: they consist of a large body of partners, or proprietors of shares, the aggregate amount of which forms a joint stock, and hence such associations are called *joint-stock companies*. They are public, from being constituted of all persons who choose to purchase shares, and these shares, or rights of partnership, are also publicly saleable at any time without the consent of the company, unless the company, by its contract of copartnery, have an option of itself purchasing them, and chooses to exercise it. The value of a share in a joint-stock company is always the price which it will bring in the market; and this may be either greater or less, in any proportion, than the sum which its owner stands credited for in the stock of the company. The liability of members of joint-stock companies may be either 'limited' or 'unlimited.' In the first case, they are liable proportionally for the whole debts of the company. In the second case, they are liable (Act 1867) either to the amount, if any, unpaid on their respective shares, or to such amount as they may respectively have undertaken by the deed of association to contribute in the event of winding-up. By the 'Act to amend the Companies Act, 1862' (1867), companies may be constituted with limited liability for ordinary members, and unlimited liability on the part of directors and managers under certain restrictions. Companies constituted under the principal Act may be remodelled in terms of this provision. The Act of 1867 also gives power to reduce the capital of a company. It also makes important provision as to subdivision of shares, and as to 'share warrants to bearer.' In many companies, such as railway companies, their act of constitution limits the liability of shareholders. It is important to note, that where liability is nominally limited, it may be practically unlimited, by the amount per share called up for working being trifling compared with the amount which there is power to call. No past member is liable if he has ceased to be a member for one year or upwards prior to the commencement of winding-up; nor is a past member liable, unless it appears to the court that existing members are unable to satisfy the contributions required. A shareholder must take infinite care, in making a transfer of shares, to see that legal formalities are properly gone through, so as to free him from future liability—see case of Teasdale *re* County Palatine Loan and Discount Company (Limited). Commenting on this case, the *Economist* (November 29, 1873) says: 'We should be inclined to say, that a shareholder who has shares cancelled, or makes a transfer, should never rest satisfied until he ascertains, by actual inspection of the registry and books of a company, that his connection with it has come to an end. Where there is a contingent liability, the business of transfer is not so simple as it seems, and the utmost care should be exercised.' Orders of English, Scotch, or Irish courts, in course of winding-up a company under the Act, may be enforced over the United Kingdom. In England and Ireland, the respective Lords Chancellor, with consent of Master of the Rolls, and in Scotland the Court of Session, are empowered to make rules as to winding-up.

Sometimes the joint stock is not held in *shares*, but, what comes to the same thing, in *stock* itself; that is, instead of the capital originally subscribed by the partners being credited to them in the form of shares, it is credited as so much money; and thus a partner who sells out, sells not so many shares, but so many pounds of stock; but the stock, like the shares, may bring a very different price in the market from what it stands rated at in the company's books.

Capital or Stock.—The capital of a merchant is strictly the amount of money which he embarks in his trade—that is, employs for buying goods, paying wages of servants, and the various expenses of carrying on his business. With a comparatively small capital, a tradesman may carry on a large business by receiving payments shortly after making his outlays. By this means there is a rapid turning-over of money, and small profits upon the various transactions may speedily mount up to a large revenue. For example, if a tradesman turn over his capital twelve times in the year, at each time receiving money for what he sells, he can afford to do business on a twelve times less profit than if he could turn over the same capital only once during the year. This leads us to a consideration of credit.

Credit in business is of the nature of a loan, and is founded on a confidence in the integrity of the person credited, or the borrower. An individual wishes to buy an article from a tradesman, but he has not money to pay for it, and requires to have it on credit, giving either a special or implied promise to pay its value at a future time. This is getting credit; and it is clear that the seller is a lender to the buyer. In all such cases, the seller must be remunerated for making his loan. He cannot afford to sell on credit on the same favourable terms as for ready money; because, if he were to receive the money when he sold the article, he could lay it out to some advantage, or turn it over with other portions of his capital. By taking credit, the buyer deprives the seller of the opportunity of making this profit, and accordingly he must pay a higher price for the article, the price being increased in proportion to the length of credit. It very ordinarily happens that the seller himself has purchased the article on credit; but as he must pay for this credit, it does not prevent him from charging for the credit which he gives and the risk which he runs by postponed payment. A person in business may take too much credit, and in that case he is said to be *overtrading*. He may take credit by both or either of two ways: by buying goods with money which he has borrowed—with borrowed capital, as it is called; or by buying goods to a greater extent than he can pay for with ready money, and on a promise to pay for them at a future period. In many cases, a trader finds that he can profitably employ more capital in his business than belongs to him; if he had more goods

than he can purchase with his own money, he could sell them also at a profit. Hence he borrows capital, or buys goods on credit; and after paying interest on the former, and the additional price for the latter, he has a profit remaining to himself. But if he incautiously commit the mistake of buying more goods than he can sell at a profit before he requires to repay the borrowed capital, or to pay the price of the goods bought on credit, he has taken too much credit, and is overtrading; the result of which, if continued, must be insolvency.

Defoe, who wrote upwards of a century ago, makes the following observations on credit and overtrading in his *Complete English Tradesman*: 'There are two things which may properly be called overtrading, and by both of which tradesmen are often overthrown: 1. Trading beyond their stock [or capital]; 2. Giving too large credit. A tradesman ought to consider and measure well the extent of his own strength; his stock of money and credit is properly his beginning: for credit is a stock as well as money. He that takes too much credit, is really in as much danger as he that gives too much credit; and the danger lies particularly in this, if the tradesman overbuys himself—that is, buys faster than he can sell—buying upon credit, the payments perhaps become due too soon for him; the goods not being sold, he must answer the bills upon the strength of his proper stock—that is, pay for them out of his own cash; if that should not hold out, he is obliged to put off his bills after they are due, or suffer the impertinence of being dunned by the creditor, and perhaps by servants and apprentices, and that with the usual indecencies of such kind of people. This impairs his credit, and if he comes to deal with the same merchant or clothier, or other tradesman, again, he is treated like one that is but an indifferent paymaster; and though they may give him credit as before, yet depending that if he bargains for six months, he will take eight or nine in the payment, they consider it in the price, and use him accordingly; and this impairs his gain, so that loss of credit is indeed loss of money, and this weakens him both ways.

'A tradesman, therefore, especially at his beginning, ought to be very wary of taking too much credit; it would be preferable to let slip the occasion of buying now and then a bargain to his advantage, for that is usually the temptation, than buying a greater quantity of goods than he can pay for, run into debt, and be insulted, and at last ruined. Merchants and wholesale dealers, to put off their goods, are very apt to prompt young shopkeepers and young tradesmen to buy great quantities of goods, and take large credit at first; but it is a snare that many a young beginner has fallen into, and been ruined in the very bud: for if the young beginner does not find a vent for the quantity, he is undone; for at the time of payment the merchant expects his money, whether the goods are sold or not; and if he cannot pay, he is gone at once. The tradesman who buys warily, always pays surely, and every young beginner ought to buy cautiously. If he has money to pay, he need never fear goods to be had; the merchants' warehouses are always open, and he may supply himself upon all occasions, as he wants, and as his customers call.' It certainly 'is not possible, in a country where there is such an infinite extent of trade as we see managed in this kingdom, that either on one hand or another it can be carried on without a reciprocal credit both taken and given; but it is so nice an affair, that I am of opinion as many tradesmen break with giving too much credit as break with taking it. The danger, indeed, is mutual, and very great. Whatever, then, the young tradesman omits, let him guard against both giving and taking too much credit.'

Orders.—An order is a request from one dealer to another to supply certain goods. An order, when in writing, should be explicit, and contain no more words than are necessary to convey the sense in a simple, courteous manner.

Counting-house (in French, *bureau;* in Dutch, *kantoor*).—The counting-house is the office in which a merchant's literary correspondence, book-keeping, and other business is conducted. Almost every different business requires a different set of books, but the mode of keeping them is essentially the same. Books may be kept either by single entry or double entry. Single entry only enables the merchant to ascertain the periodical profit or loss on the whole of his business. Double entry enables him to ascertain this on any branch of it. For example, it will enable the grocer to tell what he has made or lost upon *tea* since last balance, as well as on his business generally. The strictest care and accuracy are desirable. It is an understood rule, that no book should shew a blot or erasure; a leaf should never on any account be torn out, whatever blotch or error it contains. The reason for this scrupulous care is, that a merchant's books should be a clear and faithful mirror of his transactions, and an evidence of his integrity. In the case of misfortune in trade, or for some other reason, the books may be subjected to a rigid judicial examination, and an erasure or torn-out leaf may lead to conjectures of an unpleasant nature and consequences. Besides, in the event of any dispute being brought before a court of law, the books, if vitiated or altered, although with no improper motive, do not afford *primâ-facie* proof of the transactions having taken place which they record. When an error occurs in book-keeping, it is proper to let it remain, and write *error* below it.

From the books kept by a merchant, a condensed view of his affairs ought to be given at least once a year. To get this, there must, in the first place, be the operation of what is called *stock-taking*—that is, of making an inventory and valuation, called the stock sheet, of the goods and property of the concern at cost price, and of the debts and bills due to it; the whole forming what are called the *assets*. The stock sheet also contains a list of the bills, accounts, or other debts due by the concern, forming what are called its *liabilities*.

Balance Sheet.—This is prepared on the data of the stock sheet. The assets are placed on the credit side, the liabilities on the debit. If the latter exceed the former, the concern is insolvent. The balance being on the credit side represents the net capital. *Profit and Loss Account.*—The net capital, as shewn by the balance sheet, with partners' drawings for the period, are placed on the credit side of the account; and the net capital, as shewn by the previous balance sheet, with five per cent. interest, is placed on the debtor. The

balance shews the profit or loss for the period. *Partners' Accounts.*—On the credit side is placed the partner's capital as per last account, with five per cent. interest. On the debtor, are placed his drawings for the year; on the debtor or creditor side, his share of profit or of loss. The balance shews the net capital of the partner at the date of the account. Each partner's capital may then be carried to the balance sheet, and being added, they must agree with the figures of the balance sheet representing the net capital of the concern. A *check* is thus got on the accuracy of the whole figures.

Bill of Parcels.—An account or list of items of goods, given to their purchaser by the seller, or delivered along with the goods at the purchaser's house.

Invoice.—A bill or account of goods, which is forwarded separately, announcing the date of their despatch, and the particular conveyance by which they are sent.

Bill of Lading.—A formal acknowledgment or receipt given by sailing-masters for goods put on board their vessels, including a promise to deliver them safely, as marked and addressed, to their designed destination; always, however, excepting loss or injury by the act of God, the king's enemies, fire, or the dangers or accidents of the sea.

A *Manifest* is a document containing a specific description of a ship, her cargo, and passengers. It is signed by the master at the place of lading.

Customs, Excise.—The duties or taxes imposed upon goods entering the country are, in this country, called *customs;* and those imposed upon goods at the period of their manufacture in the country are called *excise duties.* Both form a prime element in the national revenue, and are levied by a board, having an extensive ramification of subordinate functionaries, for the imposition and collection of the duties.

Tariff, or tarif, is the term applied to a table of the articles subject to custom-house and excise duties, with their respective rates.

Insolvency, Bankruptcy.—When a person is not in circumstances to pay his debts in full, he is *insolvent,* which is nearly equivalent to being bankrupt: the term bankrupt, however, is more commonly applied to one who is legally announced or gazetted as being insolvent. In 1854, an attempt was made by Lord Brougham to assimilate the Scotch bankruptcy law to that of England; but the Scotch mercantile community objected to this, as they held the English system to be cumbrous and expensive. It was at the same time admitted that the Scotch law, while generally theoretically good, was practically inefficient, as its provisions were largely ignored. One result of the controversy was the Scotch Bankruptcy Amendment Act of 1856, which, while containing the main provisions of the previous act, rendered them effective by the appointment of an 'Accountant in Bankruptcy,' an officer whose business it is to see that trustees in bankruptcy make annual returns, in prescribed form, shewing the funds of the estate realised and outstanding, the dividend paid, the expenses incurred, and the position of the estate generally; of all which the Accountant must keep a register, open to all concerned. He is further bound to take cognisance of the conduct of trustees, commissioners, and bankrupts, and in case of misconduct, to report to the court or Lord Advocate, who have power to censure, remove from office, or to prosecute criminally. Another result was the assimilation of the English to the Scotch law, by the English Bankruptcy Act in 1869, now repealed, but in part re-enacted by the Act of 1883. In England now, as in Scotland heretofore, the creditors appoint their own trustee, who may or may not be a creditor. Both acts contain clauses for winding-up by composition or deed of arrangement, if a majority in number and three-fourths in value of the creditors consent; but in both countries this is after the public examination of the bankrupt; and in England the composition must be approved of as reasonable by the court, and in Scotland the deed of arrangement must be so approved. The committee of inspection in England discharges the duties of the commissioners in Scotland, while the supervision of the Accountant in Scotland is exercised partly by official receivers (who act with the trustee and report on his conduct), and partly by the Board of Trade, who appoint these receivers as permanent officers, and audit their accounts, and discharge them, or refuse a discharge. In England, the Lord Chancellor and the Board of Trade, and in Scotland the Court of Session, may from time to time make rules for the effectual working of the act. The English rule differs from the Scotch in requiring the consent of the Committee of Inspection to the appointment of a solicitor by the trustee. A noteworthy improvement by the Scotch 1856 Act was making the judgment of the sheriff final in competitions for the office of trustee. Amendments on the 1856 Act were passed in 1857 and 1860, the latter giving power to the Scotch courts to recall a sequestration till three months after its date. Another act defined the preference given in bankruptcy to claims for wages and salary; and the theory and practice of bankruptcy were modified by the legislation of 1880 and 1881, abolishing imprisonment and entitling creditors to institute processes of *cessio bonorum.* The great feature of the English Act of 1883 is the centralised administrative power of the Board of Trade, which is carried so far that (except in very special cases) trustees all over the country must pay their valuation into an account kept by the Board at the Bank of England. The act also contains new provisions with respect to small bankruptcies (estates under £300), and the estates of deceased insolvents.

MONEY.

Origin and Nature of Money.—In a rude state of society, exchanges are made by bartering one article for another, according to some kind of understood value. 'But when the division of labour first began to take place,' says Smith, 'this power of exchanging must frequently have been very much clogged and embarrassed in its operations. One man, we shall suppose, has more of a certain commodity than he himself has occasion for, while another has less. The former, consequently, would be glad to dispose of, and the latter to purchase, a part of this superfluity. But if this latter should chance to have nothing

that the former stands in need of, no exchange can be made between them. . . . In order to avoid the inconveniency of such situations, every prudent man in every period of society after the first establishment of the division of labour, must naturally have endeavoured to manage his affairs in such a manner as to have at all times by him, besides the peculiar produce of his own industry, a certain quantity of some one commodity or other, such as he imagined few people would be likely to refuse in exchange for the produce of their industry.

'Many different commodities, it is probable, were successively both thought of and employed for this purpose. In the rude ages of society, cattle are said to have been the common instrument of commerce; and though they must have been a most inconvenient one, yet in old times we find things were frequently valued according to the number of cattle which had been given in exchange for them.

'In all countries, however, men seem at last to have been determined by irresistible reasons to give the preference for this employment to metals above every other commodity.

'Iron was the common instrument of commerce among the ancient Spartans; copper among the ancient Romans; and gold and silver among all rich and commercial nations.

'Those metals seem originally to have been made use of for this purpose in rude bars, without any stamp or coinage. But to prevent abuses, to facilitate exchanges, and thereby to encourage all sorts of industry and commerce, it has been found necessary, in all countries that have made any considerable advances towards improvement, to affix a public stamp upon certain quantities of such particular metals as were in those countries commonly made use of to purchase goods. Hence the origin of *coined money*, and of those public offices called mints—institutions exactly of the same nature with those of the aulnagers and stamp-masters of woollen and linen cloth. All of them are equally meant to ascertain, by means of a public stamp, the quantity and uniform goodness of those different commodities when brought to market.'*

It must be understood that money is only an article which can be conveniently used in exchanging. It is in this, and in nothing else, that its usefulness lies. Its value in exchange is determined in the same way as the value of other minerals: in the long-run, by the cost of production; temporarily, by demand and supply. If there were an increase in the commerce of the world, without a corresponding increase in the quantity of gold in circulation, gold would rise in value—that is, a given quantity of the produce of human industry would buy less gold than it did before the supposed increase in production. Now, this increase in commerce may be said to be continually going on, but the effect of it is to stimulate the production of the precious metals; so that there are two counteracting forces. It may at first sight appear that the tendency is towards the production of gold outstripping the force which sets it in motion, and towards gold consequently becoming cheaper; and no doubt it does require a much greater weight of it *now* to purchase a given quantity of the produce of human labour, or of most things constituting the real wealth of the world, than it did a hundred years ago. But the increase of real wealth must not be lost sight of in the question. While the social power of a given income, say £100 a year, has greatly diminished during the last century, and continues to diminish, owing to the increasing quantity of gold in circulation, the given income will probably purchase more comfort and luxury now than it did then. Five sovereigns will not buy so much coal now as then, but they will enable their possessor to light his room with gas, to send a message in an instant across the Atlantic, or to go from Edinburgh to London in ten hours in a luxurious carriage—not one of which things could the purse of Fortunatus have enabled its possessor to do a hundred years ago. But that the value of a given income relatively to incomes in general has been diminishing for centuries, there can be no doubt. Even in a village, the days are gone of 'passing rich on forty pounds a year.' And this diminution in the social force of a given sum is plainly owing to influx of gold. It has been especially rapid during recent years, owing to the immense crops, so to speak, yielded by the mines of California and Australia. To those engaged in commerce, or in certain professions, this change is unimportant, as they get a corresponding increase in the quantity of gold which they receive for their commodities; but as it is this social power of gold which men chiefly regard, it is a very serious fact to those who depend on a fixed income that there is a tide ever running against its social weight—that is, influx of gold. The fact is also important in questions connected with national expenditure, and payment of the national debt. From the fact that, owing to causes stated, there is a tide continually running in favour of the borrower, and against the lender, it follows that the weight of a national debt is continually diminishing, even though it remains nominally the same. We hear a great outcry among certain politicians about the annual expenditure of the United Kingdom having risen during the last 50 years from 50 to 85 millions. But the increase, owing to the steady influx of gold, is not nearly so great as it seems. In the eight years 1858–65, the total importation of gold into England was £219,166,344; the exportation was £195,759,150—shewing an excess of importation of £23,407,194. The value of gold and silver imported in 1871 was £38,140,327; total exported, £33,760,671. Excess of import, £4,379,656. In the five years 1876–80, there was an excess of imports of gold and silver coin and bullion, over exports, of £3,603,757; the imports and exports being respectively £147,039,419 and £143,435,662.

Money being useful only as an instrument for effecting exchanges, it follows that the world does not become possessed of a large quantity of those useful and agreeable things that really form wealth, by merely having more money to employ in making exchanges among them. But money being, from many causes, closely associated in the mind with wealth, it has not unnaturally been imagined that the more money a nation could draw to itself and retain, the more prosperous and satisfactory its condition. Hence exports of goods, for which money would be imported, were

* Smith's *Wealth of Nations*, book i. chap. 4.

encouraged, and imports of goods which would have drawn money away, were discouraged. It was overlooked that the money itself was useful only as a convenient means of obtaining other commodities, and that it must be advantageous to a nation to part with its money for commodities which it wanted, when it could get them cheaper from abroad than it could produce them at home. It used to be said that we can only establish a profitable trade when we pay in our own manufactures. Now, paying in gold is, after all, indirectly paying with our own manufactures, for —except the comparatively trifling quantity that may have been taken in war, or that may have been brought home in their own possession by persons who had gone as diggers to the gold countries—there is not an ounce of bullion in the country that has not been obtained in exchange for some article produced either by our manufacturing or agricultural industry. Let him who doubts this position, try if he can discover any other method by which gold can have found its way to this country.

Coined Money.—Gold and silver were formerly chiefly brought from the mines of South America; now large quantities are obtained yearly from Australia, California, and the Ural Mountains. They are generally imported in the form of bars, and sometimes as *dust;* and in this rude state are commercially named *bullion.* The price of bullion in the market is liable to fluctuations, according to the cost of production, the supply, and the demand. However, the variation, as we have said, is never very great, and has little sensible effect on the coinage. It is customary to estimate the purity of gold by an imaginary standard of 24 carats. The carat is a small weight of universal use, containing 4 grains. It originated from the carat or kaura, a small bean, used by the Abyssinians for weighing gold. Diamonds are also weighed by it. If in a piece of gold weighing 24 carats there be $\frac{1}{24}$ of alloy, then the piece is 1 below the standard. What is called jewellers' gold is seldom purer than 20 fine to 4 of alloy—the alloy being usually silver, but sometimes copper, which gives a deeper red tinge to the metal. Perfectly pure gold is never seen either in trinkets or coins, for it is too ductile, and for that and other reasons requires a certain quantity of alloy. Sovereigns and other modern English gold coins contain $\frac{1}{12}$ of alloy; but this twelfth is not reckoned as gold in point of value. At present, the gold coin of Great Britain is issued at very nearly its precise market value as bullion. A pound-weight of gold, of 22 carats fineness, produces coins to the amount of £46, 14s. 6d., which is about the price at which bullion sells for in the market. Thus, the gold of our currency is coined free of expense, or at the rate of £3, 17s. 10½d. per ounce —the weight of a sovereign being 5 dwt. 3·274 grains. In coining silver, government is allowed, by the Act 56 George III., a profit or seigniorage of about 6 per cent.; the pound-weight of silver, which should produce 62s., being coined into 66*s.* —that is, at the rate of 5s. 6d. per ounce. Our silver coins being, therefore, of a little less real value than the sums they represent, they are not liable to be melted down by silversmiths for the manufacture of articles in their trade. There is now no fixed price paid at the Mint to the public for silver as for gold, the government having taken the coinage of silver into its own hands.

Money of the current and standard coinage is frequently signified by the term *sterling*, as 'one pound sterling,' &c. With respect to the origin of the word sterling, it is, among other guesses, supposed that it is derived from Esterling; for in the time of Henry III. it is called *Moneta Esterlingorum*, the money of the Esterlings, or people of the East (of Germany), who came hither to refine the silver of which it was made; and hence it was valued more than any other coin, on account of the purity of its substance. The denomination of the weights and their parts is of the Saxon or Esterling tongue—as pound, shilling, penny, and farthing, which are so called in their language to the present day.

The following is a short explanation of the origin of the principal terms used in reference to coined money: The word *money* is from the temple of Juno *Moneta*, in which money was first coined by the ancients. *Pecuniary* is from *pecus*, a flock—flocks and herds of animals being originally equivalent to money, or things constituting wealth. *Cash*, in commerce, signifies ready money, or actual coin paid on the instant, and is from the French word *caisse*, a coffer or chest in which money is kept. *Pound* never was a coin; the term was originally employed to signify a pound-weight of silver, but afterwards it was applied to mean 20s. in tale, or by counting. *Guinea* took its name from the coast of Guinea, in Africa, whence the gold for it was originally brought; at first, the piece was current at 20s., afterwards it was equal to 21s. 6d., and finally settled at 21s. In the present day, the guinea is not coined, and the term only remains to indicate 21s. Honorary fees and gifts are still usually reckoned in guineas, though paid in other money. *Shilling* and *penny* are both from Saxon words: the penny was first coined in silver. *Groat* was a name given to silver pieces equal to four pennies in value, coined by Edward III.: the word groats is a corruption of *grosses*, or great pieces, and was given to distinguish this larger coinage from pennies or small coins. *Farthing* is a corruption of *fourthing*, or the fourth part of a penny.

The coining of money forms one of the exclusive privileges of the crown, and the counterfeiting of it constituted formerly the offence of high treason. Severe punishment is inflicted on those counterfeiting or uttering false coins, and on those making, mending, or having in possession any coining-tools.

A currency of gold is the most secure and permanent, and the pieces are received for their proper value in all countries. But a metallic currency alone is quite unsuitable in highly commercial communities. Not only would it be highly inconvenient, if not impracticable, in the ordinary course of business, to pay large sums in coin, but a heavy loss would also be incurred annually from tear and wear. Nor would that be all. The additional amount of coin that would be required in this country, were bank-notes abolished, would be enormous; and the loss of profit on such a sum, if withdrawn from productive purposes, and devoted to no other use than that of exchange, would amount to millions. The additional gold could not be got by us without our giving an equal value of our manufacturing and agricultural products in exchange for

it; whereas these products, if retained by us, and applied for new productive purposes, would yield us the usual rate of profit, whatever it may be. Substitutes for a metallic currency spontaneously take their rise in commercial communities, and this not so much from the difficulty that would be felt without these substitutes in supplying the increased demand for coin, arising in a progressive state of trade and commerce, as from their presenting themselves as the most convenient means of carrying through commercial transactions.

Paper-money.—It is by what is called paper-money that people make payments without coin. The term *paper-money* is sometimes confined to notes issued by or under authority of the state, and declared to represent a certain amount of coin, without the coin being payable on demand by the party issuing them. But the term is also used to signify bank-notes, promissory-notes, bills, and bank-cheques, by means of all which payments are made and received without the intervention of coin. Indeed, in this country, coin is used almost exclusively in retail transactions or in payment of wages: all large payments are made by these documents.

Bills of Exchange were first used for the purpose of settling pecuniary transactions between individuals at a distance from each other, and were therefore convenient expedients to avoid the risk of sending actual money to a creditor. This may be explained as follows: If A, a merchant in London, have a debtor B, and a creditor C, both in Paris, instead of sending money to C, and getting money sent to him by B, he may give C an order on B to pay the debt over at once to him. This is a bill of exchange in its simplest form. Suppose, however, that A has a creditor in Paris, but no debtor, while his neighbour E has a debtor, but no creditor; A may pay the money to E which the French debtor owes him, and obtain from him an order on his debtor to pay A's French creditor. This order he will be said to purchase. It will be an accommodation to him or to the other party, according to circumstances. In the complicated arrangements of modern commerce, the individual debtors and creditors are lost sight of. If a person has a sum to transmit to another country by such an order, the rate at which he will obtain it will depend on the pecuniary relations of the two places taken in the main. If there is more money payable at the moment by people in London to people in Paris than there is payable by those in Paris to those in London, there will be a demand for orders on Paris, and a premium will be payable for the accommodation by those who want them. In this case, the *exchange* will be said to be against London. In Paris, on the other hand, there will be more people ready to give such drafts than there are in want of them, and those who dispose of them must do so at a discount. The rate of exchange is from this circumstance said to be in favour of Paris. The premium in the one case, and the discount in the other, will be measured by the balance due by London to Paris over what is due by Paris to London; and the principal sum to be met by the rate of exchange will be the expense of transmitting that balance in specie, unless the accounts can be adjusted by bringing transactions with some other community into the circle. Thus, to settle the commercial transactions between two countries, it is only the *balance* due by the one country to the other that must pass.

We may vary this explanation of the principle of exchange as follows: Great Britain, like every other country, is exposed to a drainage of its metallic currency by the balance of trade falling against it. As long as our exports are equal to our imports, they will balance each other; the bills drawn in England against foreign countries will be balanced by bills drawn in foreign countries against England. In this state of things, the exchange will be at par, or even; that is, there will be neither profit nor loss in the transmission of bullion between England and foreign countries. If our exports exceed our imports, then foreigners must send actual money for the overplus, because they have not occasion to remit bills for the amount. If our imports exceed our exports, we must in the same manner remit the overplus in actual money. Thus a dearth and scarcity of corn in England will cause a drainage of the precious metals, because our imports of that article rise to a large amount, or much beyond the value of the manufactured goods exported.

Not only international payments, but also payments between the various towns or districts of a country, are effected without the intervention of money, by means of bills of exchange—the bills drawn against one place being set off by bills drawn from it, as both pass through the bankers. So also payments between persons in the same town are made, without money, by means of bills, where they transfer to the banker who holds bills in which they stand debtors, the bills in which they are creditors. The one set of bills balances or liquidates the other. The multifarious transactions taking place between merchants, especially those in Britain and America, cause an incessant process of payment by the intervention of bills of exchange, many thousands of pounds being paid away daily in their accounts with each other without the aid of any metallic money, except perhaps a few coins for small odd sums.

Here is a common form of drawing a bill of exchange:

£100. LONDON, 5*th May* 1884.

Three months after date, pay to me or my order the sum of one hundred pounds, value received.

JOHN NOKES.

To Mr THOMAS STYLES, *Merchant*,
Cripplegate, London.

The bill being drawn in this form, Mr Styles *accepts* it, by writing his name either below that of Mr Nokes, or across the face of the writing. Mr Nokes, who is called the *drawer*, now indorses the bill, by writing his name on the back of it, and thus the bill becomes *negotiable paper*. It may be paid away to a third party; and he, indorsing it below Nokes's name, may pay it away to a fourth; and he indorsing it in the same manner, may pay it away to a fifth; and so on. Thus the bill may pass from hand to hand, on each occasion liquidating a debt of £100, and performing the functions of money, till the day of payment by the original acceptor arrives, when it is duly presented by the last holder. Instead of running this course, the bill may at any period be *discounted* by a bill-broker or banker. The discounting of a bill consists in giving the money for

it, less a certain sum for *interest*. Interest is a charge for the loan of money, and is ordinarily reckoned by *per cent.* Thus 5 per cent. (or centum) per annum signifies a charge of £5 for every £100 for one year, which is equal to a shilling for each pound. The rate of discount or interest depends on the demand for discounts or loans, and the supply of the money to meet that demand. In this country it is usually about 2 to 7 per cent.; but it sometimes falls below 2, and sometimes reaches 10 per cent. The amount of the discount or interest on any transaction depends, of course, not only on the rate, but also on the length of time between the advance of the money and the date when the bill becomes due.

According to a practice of old standing, bills are not, in this country, presentable for payment till the third day after that which is specified for them to fall due. The three days allowed are called the *days of grace*. Thus, a bill drawn on the 5th of May, at three months, is not legally due till noon of the 8th of August. In some countries, the period of grace is much longer than three days.

Bills of exchange are occasionally drawn in the form of promissory-notes; as, for example:

£100. LONDON, 5*th May* 1884.

Three months after date, I promise to pay to Mr John Nokes, or order, the sum of one hundred pounds, value received. THOMAS STYLES.

When in this form, no signature is written across the front of the document—it is only indorsed by the creditor. Promissory-notes are in every respect liable to the same regulations as bills. Both promissory-notes and bills must be written on stamps of the proper price; if on stamps of an inferior value, they are not negotiable, and cannot be protested. The protesting of a bill is simply the marking of a notary-public that it has not been duly paid on presentation; which marking, or *noting*, affords proof that it had been presented. In Scotland, when the protest is written out and recorded, it forms the warrant for the issuing of legal diligence by the competent authorities in a more summary and less expensive way than if no protest had been taken. When the acceptor of a bill fails to pay the amount, the holder can fall back for payment on any of the indorsers, or the drawer, provided these persons be immediately warned that the proper debtor has failed to pay.

Bills are sometimes drawn at *sight*, or so many days after sight; for example:

£50. LONDON, 5*th May* 1884.

Ten days after sight, pay me or my order the sum of fifty pounds, value received.

To Mr ISAAC WALTERS, JOHN JENKINS.
Cheapside.

A bill of this kind is usually drawn by a person at a distance from his debtor, and on writing it out and indorsing it, he transmits it to an agent—or probably a creditor of his own—in the town in which the debtor resides. The agent having received it, hastens with it to the debtor to be *sighted*, which consists in the debtor—as, for instance, the above Mr Walters—accepting it, by signing his name, and marking the day on which he has done so. The bill is now a negotiable instrument, and on the third day after the day specified, it is presentable for payment. This may be called a convenient way of getting ready money or prompt payment of any sum from a debtor. It is very common to draw *foreign bills of exchange* at so many days after sight. These bills are of precisely the same nature as inland or home bills of exchange; but for the sake of security in transmission, they are drawn in sets of three. The following is a common form:

£100. MONTREAL, 18*th May* 1884.

Sixty days after sight, pay this my first bill of exchange (second and third of the same tenor and amount being unpaid), for the sum of one hundred pounds sterling, value received.

SAMUEL ROBERTSON.

To Messrs BROWN & JONES,
Merchants, Bristol.

This bill being indorsed by Mr Robertson, is transmitted to England—probably in liquidation of a debt of the same amount—and is presented to Messrs Brown & Jones to be sighted, and is afterwards presented to them for payment accordingly. The agent or individual to whom it is sent receives by the next packet the second bill of the same tenor. Should the first have been lost by shipwreck, this second is available; but otherwise it is of no use, and may be destroyed. The third bill of the same tenor is retained by the drawer till he learn whether the first or second has been received; if both have been lost, it is transmitted. Bills of this description are rarely sent by the actual drawer. They are usually paid away or sold on the spot to another party, who transmits them to a creditor of his own, and he negotiates the payment. The abundance or scarcity of foreign bills of exchange affects their price. If many merchants be in quest of bills of this nature to send abroad, and there be few having them to dispose of, they rise to a premium; in other words, a merchant in New York may give £105 for a bill for £100 payable in England. If, on the contrary, there be many bills and few buyers, they will be disposed of at a discount. These differences constitute what is called *the difference of exchange*.

The amount of the *currency* or *money* of the United Kingdom is not known. The bank-notes in circulation vary at different periods of the year, and in different states of the commercial world. The note circulation of the United Kingdom for the month ending September 23, 1882, was (*Bankers' Magazine*, 1882) as follows:

Bank of England (month ending Sept. 23, 1882)	£26,267,711
English Private Banks	1,626,898
English Joint-stock Banks	1,644,335
	£29,538,944
Scotch Banks	5,620,458
Irish Banks	7,108,372
Total for United Kingdom	£42,267,774

As nearly all large payments, however, are made by bills of exchange and drafts on bankers, there is an enormously large currency of that kind. The centre of all the great money transactions of the British empire is London, in which is situated the Bank of England, or principal banking institution. In Scotland, celebrated for its well-conducted banking institutions, the money-currency is almost entirely bank-notes and silver.

BANKS.

Origin of Banks.—The term *bank*, in reference to commerce, signifies a place of deposit of money, and is derived from the Italian word *banco*, a seat or bench, the first custodiers and dealers in money in Italy having been Jews, who sat on benches in the market-places of the principal towns. It is worthy of remark, that in the infancy of almost all modern civilised nations, the earliest money-dealers were Jews, and in the present day, persons of that nation are the chief commercial negotiators in barbarous countries. Their acute intelligence, patient industry, disregard of local attachments, and kindred qualities, have in all ages fitted the Jewish people for this course of life.

About the reign of Charles I., Jews and goldsmiths, to whom valuable property had been assigned for safe custody, began to exercise the profession of bankers and money-dealers in England; but till a much later period there were several eminent bankers in London who still kept goldsmiths' shops.

On the continent of Europe, regular banking commenced much earlier than in this country. The Bank of Venice was established as early as 1171, the Bank of Amsterdam was begun in 1609, and that of Hamburg in 1619. Regular banking establishments were formed in England and Scotland shortly after the Revolution. The Bank of England began in 1694, and the Bank of Scotland in 1695, since which period, banks of various characters have been instituted in all the principal towns in the United Kingdom.

Business of Banking.—A bank is a commercial institution, established and conducted by private individuals, for their own behoof, or by joint companies. Banks are usually reckoned to be of two kinds—banks of *deposit*, and banks of *issue*. By deposit, it is meant that the bank takes charge of deposits of cash, which it is ready to restore on demand, or on a certain short notice. Some banks of this nature allow interest on the sums received, and others do not; all, however, of necessity, make use of a portion, generally the greater portion, of the money so deposited, by lending it out at a certain rate of interest, and thus compensate themselves for the interest, if any, allowed by them to their depositors, and for their trouble. The loans are most commonly in the form of discounts of bills, and occasionally advances on heritable or real property, or other securities. Banks of issue transact all the ordinary business of banks of deposit, and, in addition, issue notes of their own instead of actual cash or the notes of others. Within 65 miles of London, no banks, except the Bank of England, are allowed to issue their own notes; but beyond that circle, almost all banks in this country are banks both of deposit and issue. The only banks permitted to issue below £5 are those in Scotland. All the present banks of issue were in existence before the 6th of May 1844. From and after that date, new banks of issue were prohibited by act of parliament; and a limit was fixed in 1844 and 1845 to the amount of notes that the existing banks could in future issue. By the Companies Amendment Act (1879), banks of issue registered as limited liability companies are not limited as to liability in respect of their notes. The fixed issue of the Scotch banks is £2,676,360; of the Irish, £6,354,494—total, £9,030,854.

As it is a principle at the very root of banking, that money deposited shall be returned, either on demand, or punctually at the expiry of a stipulated notice, it follows that banks must always have in their coffers as much of the money deposited with them as there is the least likelihood of being called for by depositors. When business is in its ordinary condition, a bank can, after some experience, approximate pretty nearly to the amount of the greatest demand for a return of deposits throughout the year, and provide accordingly. But sometimes the credit of a bank becomes doubted, either from causes peculiar to itself, or on occasions of a *panic* or general distrust, when all who own money wish to have it in their own possession. In these cases, there is a *run* on the bank for repayment of its deposits, and the amount called for may be far beyond the maximum demanded in ordinary times. If the bank has not retained as much of the deposits in its coffers as will meet the demand, it is said to *suspend payment*, and, as a general rule, it must wind up its business; the confidence of the public that it will in future restore its deposits on demand, being now destroyed. It is impossible for a bank to conduct its business without some risk. But a well-conducted bank will never make an unsecured advance to any one who has not commercially a good reputation. It will make an excessive advance to none. It must have the courage to own a loss, and the wisdom not to 'throw good money after bad.' Observation of these rules is the best preventive of a run.

The *reserve* of the banking department of the Bank of England is always in coin, or, what is the same thing, in notes against which there is coin lying in what is called the *issue* department of the bank. In the case of all other banks in this country, the reserve is only partly in coin; sometimes the proportion of coin is very small. A great portion of the reserve is generally in Bank of England notes, equivalent, of course, to coin. These other banks also hold a portion of what is truly their reserve in the shape of government stock, in which they have invested it. In this way the banks obtain a return on this last portion of their reserve, in the dividends or interest paid by government on the stock—this return being less, indeed, in the usual case, than if the bank had lent out the money in the ordinary course of business, but better than no return at all, as must be when the coin or notes are lying idle. The reason why government stock is a safe reserve is, that it is sure to command a purchaser at all times. If there be a run on a bank, it immediately finds a purchaser for the stock, and with the price, whether paid in gold, or in Bank of England notes, the only other legal tender, it meets the demands of its depositors. Sometimes, a bank has its reserve in the form of a deposit at the Bank of England; or, if a provincial bank, with some London bank, which has its own reserve there. From the Bank of England being the channel through which, directly or indirectly, payments are made, and moneys received, by other banks, it is more convenient for them to have their reserve lying as a deposit in it, than lying as gold within their own walls. In the case of a demand on their reserve, the banks will draw out

their deposits, in notes, or, if gold be in demand, in gold, from the Bank of England. Whether, therefore, the reserve of a bank is invested in government securities, or is deposited in the Bank of England, or is in Bank of England notes, it is from the coin in that bank that the gold comes in the case of a run. It is apparent from this that it is essential to the stability of all banks, so long as they themselves do not keep a sufficient reserve of coin in their coffers, that the Bank of England shall always be possessed of coin, and never be unable, on demand, to pay its depositors in gold, or to give gold in exchange for all its notes that may be presented to it. It may be added, that while banks gain, through the annual dividends, in keeping their reserve in government stock, they run the risk of a loss in the event of their requiring to sell it in the time of a panic; for at such a time, when many securities and stocks become unsaleable, and all of them suffer depreciation in value, government stock itself falls in price, although less so than the others. Banks often invest portions of their reserve in other stocks than government stock. The higher return obtained on these other is, however, outweighed by the greater risk of depreciation in their value, whether continued unsold or thrown into the market for sale in times of panic.

A person may apply to a bank for a loan of a sum of money, as when he discounts a bill; for that loan, he will pay so much interest. The bank may give the loan in coin. That coin may be money belonging to itself—part of its *capital.* In this case, the bank will have no greater profit by the transaction than if it had laid out the money in any other way, equally safe, and involving the same amount of trouble to the bank. Or the coin may be money deposited with the bank. In that case, the interest paid by the borrower, in so far as it exceeds the interest, if any, paid by the bank to the depositor, and a rateable proportion of the expense of carrying on its business, will be pure profit to it. Or, if it be a bank of issue, it may give the loan in its own notes. A bank-note is simply a written promise by the bank issuing it to pay to the bearer on demand the sum of money therein mentioned—that is, in gold, or, what is the same thing, in Bank of England notes, for which coin may be immediately procured at its issue department. Of course the borrower would not accept a loan from a bank in its own notes, unless he believed that it could redeem its promise of paying in gold, and that the public were of the same opinion; for the moment that a suspicion arises that the promise will not be made good, the note will cease to pass from hand to hand as coin, or to perform all the functions which coin performs. But when the loan is accepted in a bank's own notes, it is evident that the interest which the bank draws for the loan of its promises to pay is pure profit, except the rateable proportion—as in the other cases—of the expense of carrying on its business, and the expense of the paper and printing of the notes with the government stamp-duty. The motive which a bank has to extend its issues on loans is therefore apparent, so long, of course, as it is not compulsory on it to retain unemployed in its coffers as much in gold as it issues in notes.

But it by no means follows that when a bank makes a loan in its own notes for a definite period, it will really obtain the benefit of the interest on it for that period; for the borrower does not apply for the notes that he may keep them beside him, but that he may pay them away in making a purchase, or in liquidating a debt, and this, most commonly, on the very day he receives them. If the person to whom the notes are thus paid by the borrower has himself no purchase to pay for, or no payment to make, he may, the moment he gets them, return them to the bank that issued them, to lie there on deposit. If the bank pays interest on deposits, as most banks do, then out of the interest drawn by it on the original loan, it will have to pay interest to the depositor of the notes; in other words, the loan is no longer a loan of its notes, but a loan from its deposits. Or, the person receiving the notes from the borrower, may immediately present them to the issuing bank for gold, instead of depositing them. Here, too, therefore, the loan that was made in notes is now converted into a loan of gold, that was in reserve from previous deposits, or that was part of the bank's own capital; in which cases, the bank obtains no advantage whatever in having made the loan originally in its notes. It might equally well, so far as profit is concerned, have originally made it in gold from its reserve of deposits or capital. So, also, the bank makes no profit by a loan of its notes, if the person to whom the borrower pays them is himself a debtor of the bank, and returns the notes to it to liquidate his debt. Notes generally find their way back to the bank that issued them through other banks, into which they have been paid as deposits, or for the liquidation of debts due to them. These banks suffer the loss of profit or interest on the amount of the notes thus received by them so long as they keep them; they, therefore, immediately present them to the issuing bank for gold, to replenish their own reserves, or to lend out; or, what is the same thing, they present them to the issuing bank for government stock, or other securities bearing interest, and which that bank has had to provide from its capital and deposits.

It will now be apparent to the reader that there are two checks which prevent a bank issuing notes to any extent it pleases. In the first place, there must be a demand for its notes by borrowers. It is only to people in good credit, and likely to make a profitable use of them, that a bank will lend its notes, and such people will not take an increase of loans unless trade be increasing, and new opportunities be presenting themselves for profitably employing the notes borrowed. True, banks, when imprudently conducted, or when deceived in the character of their customers, frequently lend their notes to reckless persons, who overtrade with them, and become bankrupt. But banks commit this error, when they do commit it, to a far greater extent by loans of their deposits and capital, than by loans of their notes. In the second place, the immediate return of the notes, chiefly through other banks for gold, or for other portions of the reserve of the issuing bank, is a check to its issuing more notes than it has a reserve to meet. This return of notes through banks is called the *exchange* of notes—the notes issued by a bank being returned to it in exchange for the notes held by it of another bank. The

difference is paid in the way that has just been mentioned, by the bank to which the exchange is *unfavourable*—that is, by the bank which gets more of its notes returned to it than it has notes of other banks in its possession.

Besides issuing its notes in loans, a bank may issue them in repayment of deposits, or in payment of *remittances*—that is, of money lodged with it, or with its correspondent, in one town, in order to be paid over to a person in another town. In this case of an issue, there is the same profit to the bank as in the other case. The bank gets the profit which it makes on the money which was originally deposited or lodged with it, without having to pay interest to the persons who made the deposit or lodgment; the deposit, or money lodged, having now been repaid in its notes. But here, too, these notes are equally liable to be returned to the issuer as when they are issued on loans. They have been taken out of the bank only to be paid away, and they immediately find their way back to it, in the manner described.

Of all the notes issued, in whatever way, by banks, a certain amount is not returned to them, but is kept in circulation, being what is required by the necessities of the public for use as money, passing from hand to hand. It is, of course, on this portion that the banks make their profit; and, in consequence of this profit, they are able to afford banking facilities to the public more cheaply than they could otherwise do. The profit is just the interest on the notes in circulation—less the expense of manufacturing the notes, a rateable proportion of the expenses of conducting the banks, and the loss of interest or profit on an unemployed reserve kept to meet a return of notes, and on the gold required by law to be held against extra issues, if any. The amount of the bank-notes in circulation varies at different periods of the year; at term-times and quarter-days, when more payments than usual are made, there is a greater quantity of money required by the public than at other times, and the notes in circulation increase in amount. This addition to the circulation is drawn from the banks by depositors or borrowers. After it has served its purpose, this additional quantity gradually returns to the banks as deposits or in repayment of loans. If the credit of an issuing bank is at any time suspected, the holders of notes will present them for gold, just in the same way as its depositors will call for a return of their deposits; and a bank requires to provide itself with a reserve—on which, of course, it makes no profit—to meet a *run* from its note-holders, as well as a *run* from its depositors. It has been generally imagined that when issuing banks suspend payments on a run, the run is one on the part of their note-holders; but this is only a popular error. In a well-established bank, the amount of its notes in circulation is almost nothing compared to its deposits; and though the holders of small sums in notes may be more apt than depositors to take alarm, and rush in a panic to the bank for gold for its notes, a small proportion of its depositors suddenly demanding a return of their money in gold, as effectually drains a bank of its reserve, as if its whole circulation were to be at once presented to it for gold.

The total deposits and acceptances in the joint-stock banks of London (see Abbott's Tables, *Bankers' Magazine*, 1872, p. 748), as shewn by the balance sheets and reports for the half-year ending 30th June 1872, were £101,528,646; their total paid-up capital was £8,216,180; their reserved fund was £2,628,390: thus shewing a total working capital of £112,373,216. On 15th November 1882, the deposits in the Bank of England were as follows:

Public deposits, including Exchequer, Savings-bank, Commissioners of National Debt, and Dividend account.....	£2,545,824
Other deposits.....	22,593,159
Seven-day and other bills.....	223,713
Shewing a total of.....	£25,362,696

We do not know what is the total working capital of the banks of the United Kingdom; but the above figures, taken in conjunction with those already given—namely, £42,267,774, as the total note circulation of the United Kingdom in September 1882—are sufficient to shew that the important part which banks play in this country by means of their advances to borrowers, is not as banks of issue, but as banks of deposit. But so strong in some quarters was the impression that it was chiefly by means of their issues that banks possessed a powerful influence for good or for evil in the commercial world, that it led to legislative measures, still in operation, for the purpose of controlling their proceedings in the capacity of banks of issue.

This country, like others, has suffered repeatedly from what is called a commercial crisis or convulsion. One cause of such an event, and one which has been too often supposed to be the invariable one, is a course of speculation or overtrading. In a speculative period, there is no limit to the purchases made by traders in certain great branches of commerce, or even by traders generally. In the hope of a further rise in the markets, each man endeavours to buy, with the view of reselling at the increased price. The demand being thus increased, of itself raises prices with us; foreigners therefore diminish their exports from us; and to benefit by the high prices prevalent here, importers increase the quantity of goods brought to us from abroad. In this way, the imports exceed the exports; and a drain of gold to pay for this excess sets in from this country to abroad. This drain affects the reserve of banks, and directly or ultimately the reserve of the Bank of England—which is the great storehouse of gold in this country—and leads to a restriction by banks of the loans which they give. Traders generally must now withdraw their usual credit from their customers; and this obliges those that hold goods to sell them off at what they will bring, in order to raise money to meet their engagements. As so many are thus rushing as sellers into the market, prices fall or collapse, as they may do before the restriction of credit, on the suspicion arising that they will not be maintained. The holders of goods thus suffer a heavy loss, and if unable themselves to bear it, they become bankrupt. Prices having thus fallen, imports decrease, and exports increase, so that gold is returned to this country, to pay for the excess of the exports, and the former equilibrium in prices is gradually restored. All

these phenomena might take place in a country where the currency is purely metallic; but a very general belief arose in England that the rise of prices, and consequent drain of gold, if not actually generated, were at least heightened and prolonged in this country by the issues of bank-notes, there being formerly no limit by law to their issues. As prices, it was argued, depend on the quantity of money circulating in a country, the more bank-notes that are issued, the higher are prices. Hence, banks, if unlimited in their issues, do, by increasing their issues, raise prices. Then, if a drain of gold sets in from this country, it can be checked or counteracted only by a fall of prices; while, if banks continue to throw out their notes, or even abstain from calling them in, prices will not fall, and the drain of gold will go on. If the currency were purely metallic, it would, of necessity and spontaneously, be lessened in amount by the withdrawal of the gold for export, and prices must fall. Therefore, banks ought not to be allowed to issue notes to increase the circulation—to over-issue, as it is called—unless they withdraw from it as much gold as they issue notes; if they were not allowed, our mixed currency of gold and notes would vary as a metallic currency would do; and the currency would not be kept in an inflated condition by issues of bank-notes when, but for them, it would not have increased, so as to raise prices, or would have diminished, so as to allow them to fall. The object of the existing bank acts, passed in 1844 and 1845, was to carry this theory into practice, by preventing the issue of notes beyond a fixed amount, unless against gold held by the issuers.

There are three fundamental errors in this theory, according to those who oppose it. First, it proceeds on the erroneous supposition that, in a country like ours, where most purchases are made on credit, or are paid for by other means than gold or bank-notes, prices depend on the amount of gold and notes in circulation. A sale is effected by a mere book-entry of the seller, and before the term of credit has expired, the price will be set off by a counter-sale to him; or, if the price, as is the case in the great majority of wholesale transactions, is paid by a bill or bank-cheque, the holder obtains its value without the intervention of gold or notes; the bills and cheques are set off in the hands of bankers by the bills or cheques granted by himself. Prices, therefore, are not to be regulated by regulating the currency of coin and notes. The second error is, in supposing that banks can over-issue at pleasure. The extent of their issues depends on the demands of their customers, and their customers, when under a speculative mania, do not effect their purchases by means of bank-notes. There is also the check afforded by the return of the notes to the Bank for gold. The word *over-issue* is frequently used in these discussions to signify an addition of notes to the circulation, when it is in that state that there is no passage of the precious metals to or from a country to pay for an excess of imports or exports. In this sense, banks may over-issue, on the application of their customers; but if trade were increasing, so as to require an addition to the circulation, temporary or permanent, the over-issue would be advantageous to the country. If the banks did not meet the demand for additional notes, the public must and would be at the cost of importing gold to serve the necessities of business. Third, when there is a drain of gold, it would be taken from stores or reserves in banks, and not from the circulation in the hands of the public, although purely metallic; it is always drawn in this country, directly or indirectly, from the reserve of the Bank of England; so that prices are not affected by a diminution of the currency, but only by the bank withdrawing credit. Any attempt, therefore, by legislation to withdraw gold or notes from the circulation on a drain, is to aim at a result different from what would take place under a purely metallic currency.

On considering the various operations connected with banking, it will be found that, independently of the impulse and elasticity created by the facilities given to commerce, the direct and primary effect of them is the employment of waste money. A bank gathers, as it were, the money of a district into its hands, and allowing each man to use as much of his own share as he requires at the time, keeps the remainder likewise in employment, which would not have been the case had it remained in its owner's hands.

The rapidity with which all kinds of payments are made, and therefore the frequency with which money can be used, through the instrumentality of banks, form the most striking feature. In a bank-office the same sum of money will have been made the means of paying its amount a dozen of times over in a day without being once uplifted. A, who is due B £100, gives a cheque for the sum, which is simply an order on the bank to pay the money to B, and which will make it stand in his name instead of A's. B gives a similar cheque to C; C to D; and so on. 'Thus it is,' says Mr Gilbart, 'that banks of deposit economise the use of the circulating medium, and enable a large amount of transactions to be settled with a small amount of money. The money thus liberated is employed by the banker in making advances, by discount or otherwise, to his customers. Hence the principle of transfers gives additional efficacy to the deposit system, and increases the productive capital of the country. It matters not whether the two parties who have dealings with each other keep their accounts with the same banker or with different bankers; for as the banks exchange their cheques with each other at the clearing-house, the effect as regards the public is the same.'*

London, in which the government funds are managed, and where all the great pecuniary transactions of the empire may be said to centre, furnishes a remarkable instance of the economising of money by the interchange of cheques or drafts among bankers. Most of the banking-houses in the metropolis send daily the drafts they have received on other banking institutions to a place of common resort, called the *Clearing-house*. Here a clerk from each bank attends and exchanges drafts. By the official return, the total value of cheques and bills cleared at the bankers' clearing-house for the year ending 30th April 1882, was £6,382,654,000.

Bank of England.—This institution, which is the largest and most important banking establish-

* Gilbart's *History and Principles of Banking*, pp. 123, 124.

ment in the world, was projected by William Paterson, a Scotchman, and received its charter of incorporation, July 27, 1694. It was constituted as a joint-stock association, with a capital of £1,200,000, which sum was lent at interest to the government of William and Mary, at the time in a state of embarrassment. At its very outset, therefore, the Bank of England was a mere engine of government; and in a lesser or greater degree, it has held this character through all the stages of its subsequent history. At first, the charter of the Bank was for only eleven years; but in consequence of the great services of the institution to government, its charter has been at various times renewed. The last renewal was in 1844, and the charter of that year still subsists; its terms being subject to modification or revocation by the legislature at pleasure. By the act or charter of 1844, the Bank was divided into two departments—the *issue* and the *banking*.

In the *issue* department, its sole business is to give out notes to the public. Before the separation of the departments, the government was due to the Bank £11,015,100. This sum was declared to be now a debt due to the issue department, and for the issues of notes to that amount, no gold requires to be held by it. This was just the same thing as if the Bank had originally lent £11,015,100 of its notes to government, and these notes had found their way into circulation. The Bank was also allowed to issue additional notes on securities, that is, to lend them to a limit which at present amounts to £3,984,900, and this also without holding gold. The amount of notes which may thus be issued, without gold being in reserve against it, is £15,000,000. All notes issued above that amount can be issued only in exchange for gold. At the passing of the act in 1844, the limit of notes to be issued against the government debt and securities was fixed at £14,000,000—past experience having shewn that there was not the least risk of there being at any time less than that amount of Bank of England notes in the hands of the public. It was thus rendered certain that for all of its notes that might be returned to it for gold, there would be gold in store, and that, according to the views of the supporters of the act, the Bank would be prevented from interfering at pleasure, by issues of notes, with the circulation. The augmentation of the authorised circulation—from fourteen to fifteen millions—is on account of the lapse of country banks. The Bank must account to government for the net profit of the extra issue; and the profit which the bank derives from its issue department is the interest received on the £14,000,000 of government debt and securities, which, at 3 per cent., is £420,000 yearly. But out of this the Bank pays to government, for its banking privileges, and in lieu of stamp-duties, £180,000. The expense of the issue department being £160,000, the net yearly profit upon it to the Bank is thus £80,000. The Bank also makes a profit of £20,000 to £40,000 yearly upon bullion and foreign coin. These are brought to the Bank for notes; they are worth £3, 17s. 10½d. per ounce; but the Bank is obliged by its charter to purchase them at £3, 17s. 9d. The holders prefer taking this price to having their bullion and foreign coin coined, free of charge, at the public Mint, as the delay in the coining is equal to a loss of interest of 1½d. per ounce.

Viewed in its *banking* department, the Bank differs from other banks in having the management of the public debt, and paying the dividends on it; in holding the deposits belonging to government, and in making advances to it when necessary; in aiding in the collection of the public revenue, and in being the bank of other banks. For the management of the public debt, the Bank receives about £247,000, against which there has to be set £124,000 of charges. The remaining profits of the Bank are derived from its employment, like other banks, of its deposits, on which it allows no interest, and of its own capital. The capital was originally £1,200,000; in 1816, it reached £14,553,000—the present amount.

In 1797, the Bank found itself likely to be obliged to suspend payments, and its notes were declared by law a legal tender, although no longer convertible into coin. This state of matters continued till 1821. The notes during this interval not having been convertible into coin on demand, there was no check upon the Bank in the amount of its issues; and the currency became depreciated—that is, a £5 note would not exchange for five sovereigns; and every man to whom £5 was due, was thus obliged to accept payment in a £5 note, not worth £5. It is, however, said that the value of gold at the time was enhanced owing to absorption by hoarding and by military-chests, and that the depreciation was more apparent than real. The export of gold following on a rise of prices occasioned by an issue of bank or government notes is unlimited, except by exhaustion, if these notes are not payable in coin on demand, and are issued without any check from without or self-imposed. But as prices estimated in these notes rise, the price of bullion, like other commodities, rises too, and the price of coin which can be converted into bullion, or be used abroad at its previous purchasing power, rises also. Since 1821, the Bank has been oftener than once on the verge of a suspension of payments, owing to foreign drains of gold. The separation of the banks into two departments is regarded by many as having a tendency to produce a suspension in times of panic, when the reserve is reduced by withdrawals to supply a foreign drain, or to meet an internal run. Before the separation, the Bank, in the case of withdrawals of gold, had the whole amount of gold within the Bank to meet them; but now it loses the command of all the gold in the issue department. It cannot get that gold unless in exchange for notes, but, its reserve being reduced or exhausted, it has none to spare. The restriction of credit consequent upon the approach to an exhaustion of the reserve of the banking department is so great, that the fear of it occasions a panic; and in 1847, 1857, and 1866, on the possible suspension of payments by the banking department, owing to a reduction of its reserve, being apparent, the government of the day took the responsibility of authorising the Bank to lend additional notes, not represented by gold, which was an indirect way of getting at the gold in the issue department where the object of the borrowers was to obtain gold.

The Bank of England is situated in the centre of London; but it has a branch in the west end, and several branches in the provinces.

Joint-stock Banks in England.—There are 56 of these banks in England. There are also 118 *private banks* of issue, besides numerous others, especially in London, which do not issue notes.

In the case of all these banks, whether issuing or non-issuing, their profits are chiefly derived from the use of their deposits. The issues of those banks possessing the privilege are small compared with their deposits.

There are also in London the establishments of many colonial, Indian, and foreign joint-stock banks, and some of the Scotch banks have recently established branches in London.

Banks in Scotland.—The earliest banking institution in North Britain was the Bank of Scotland, instituted by a charter of incorporation from the Scots parliament in 1695. The original capital was £1,200,000 Scots, or £100,000 sterling. The amount was raised by shares differing in extent, from £1000 Scots, or £83, 6s. 8d. sterling, to £20,000 Scots. In 1774, the amount of stock was extended to £200,000 sterling: now it is £1,250,000 sterling, and the shares £100 sterling.

The establishment of the Bank of Scotland was of great service to the nation; the landholders borrowing notes, and bringing the country into cultivation, and a spur being by that means given to various branches of manufactures. The Bank of Scotland continued to be the only bank in the country till the year 1727, when a new and similar establishment was constituted under the title of the Royal Bank of Scotland, whose advanced capital is now £2,000,000. These two establishments engrossed all the respectable banking business in the country till the year 1746, when another association was formed, and incorporated by royal charter, with the title of the British Linen Company. The object of this association was at first to encourage the linen manufacture of Scotland, but gradually it fell into the course of common banking business, and now occupies a high station among these institutions. From £100,000, the capital of this bank has been raised to £1,000,000.

The failure of the Western Bank in 1857 was a great commercial and social disaster, although its depositors and note-holders were afterwards paid in full. The failure of the City of Glasgow Bank in 1878, with public liabilities amounting to £12,404,297, and an estimated shortcoming of £6,190,983, was even a greater calamity. It paralysed trade, and ruined most of the shareholders, upon whom calls amounting to £2750 for each £100 share were made. Nevertheless, by the beginning of 1880, little more than a year from the time of the failure, a payment of sixteen shillings in the pound had been made to creditors. The following table shews the progress in dividend and in the value of capital, of the six Scotch banks having their head-office in Edinburgh, from 1857 to 1882:

Name.	Paid-up Capital.	Rate per cent. of Dividend, 1857.	Rate per cent. of Dividend, 1882.	Price per cent. of Capital, 1857.	Price per cent. of Capital, 1882.	Total value of Capital, 1857.	Total value of Capital, 1882.
Bank of Scotland	£1,250,000	8	13	188	313	£1,880,000	£3,912,500
Royal Bank	2,000,000	6	9½	135	210½	2,700,000	2,000,000
British Linen Company	1,000,000	9	14	200	312½	2,000,000	1,000,000
Commercial Bank (Limited)	1,000,000	10	14	235	57½	1,410,000	2,875,000
National Bank (Limited)	1,000,000	8	15	184	314	1,840,000	3,140,000
Union Bank (Limited)	1,000,000	9	12	90	241	900,000	2,412,500
	£7,250,000						
Total market value of capital, 1857						£10,730,000	
" " " 1882						....	£15,340,000
Increase of value during the period						£4,610,000	
						£15,340,000	

The value of bank stock naturally had a downward tendency after the City of Glasgow Bank catastrophe; the value of £100 Bank of Scotland stock, which was at £319 in 1877, and fell to £281 in 1878, had risen again to £290 in 1880, and like that of the other banks, was steadily rising. Those not mentioned in the above table are the Clydesdale, the Aberdeen Town and County, the North of Scotland, and the Caledonian Banks. (Of these the largest, the Clydesdale, has a paid-up capital of £1,000,000. They are all limited companies.)

The banks in Scotland, like the Banks in Ireland, but unlike the provincial banks in England, are allowed to issue notes beyond their fixed issues on holding gold equal in amount to the extra issue. The increase of trade and commerce in Scotland has rendered it necessary for them to take advantage of this power. But as the gold thus retained is, like the other gold in reserve, liable for all the deposits, as well as the whole circulation of a bank, if it should fail, the security of the establishment is increased only in a small degree by this arrangement, which, apart from the loss of profit to the bank on the gold unemployed, is attended with inconvenience at those seasons when the circulation is extended.

Besides employing money in discounting bills, the Scottish banks grant loans of fluctuating amount, called *cash-accounts* or *cash-credits*. By a cash-account is signified a process whereby an individual, on entering into an arrangement with a bank, is entitled to draw out sums as required, to a stipulated amount, and by an implied condition to make deposits at his convenience towards the liquidation of the same. On entering into this arrangement, he finds security to the bank that he will repay to the bank, whenever called on, the balance of sums drawn out, less those paid in, with the interest that may be due. These accounts are balanced yearly like current or deposit accounts. The only difference between them and a cash-account is, that if the credit allowed on the cash-account is being made use of, the balance is in favour of the bank; whereas, on the other kind of accounts, the balance is in favour of the bank's customer. Frequently, the balance due on a cash-account is against the bank, owing to the

customer not for the time requiring an advance, but having, on the contrary, lodged spare money with the bank.

Irish Banks.—The banks in Ireland were in 1882 as follows:

Name.	Paid-up Capital.	Last Dividend per cent.	Reserved Fund and Balance.
Bank of Ireland	£2,769,230	12	£1,034,000
Belfast Banking Company	250,000	28	227,227
Hibernian Joint-stock	500,000	8	105,791
Munster Bank, Limited	525,000	10	281,111
National Bank	1,500,000	11	212,877
Northern Banking Company	961,538	18	100,000
Provincial Bank of Ireland	4,080,000	10	186,383
Royal Bank of Ireland	1,500,000	12	208,904
Ulster Banking Company	1,200,000	20	358,637

Savings-banks.—These are banks of deposit, for receiving small sums, not exceeding £30 in one year. For information respecting these beneficial institutions, see SOCIAL ECONOMICS OF THE INDUSTRIOUS ORDERS.

Stock Exchange.—About the year 1700, the dealers in public securities were found to encumber the Bank of England by their increased numbers, and they changed their place of meeting to what is now known as Change Alley. In 1773 several of the brokers engaged rooms, to which they gave the name of Stock Exchange, in Sweetings Alley. In these, any one was allowed to transact business on payment of sixpence. Eventually, subscriptions were raised to erect a building for the special purpose of dealing in stocks. The site chosen was Capel Court, where stood the residence of William Capel, Lord Mayor of London in 1504. Free admission now ceased, and members were chosen by ballot. The present Stock Exchange was rebuilt, and opened 17th March 1854. It is regulated by a committee of 33 members, who have power to suspend or expel any member 'who may be guilty of dishonourable or disgraceful conduct.' It recognises no transaction with any one who is not a member, and every bargain must be in accordance with the usages of 'the house.' 'Settling-days' in English and foreign stocks are twice a month, the middle and the end; in consols, once a month, a day between the 6th and 11th. 'Scrip' is an abbreviation of subscription, and is applied to the document certifying payment of deposits and calls on shares, prior to the issue of the final certificate. It is negotiable. Members are divided into 'jobbers' and 'brokers.' A jobber deals on his own account, and is prepared to name prices at which he will buy or sell stocks or shares. A broker acts under instructions from his constituent. He deals with the jobber, and is paid by commission. 'A Bull' buys for settlement at a future date, with a view of gaining by a rise of price in the interval. 'A Bear' sells for settlement at a future date, with a view of gaining by a fall of price in the interval. Hence Bull and Bear transactions are speculations for the 'rise' or 'fall.' 'Contango' is the sum paid for postponing settlement of a Bull transaction from the original settling-day till the next, and represents interest upon the purchase-money of the stock or shares for the time between the settling days. It is paid either to the seller of the stock, who consents to wait for the purchase-money for a fortnight, or to some other person who lends the money to the Bull. A Bear in this way often gets a Contango, or interest on the purchase-money of stock which he does not possess. The rate of the Contango is of course primarily regulated by the supply of money in the market at the time. If stock is plentiful and money scarce, the Contango is high. Owing, however, to Bear transactions—that is, sales by persons who have no stock to deliver—it sometimes happens that stock is scarce and money plentiful. The position is then reversed, and the Bear, instead of receiving the Contango from the Bull, has to pay for the privilege of not being called upon to deliver the stock. This payment is called a 'Backwardation.' In this carrying over of transactions, the average price of the day is fixed as a 'making-up' price, and the difference between this and the prices at which transactions were originally entered into is received and paid by the Bulls and the Bears. These 'time bargains' are purely speculative or gambling transactions, and may be entered on with a comparatively small capital. The experience of recent years has led to the passing of an act of parliament rendering illegal time-bargains in bank shares. The famous Pullinger frauds led to a rule being passed, that clerks or subordinates should not be dealt with, without notice being given to their employers—an excellent rule; but complaints are made that it is not duly observed. While men of great experience, devoting their time and brains to Stock Exchange speculation, often make great fortunes by it, to the inexperienced, who have no means of getting special knowledge, and who fancy they see in it a short cut to wealth, it is the road to certain ruin. To the latter, at least, it must therefore be demoralising. The former may plead that he does give brains and experience to it, and that trade in general is speculation for 'rise or fall.'

National Debt.—The national debt of England at the Revolution of 1688 was £664,263; at the accession of George I., £36,175,460; beginning of the American war, in 1775, £127,162,413; at the end of it, £231,843,631; at the beginning of the French war, 1793, £247,874,439; at the peace of Amiens, 1802, £537,653,008; at the peace of Paris, 1815, £861,039,049. In 1851, the population of Great Britain was 20,816,351, and the debt close upon £790,000,000—or about £38 per head. In 1871, pop. 26,064,126; debt, £795,370,122—about £35 per head. In 1881, pop. 35,262,762; debt, £763,045,940—about £22 per head.

POPULATION—POOR-LAWS—LIFE-ASSURANCE.

POPULATION.

THE laws which govern the increase and decrease of population form a comparatively recent branch of study, for although, in ancient times, both Plato and Aristotle gave some attention to the evils arising from population increasing more rapidly than the means of subsistence, yet it was not until the close of the last century, when the occurrence of the French Revolution forced into prominence many leading social questions, that any systematic effort was made for the purpose of ascertaining the natural rate at which population increases, the proportion which this increase bears to the means available for its subsistence, and the causes operating to bring the increase of population and the means of subsistence into uniformity. So far as the law of population was at all thought of in former times, the prevalent doctrine was, that the greater the numbers of a nation, the stronger was the state, and the more vigorous its agricultural and commercial industry. So useful were numbers considered for increasing the means of defence and the means of subsistence, that in many countries it was thought proper to make laws for encouraging matrimony, and to put bounties on families exceeding a certain number. So lately as the time of Louis XIV. pensions were awarded in France to those who had ten or more children.

Dr Adam Smith, in his *Wealth of Nations*, was among the first to suggest anything like a law as regulating the increase of population. He remarked that 'the demand for *men*, like that for any other commodity, necessarily regulates the production of men; quickens it when it goes on too slowly, and stops it when it advances too fast. It is this demand,' says he, 'which regulates and determines the state of population in all the different countries of the world—in North America, in Europe, and in China; which renders it rapidly progressive in the first, slow and gradual in the second, and altogether stationary in the last.'

THE MALTHUSIAN THEORY.

The preceding passage in Dr Adam Smith's well-known work, coupled with the perusal of an article in Godwin's *Inquirer*, is said to have suggested the celebrated *Essay* (by Mr Malthus) *on the Principle of Population*, which appeared anonymously in 1798; and afterwards in a partially reconstructed form, and with the author's name attached, in 1803. Mr Malthus's views at once attracted general attention, and many of the ablest thinkers of his time became converts to the doctrine propounded by him. His work passed through several editions, the fifth, containing several additional chapters, appearing in 1817; and the sixth and last in 1823.

The Malthusian doctrine is based on certain generally recognised facts. For instance, it is known that the rate of increase in population is different in different parts of the world, and that the variations in the rate are universally preceded and accompanied by variations in the means of sustaining population. Where those means are abundant, as in Australia, Canada, and the United States, there is an increasing demand for labourers, with ample means for maintaining them, and the population of the country is observed to make rapid advances. When these means increase only at a moderate rate, as in many European and Asiatic states, the general increase in the demand for labour is slow; the command of the labourer over the means of subsistence becomes partially checked; and the increase of population proceeds at a moderate pace, varying in each country according to the means available for its support. Where these means are stationary, as in some parts of Southern Europe, the demand for labour remains limited, the command of the labourer over the means of subsistence is comparatively scanty, and population makes little or no progress, if it does not actually diminish.

The actual increase of means for the maintenance of labour does not depend upon the mere physical capacity of any particular country to produce food and other necessaries, but upon the degree of settled industry, intelligence, and activity with which that capacity is at any particular time called forth. Countries possessing every requisite for producing the necessaries and conveniences of life in abundance, are sometimes found sunk in a state of ignorance, indolence, and apathy, from the vices of their governments, or the unfortunate constitution of their society, and slumbering on for ages with scarcely any increase in the means of subsistence, till some fortunate event introduces a better order of things. When the industry of a nation is thus roused, and when it is permitted to exert itself with some measure of freedom, more abundant funds for the maintenance of labour are provided, and population is observed to make a sudden start forwards, at a rate altogether different from that at which it had previously proceeded; as in Russia, where the present increase of population is proceeding at a far more rapid rate than at any previous known period of its history.

It is also a fact that has often attracted observation in a review of the history of different nations, that the waste of people occasioned by the great plagues, famines, and other devastations to which the human race is occasionally subject, has been repaired in a much shorter time than it would have been if the population, after these devastations, had multiplied at the same rate as before. From this it is apparent, that after the void thus occasioned, the population must have increased much faster than usual; and the greater abundance of the means for the maintenance of labour,

which would be left to the survivors under such circumstances, indicates, again, the conjunction of a rapid increase of population with a rapid increase of the means for its maintenance. In England, just after the great pestilence in the time of Edward III., a day's labour would purchase a bushel of wheat; while, immediately before, it would hardly have purchased a peck. At the close of the civil wars prevalent in France from 1610 to 1645, the annual increase of the population rose from 1 in 1000 to 1 in 316. With regard to the minor variations of population in the different countries of Europe, it is an old and familiar observation, that wherever new channels of industry and new sources of wealth are opened, so as to provide the means of supporting an additional number of labourers, there, almost immediately, a stimulus is given to the population, which increases for a time with a vigour and celerity proportionate to the abundance and duration of the funds thus supplied.

From such premises as these, Malthus laid it down as a proved fact, that population tends to increase at the rate of a doubling every twenty-five years. He at the same time endeavoured to shew that, as man begins to use the best lands first, or, in other words, those of which he can reap the fruits with least labour, and then has to go to worse and worse, it becomes always more and more difficult to obtain the means of subsistence for increasing numbers. He concluded that, at the utmost, the means of subsistence would be found, at the end of each successive quarter of a century, to have increased only at the rate of double for the first, triple for the second, quadruple for the third, and so on. Thus, said he, while population would go on increasing in a geometrical ratio—that is, as 1, 2, 4, 8, 16, 32, 64, 128, &c.—food would increase only in an arithmetical ratio—that is, as 1, 2, 3, 4, 5, 6, 7, 8, &c.—and the consequence of an unchecked increase of the one, with the utmost possible increase of the other, would be, that when the population of the globe had advanced to 500,000 million, there would be food for 10,000 million only, or but a fiftieth part of the number!

Considering, then, that there is a power and a tendency in human beings to increase so rapidly, and that, in point of fact, it is only in a few favoured spots that they do increase at such a rate, Malthus concluded that there must be some counteracting agencies, or *checks*, in constant operation, in almost all communities, to restrain population at a lower rate of increase, or keep it stationary. In looking about to discover these checks, he satisfied himself that they were of two orders: first, there was the mortality produced by the effects of deficient food and of wicked passions—these he called *positive checks;* then there was the check produced by a prudent forethought in human beings, leading them to avoid too early marriage, on account of the little prospect of being able to rear a family in comfort—this he called the *preventive check.*

Arriving at this point, Malthus and his followers proceed to shew how their doctrines are applicable for the benefit of communities. It is clearly preferable that population should be restrained by the preventive check, rather than by the positive check. An early number of the *Edinburgh Review*, in which the doctrines of Malthus are comprehensively summarised, says: 'It is observed in most countries, that in years of scarcity and dearness the marriages are fewer than usual; and if, under all the great variations to which the increase of the means of subsistence is necessarily exposed from a variety of causes—from a plenty or scarcity of land, from a good or a bad government, from the general prevalence of intelligence and industry, or of ignorance and indolence, from the opening of new channels of commerce, or the closing of old ones, &c.—the population were proportioned to the actual means of subsistence, more by the prudence of the labouring-classes in delaying marriage, than by the misery which produces premature mortality among their children, it can hardly be doubted that the happiness of the mass of mankind would be decidedly improved.

'It is further certain, that, under a given increase of the funds for the maintenance of labour, it is physically impossible to give to each labourer a larger share of these funds, or materially to improve his condition, without some increase of the preventive check; and, consequently, that all efforts to improve the condition of the poor that have no tendency to produce a more favourable proportion between the means of subsistence and the population which is to consume them, can only be partial or temporary, and, however plausibly humane, must ultimately defeat their own object.

'It follows, therefore, as a natural and necessary conclusion, that in order to improve the condition of the lower classes of society, to make them suffer less under any diminution of the funds for the maintenance of labour, and enjoy more under any actual state of these funds, it should be the great business to discourage helpless and improvident habits, and to raise them as much as possible to the condition of beings who "look before and after." The causes which principally tend to foster helpless, indolent, and improvident habits among the lower classes of society, seem to be despotism and ignorance, and every plan of conduct towards them which increases their dependence and weakens the motives to personal exertion. The causes, again, which principally tend to promote habits of industry and prudence, seem to be good government and good education, and every circumstance which tends to increase their independence and respectability. Wherever the registers of a country, under no particular disadvantages of situation, indicate a great mortality, and the general prevalence of the check arising from disease and death over the check arising from prudential habits, there we almost invariably find the people debased by oppression;' or destitute of knowledge, and of the habits implanted by a good secular and moral education. 'Wherever, on the contrary, in a country without peculiar advantages of situation, or peculiar capability of increase, the registers indicate a comparatively small mortality, and the prevalence of the check from prudential habits above that from premature mortality, there we as constantly find security of property established, and some degree of intelligence and knowledge, with a taste for cleanliness and domestic comforts, pretty generally diffused.

'Nor does experience seem to justify the fears of those who think that one vice at least will increase in proportion to the increase of the

preventive check to population.' The countries 'most distinguished for the smallness of their mortality, and the operation of the prudential restraint on marriage, may be compared to advantage with other countries, not only with regard to the general moral worth and respectability of their inhabitants, but with regard to the virtues which relate to the intercourse of the sexes. We cannot,' as Malthus justly observes, 'estimate with tolerable accuracy the degree in which chastity in the single state prevails: our general conclusions must be founded on general results; and these are clearly in our favour.

'We appear, therefore, to be all along borne out by experience and observation, both in our premises and conclusions. From what we see and know, indeed, we cannot rationally expect that the passions of man will ever be so completely subjected to his reason, as to enable him to avoid all the moral and physical evils which depend upon his own conduct. But this is merely saying that perfect virtue is not to be expected on earth, an assertion by no means new, or peculiarly applicable to the present discussion. The differences observable in different nations, in the pressure of the evils resulting from the tendency of the human race to increase faster than the means of subsistence, entitle us fairly to conclude, that those which are in the best state are still susceptible of considerable improvement, and that the worst may at least be made equal to the best. This is surely sufficient both to animate and to direct our exertions in the cause of human happiness; and the direction which our efforts will receive, from thus turning our attention to the laws that relate to the increase and decrease of mankind, and seeing their effects exemplified in the state of the different nations around us, will not be into any new and suspicious path, but into the plain beaten track of morality. It will be our duty to exert ourselves to procure the establishment of just and equal laws, which protect and give respectability to the lowest subject, and secure to each member of the community the fruits of his industry; to extend the benefits of education as widely as possible, that to the long list of errors from passion, may not be added the still longer list of errors from ignorance; and in general, to discourage indolence, improvidence, and a blind indulgence of appetite without regard to consequences; and to encourage industry, prudence, and the subjection of the passions to the dictates of reason. The only change, if change it can be called, which the study of the laws of population can make in our duties is, that it will lead us to apply, more steadily than we have hitherto done, the great rules of morality to the case of marriage and the direction of our charity; but the rules themselves, and the foundations on which they rest, of course remain exactly where they were before.'

This must be considered as the mildest possible exposition of the application of Malthus's doctrines: his theory almost necessarily led to some other practical inferences, of a kind to which it is not so easy for a humane mind to assent. It came to be held, for instance, that where the preventive check had not operated, it was quite legitimate to allow the positive to come into operation, even when in the power of society to arrest it. A human being, who had come into existence undemanded by the state of the funds for subsistence, was to be told that the places at Nature's table were all occupied, and there was no cover for him. To the man who married when there was a redundancy of population, 'all parish assistance,' said Malthus, 'should be most rigidly denied; and if the hand of private charity be stretched forth for his relief, the interests of humanity imperiously require that it should be administered very sparingly.' These stern principles were adopted very generally by a class of political economists, and for twenty years they exercised no small influence in England, where the notorious abuses of the old poor-law had prepared the minds of many for extreme views with regard to public charity.

OBJECTIONS TO THE MALTHUSIAN THEORY.

A reaction at length took place against the Malthusian theory, and views having an opposite tendency were presented by various writers, the most distinguished of whom was Mr M. T. Sadler, whose work, entitled *The Law of Population*, appeared in 1830. By these writers, it was represented that in America and the Australian colonies there is an evident tendency in subsistence to increase in a more rapid ratio than population, insomuch that flocks and herds become a drug. The only difficulty experienced in those regions is in obtaining a market for the vast amount of produce not needed by the native population. Here, it was said, is a clear case in disproof of the proposition, that population always tends to increase more rapidly than food.

As for the geometric ratio of human increase, it was said that, if the human family follows this ratio of increase, so do all the orders of organic beings, animal and vegetable; sheep and oxen increase at the geometric ratio as well as mankind, and what is more, they begin to multiply at a much earlier period of life. Poultry, for instance, could probably multiply themselves a million of times before a couple of the human race could do so once. The vegetable food of man is capable of a still more rapid increase. Wheat generally returns from ten to twenty fold in one year. The produce of a single acre of this grain, increased year after year in the ordinary way, would require only fourteen years to reach an amount which would occupy the whole cultivable surface of the globe. And as it is with wheat, so is it with most of the other plants on which we depend for food, either for ourselves or for the animals which become food to us. So that, instead of their being any such disagreement between the natural possibilities of increase in human beings and subsistence, as Malthus and his disciples insist on, there would appear to be a discrepancy in exactly the contrary way; that is to say, the means of subsistence appear to be capable of a much more rapid increase than human beings. (In this argument, the anti-Malthusians overlook the fact that only a tithe of each crop of grain or brood of poultry is left to breed, the rest being in the meantime used as food.)

But—the Malthusians object—when the best soils are all under cultivation, it is necessary to resort to the inferior. These require more labour, and afford less return. There is, therefore, a

decreasing fertility in the country, while its population is always increasing. To this it is replied by the opposite party, that while worse and worse soils are in the course of being resorted to, better and better modes of culture are coming into operation, so as to make perhaps a third-rate soil capable of producing as much, by a certain amount of labour, as a second-rate soil was a few years before; and so on with the other qualities, each being raised a degree in the scale by every fresh effort of human ingenuity. In point of fact, the best British soils do now bear four times the quantity of grain they bore a few centuries ago, and millions of acres then deemed unfit for tillage now produce as much by the same degree of labour as the best soils did at that time. Add to this the improved modes of culture, which lessen the amount of labour, the application of stimulants hitherto unknown, and also the more economical modes of sowing and preparing food, and you have a ratio of increase in the means of subsistence equivalent to anything anticipated in the progress of population.

The Malthusians, moreover, were said by their opponents to derive the strength of their case from limiting their views to a certain region. Their propositions, it was admitted, might be true with regard to a population shut up in a certain small space, without any connection with what is beyond. But such a population never existed, and therefore the apprehended evils never can take place. From the earliest notices we have of the human family, it appears to have been their custom to spread abroad over the soil, when they found that food could be more easily obtained at a distance from the natal spot than at the natal spot itself. At the present time, a large part of the earth's surface remains unpopulated and uncultivated, while in many places cultivation is carried on in a rude and primitive manner. Even where the best modes of cultivation exist, the limit of productiveness is far from having been reached. With such an indefinite field still before us, it seems absurd to be under any anxiety as to the supposed tendency of the human family to a too rapid increase. The superabundant population of one district has only to go to some yet unpeopled or thinly populated spot, or to exert ingenuity and industry to raise more food from that which they do occupy, in order to maintain themselves in comfort. There is another means whereby it may chance that a superabundant population can support itself in the native locality, though the productiveness of that locality falls short of the demand for food. If it possess advantages for manufactures, it can exert its industry in that way, and exchange the products for food raised in other countries, where subsistence exceeds population, and where advantages for manufactures do not exist.

The opponents of Malthus combated his notion of checks on moral and religious grounds; and here, certainly, the general feelings of mankind greatly favoured their views. It was held as an impeachment of that system of wisdom and benevolence seen throughout all nature, that one of the most powerful tendencies of human beings should be supposed to require being put under an absolute arrestment, upon the penalty of its otherwise leading to misery in the individual, and embarrassment in the community. It was held that the preventive check, supposing it to be capable of operating without an increase of immorality, was necessarily attended by an abridgment of human happiness, in as far as it involved a denial and repression of the domestic affections. Its cruelty was also partial, for it bore solely on the poorer classes, to whom celibacy is a greater hardship than to the rich. And even supposing that it could be morally carried into effect, so as to keep down population at a certain level, it was, after all, an uncalled-for interference with Divine arrangements, which, from all analogy, as well as from their practical effect, might be supposed to be designed for good ends. For do we not see that the charge of a family acts in all well-constituted minds as an incentive to industry? and can we doubt that equally will a growing population tend, in ordinary circumstances, to increase the industry of a nation? Contemplated thus, the tendency to increase would appear as a means, in Providence, to stimulate men and nations to the utmost possible exertion for the improvement of the materials placed at their command, so that no faculty of their being might lie waste, and no power of physical nature remain useless and unenjoyed. Supposing this to be one of the final causes of the population principle, the preventive check of the Malthusians must necessarily appear an impious attempt to control one of the Creator's most important designs.

GENERAL OBSERVATIONS.

Much of the angry opposition excited by the publication of Malthus's Essay, and the cold unfeeling manner in which its arguments were interpreted by many of the earlier Malthusians, has disappeared of late years, and although the accuracy of the conclusions arrived at by Malthus is by no means generally admitted, there are few impartial thinkers who do not recognise the importance of his views. Probably this is due in some measure to the influence exercised by the writings of the late John Stuart Mill, who, in his *Principles of Political Economy*, has endorsed the leading features of the Malthusian theory.

But although the doctrines of Malthus have become more dispassionately received, the facts upon which they are based and are intended to elucidate do not appear to have met a corresponding amount of increased attention, especially on the part of the labouring classes, who are primarily interested. This result may be partially accounted for by the facilities afforded by the colonies and other English-speaking countries for the speedy absorption of our continually increasing population. We do not experience the evils which instinctively lead the inhabitants of other countries to place certain restraints upon the natural increase of their numbers, as in Norway, in Switzerland, and in France, where the bulk of the population consists of peasant-proprietors, among whom the habits of emigration characteristic of the Anglo-Saxon race are comparatively weak. These people feel that an incautious multiplication of their families must infallibly sink them in poverty and degrade them in civilisation. Accordingly, we find, even among the poorer classes, the instincts of population placed habitually under restraint, as shewn by

the very moderate increase of inhabitants returned by each successive census. In many countries it is an old standing custom that a girl should not marry until she spin and weave for herself a sufficient *trousseau*. In Norway, a young man rarely marries until he can purchase or succeed to the ownership or the occupancy of a cottage-farm; and the marriage of such as are in receipt of poor-relief is prohibited. In Germany, France, and other continental states, the law of conscription or military service in the regular army or in the militia, is a very prevalent preventive of marriage up to the age of twenty-five; and in some parts of Germany, marriage is prohibited till the contracting parties can prove before a magistrate their ability to maintain a family. In England, during the last century, the difficulty of obtaining cottage accommodation checked the increase of the rural population; and the same retarding cause is observable in many parts of Scotland. In all countries, the frequency of marriage varies year by year with the prosperity or adversity of the time. When profits are high, marriages multiply; when trade is dull, they fall off. The periodical returns of the registrars of births, marriages, and deaths furnish much instructive information respecting the effects of periods of industrial adversity in restricting population.

It is true that the capabilities of our colonies and other countries for the absorption of our superabundant population are still great, but no reflecting man will pronounce them to be unlimited; and although it may not be in our day, we cannot help looking forward to a time when all the vacant spaces available for the abode and sustenance of man—of the higher races, at least—will be occupied as densely as the oldest states of Europe. In the meantime, when we consider that, although many people readily emigrate, it is against the fixed disposition of others to leave their mother-country; that the development of manufacture and trade is fitful and fluctuating in its nature, rapid at one moment, subject to frequent checks, capricious in its seat, ever changing in its modes; especially when we consider how inconsistent it is with past experience that our trade should increase for ever with the gigantic strides of the last hundred years, we cannot but deplore the heedlessness with which the precepts of Malthus are too frequently regarded.

The stationary condition of a people is not necessarily one of excessive hardship, and is not necessarily accompanied with excessive mortality. True, if a people multiply beyond the means of subsistence, and can neither find room for its surplus population by increased trade nor by emigration, mortality is in that case the only check; and generally the wretchedness and ignorance accompanying such a state are so great, that marriage is resorted to as the only solace of life—thus aggravating the evil, and reducing man to the level of the lower animals. But the prevalence of moral restraint implies no such hardships and no such degradation. Instead of the early solace of marriage, people learn to prize more the homes of their own youth, residing longer with their parents, and only leaving these when they have the prospect of a home of their own, which in comfort and respectability shall not fall beneath that to which they were born. In such a state, the family ties are all more lasting; the children are fewer, and receive more justice in their upbringing, and a larger and more lasting share of their parents' affections; brothers and sisters need not part in youth to push their livelihood, it may be, in different quarters of the globe. The proportion ultimately entering on marriage need not be much diminished; and while waiting till such a step is justified by their prospects, they may have many social and domestic enjoyments to which they would otherwise be strangers, as in Switzerland and other parts of Europe, where the want and misery so common in this country, arising from the frequency of improvident marriages, are comparatively unknown.

POOR-LAWS.

In all stages of society, there has existed a class emphatically termed the *Poor*, composed of persons who, but for the charity of their neighbours, would be nearly or totally destitute, being themselves unable, or all but unable, to supply their own wants. It is easy to see how this has been and must be; for, from accidents in the operation of the natural laws presiding over the birth of individuals, some come into the world without the usual gifts of body and mind required for obtaining a sufficient subsistence; the accidents of life deprive others of the use of their full powers; many reach an infirm old age without having laid up a store to help them over it; the consequences of vice and error—of all those countless temptations which beset human nature, and from which no one is altogether safe—leave many in a helpless state; finally, in the imperfection of all political institutions, there are circumstances which press severely upon classes and persons, tending to make their own efforts for their subsistence insufficient. The operation of accidents upon one class of parents, and the vices and neglect of others, likewise leave many young and helpless children in a state in which they would be destitute but for the aid of neighbours. All of these causes being inherent in human nature and in society, we may be assured that 'the poor we shall have with us always,' however it may be possible, by judicious and humane efforts, to keep their numbers within comparatively moderate bounds.

In an early state of society, the relief of the poor is left to the operation of benevolence amongst individuals; and the destitute are either succoured by those locally near them, or go forth to beg relief in a wider circle. Generally, the efficacy of benevolence for this end is the greater, in consequence of the succour of the poor being set forth as a duty in almost all religions. In addition to occasional and particular acts of charity, donations are made and legacies left for the purpose of affording a more or less regular and systematic relief within certain bounds. As society, however, advances, it is found that the charity of individuals is either an insufficient means of succouring the poor, or is attended with certain inconveniences. A relief by benevolence is found to be oppressive to those who have kind feelings, while the niggardly and ungenerous escape. A dense and highly artificial state of society rendering it impossible to keep watch

over particular cases of destitution, the relief afforded is unavoidably partial and unequal—no one knowing the real needs of a petitioner, or how far he is relieved by others; so that a door is opened for the practice of gross imposture, while the more modest poor are probably the least liberally treated. It is also generally found that this state of society is attended with an increase of the numbers of the poor, rendering individual efforts insufficient, and tending to such disorders, that a public provision becomes necessary as a matter of police. A new principle is then evolved from the natural fact of the existence of a poor class—namely, that the community cannot be safe from imposture, spoliation, the propagation of disease, and other kindred evils, unless it combine to assure itself that no person in the country shall want the necessaries of life.

It is then that states begin to make arrangements for the regular relief of the poor; and generally these arrangements are of a more or less advanced and efficient nature, in proportion to the advanced social condition of the respective countries. In most of the Catholic states of Europe, the system adopted consists simply in the ministers of religion taking charge of the voluntary contributions of the people, and administering them to the best of their ability. We need scarcely remark that the single fact of the funds being, on this plan, voluntary, renders it impossible to be certain that the provision for the poor is sufficient in amount. In Great Britain, Germany, Switzerland, Russia, Denmark, Sweden, and Norway, the principle is recognised that a compulsory provision ought to be made so as to insure that all the members of the community shall have the means of subsistence. In England, this system has been in operation for nearly three centuries; but in most of the other countries enumerated, it is of comparatively recent adoption. In America, all the states of the Union which are of English origin have, from their commencement as colonies, adopted this principle. In Scotland, laws for a compulsory provision have existed nearly as long as in England, but until 1845–6 they were not carried out into anything like a general system.

ENGLISH POOR-LAWS.

Acts respecting the poor in England only made arrangements as to the places in which they should beg, until, in 1536, immediately after the dissolution of the religious houses, by which the poor had previously been in a great measure supported, it was found necessary to make an effort to repress the enormous prevalence of vagrancy, by enacting that head-officers in parishes, towns, and counties, should take charge of the impotent poor, and collect alms for their support, and at the same time use force to compel able-bodied mendicants to work for their own livelihood. This and subsequent Acts of a similar character appear in a great measure to have failed in their object, chiefly perhaps from the severity of the penalties imposed for disobedience. In 1572, we find the first trace of compulsory assessment for the poor—a measure then resorted to, apparently, because all other means of collecting money had proved insufficient.

It was, however, by the famous Act 43 Elizabeth, c. 2 (1601), that the basis of the present system of poor-relief in England was laid. The professed objects of this law were, 'to set the poor to work, to relieve the lame, impotent, old, and blind, and to put out their children as apprentices.' To attain these objects, the inhabitants of every parish in the country were required to raise a fund sufficient to maintain their own poor; and the administration of this fund was placed in the hands of parish overseers, under the control of justices of the peace. The leading merit of this Act was, its requiring that the claims of the able-bodied for relief should be subjected to a *test*, to prove that the alleged want was not the result of an indolent disposition: such persons were to receive relief only on condition that they should work for it. To make this rule certain of operation, an Act passed eight years after (7 Jac. I. c. 4), ordered the building of houses of correction, to be provided with cards, mills, and other implements, and where the vagrant able-bodied poor should be set to work. This may be considered as the origin of the workhouse system in England.

The principal difficulties connected with the earlier administration of the English poor-laws arose from the indolent and vagrant disposition of a large section of the people, who preferred the vicissitudes and hardships of a wandering life to the exercise of steady and industrious habits. One result of this large amount of vagrancy was that many towns became burdened with the expense of relieving numbers of strangers from other parts of the kingdom. This led, in 1662, to the passing of the Act establishing settlement, and giving each parish the right, within forty days of a poor person coming to reside within it, to have that poor person conveyed back to the parish where he last resided for a period of forty days. The rigid enforcement of the law of settlement was followed by a marked diminution in the number of habitual vagrants, but the benefit thus derived was only partial, for the poor speedily learned to avail themselves of the claim which the law gave them upon their native parishes, and thus the evil of vagrancy became replaced by another, equally demoralising and distressing—a timid and slothful dependence on the relief to be obtained at one fixed place.

The houses of correction were mainly penal establishments; and it was not till 1723 that workhouses, as now understood, were established. An Act passed in that year enabled parishes, either singly or in union, to provide themselves with houses wherein to employ the poor; and enacted that, in case any person refused to be relieved in those houses, he should not be entitled to any other relief. This might be severe upon the real pauper, but it effectually unmasked the voluntary one and the impostor, and proved a protection to parishes against the orders of justices over-liberal of money not their own. The operation of this law was so favourable to the public, that some began to imagine that paupers might even become profitable; and this was partly the cause of an Act (22 Geo. III. c. 83) in 1782, usually called *Gilbert's Act*, which threw upon guardians the duty of finding work for the poor near their own residences, and making up what was required for their subsistence out of the

poor-rates. The use of the workhouse as a test of real indigence and inability was thus in a great measure undone, and all its benefits in repressing a pauper population lost. Gilbert's Act may be said to have been the foundation of all the pecuniary oppression to the public, and all that demoralisation of the lower classes for which the English poor-laws were latterly so remarkable.

Towards the close of the last century, numerous abuses crept into the working of the poor-law system. In 1795, the price of wheat, which, at an average of the three preceding years, was 54s., rose to 74s., without a corresponding rise in wages, and the condition of the labouring-classes consequently became one of considerable privation and hardship. Instead of temporary measures for getting over a temporary difficulty, one of a permanent nature was adopted. The magistrates of Berkshire in that year issued tables stating what the wages of a labourer per week ought to be, according to the magnitude of his family and the price of the gallon loaf; directing at the same time the overseers, and others concerned in the management of the poor, to regulate their allowances accordingly. The minimum weekly wages of an unmarried labourer, supposing the gallon loaf to sell at 1s., were set down at 3s.; when married, and having one child, wages were to be at least 6s.; if he had five children, they were to be at least 12s.; if he had seven children, they were to be 15s. In the event of the price of the gallon loaf rising to 1s. 6d., the wages of an unmarried man were not to be less than 4s. 3d. a week; while the wages of a married man with a single child were not to be less than 8s. 3d.; and those of a married man with seven children not less than 20s. 3d. These regulations, which remind one of the ignorant legislation of the 14th century, were made binding, universal, and permanent, by an Act passed in the ensuing year (36 Geo. III. c. 23). It cannot fail to be remarked, that it was thus thought necessary to undertake for the labouring-classes some of the simplest duties which they owed to themselves, and to make them everywhere pensionaries upon the public for a considerable part of their subsistence. As an attempt to secure to a portion of the community the same supply of food in scarce as in plentiful years, and consequently to relieve them from the necessity of those retrenchments by which a deficient supply is distributed over the whole year, and absolute famine averted, the Act was further liable to be considered as a gross absurdity. The evils of the regulations themselves were increased by peculiarities in the administration, by which the labouring-classes became a means of enabling one class of ratepayers to carry on a constant warfare against the pockets of another. The general evils of the poor-laws were much aggravated by the arrangements with respect to settlement; virtually, the labouring-classes were imprisoned in the parishes of their nativity, or where some subsequent circumstance, as apprenticeship, marriage, and inheritance, had given them a claim. Thus the population was distributed, not as required by the demand for labour, but as certain accidental circumstances might direct; and accordingly there were often hordes of useless labourers at one place, and a great amount of labour without hands to undertake it in another. This tended to perpetuate the pauper spirit, which experience has shewn to be the principal obstacle to the formation of thrifty and self-reliant habits among the labouring poor. Practically, the condition of the humbler portion of the English labouring-classes at this period was a species of slavery. In the pauperised districts, where the labourer's means consisted partly of his wages, partly of parish allowance, the married labourer was virtually a slave. He 'had no more free-will as to the parish in which he should reside, the master whom he should serve, or the subsistence which he and his family should receive, than the horse which he drove. In parochial language, he belonged to the parish in which he had his legal settlement.'

This most objectionable system lasted with little alteration for nearly forty years; but long before the end of that time, its moral evils, and the enormous increase of expenditure which it demanded, had excited great alarm, and made England, with regard to this particular part of its domestic polity, a wonder to neighbouring nations. The sum raised for poor-rates in 1776, while the workhouse system of 1723 was still in operation, was only £1,720,316; in the three years after the passing of Gilbert's Act (1783–4–5), it averaged £2,167,749. But the average of 1801–2–3 was £5,348,205; in 1818, a year of scarcity, it reached the enormous sum of £9,320,440; and even in the fair seasons of 1830–31–32–33, it was above 8 million. This was an increase far exceeding that of the population, and the more alarming, as it took place during a period of progressive national prosperity. Almost everywhere it pressed very severely upon the property of the country, and in some places had even caused property to be abandoned, the rates exceeding all that could be derived from the land.

The evil being generally felt and acknowledged, a royal commission was issued in 1832 for inquiring into it, in order that parliament might apply a remedy. The labours of the commissioners were of an extremely heavy and difficult character; but within the space of a couple of years they were enabled to prepare a Report of a most comprehensive nature, in which they fully explained the working of the law, its effects upon different classes, and the character of the remedial measures required. The publication of this Report, in February 1834, was followed, in August of the same year, by the passing of an Act, usually called the 'Poor-law Amendment Act,' by which many of the abuses complained of were removed, and a return made to the just principles and practices dictated by the Acts of 1601 and 1723.

With regard to the impotent poor, the new Act rather increased than diminished the liberality of the arrangements for their relief, while it made several other considerable improvements. The great class of adult persons who, from old age, or infirmity of body, are wholly unable to work, were to remain, as before, entitled to a support by means of outdoor allowances. Of destitute children, those unlikely, from natural defects, to be able to win their own bread, were provided for by outdoor relief: those, on the other hand, who were likely to prove useful members of society, were taken in charge, and reared in separate establishments, where their education and training for industrious callings were particularly cared for. Judicious provisions were also made for their

being ultimately set afloat in the world as apprentices. With regard to illegitimate children, several former provisions of evil tendency were annulled; and it was provided that no regard should be paid to them till they became actually chargeable upon the parish, when relief should be extended through the mother, she being in this respect treated as a widow. Persons unable to support themselves through accident, or from sudden and dangerous illness, were to receive temporary relief, and to have all necessary medical attendance. Insane paupers were to be placed in proper asylums at the expense of the public.

The provisions for able-bodied claimants formed the most important part of this Act, as indeed it was in this department that the abuses of the old system were the most glaring. The main feature of the new arrangements was the erection of workhouses by unions of parishes, where relief should be offered to able-bodied claimants, on the condition of their giving their labour in return, and submitting to the rules of the establishment. This was only a revival of the test applied by the Act of 1723, the object being to check applications for relief from the slothful, and to throw upon the able-bodied in general the duty, which is everywhere else the lot of free labourers, of finding employment for themselves. The new law contemplated that the food and accommodation of the workhouse should be good and sufficient, but yet not quite so good as those which the free labourers of the district could obtain by their own exertions; so that it might, upon the whole, be more agreeable to the able-bodied man to work for himself than become chargeable to the parish. At the same time, it being acknowledged that a change from one system to another could not be expected to be suddenly effected without some degree of hardship, provision was made for enabling the administrators of the law to exercise a humane discretion in applying the new regulations.

Some material changes were likewise made in the machinery for the local administration of the poor-laws. The ratepayers elect for each union of parishes a board of guardians, each ratepayer having votes in proportion to his property, and the proceedings of these boards were under the control of a central board, composed of three commissioners appointed by the crown. Under the chief-commissioners there were twelve assistant ones, each of whom had the inspection of a particular district.

In the first year of the new system, the commissioners issued a general order, prohibiting relief in money to the able-bodied in the employment of individuals, thus throwing their entire support upon their masters. In the second year they began, in a cautious manner, in obedience to the spirit of the Act, to put a stop to outdoor relief to the able-bodied—meaning labourers who, with their families, are in health, but excepting widows with young children.

The first effects of the stop put to the allowance system were most surprising. The so-called surplus population—the hordes of unemployed men who had required to be partially or entirely sustained by the parish funds, who had been condemned to stand in the parish pound for days, and spend half their lives in a kind of idleness in the parish gravel-pits—disappeared as if by magic. It was found that, left free to seek employment where it could be had, and furnished with the usual motives to exert their industry, they all obtained employment. On this subject, the earlier Reports of the commissioners gave some valuable information, shewing how delusive must have been those views which held forth the population as redundant, and as needful of artificial support. The whole evil seemed to be one of derangement. Once disengaged from the trammels which confined men to certain spots of ground, and put a bounty upon their remaining idle, the labourers quickly fell once more into natural arrangements, and there was an independent maintenance for all.

The improved system of poor-law administration enabled the gross expenditure upon the poor to become reduced from £6,317,255, in 1834, to £4,044,741, in 1837. In 1856, it again rose to £6,000,000; the sum received from the ratepayers being £8,200,000. During the five years following, the annual amount of relief sunk to an average of £5,500,000; but in 1862, the occurrence of the cotton-famine in Lancashire caused the amount of relief to rise to £6,077,525. In 1863, the amount of relief was £6,527,036. In 1872, the amount of relief was £8,007,403, the total number of paupers (exclusive of children, who numbered 282,851) being 594,154. Large as is the total amount of pauperism in England and Wales, improved poor-law management has prevented it from keeping pace with the increase of population, the number of paupers at no time since 1849 having reached the figures for that year, which shewed a total of 1,088,659 persons, out of a population of 17,534,000, in the receipt of parish relief. In 1834, the amount expended in relief per head was 8s. 9½d.; from 1835 to 1867 it averaged 6s. per head; but since 1868 the high price of provisions, improved medical attendance, &c. have caused it to rise to an average of 6s. 10d., the amount in 1872 being 6s. 11½d. The net annual value of rateable property in England and Wales in 1841 was £62,540,030; in 1847 it was £67,320,587; in 1850 it was £67,700,153; in 1856 it was £71,840,271; in 1866 it was £93,638,403; in 1868 it was £100,668,698; in 1870 it was £104,420,283; in 1871 it was £107,398,242; and in 1872 it was £109,447,111.

The poor-law of 1834 has undergone numerous modifications during the last forty years, chiefly affecting the administrative machinery, the subject of medical relief, the care of pauper lunatics, the management of vagrants, the law of settlement, the education of pauper children, and other improvements which the condition of the country for the time being has rendered expedient. By an Act passed December 17, 1847, the commissioners were superseded by a controlling board, known as the Poor-law Board, consisting of four members of the government *ex officio*, and certain commissioners appointed by the Queen in Council. In 1867 an Act was passed for the establishment, in London, of district asylums for the sick, insane, and other classes of helpless poor; of dispensaries; and for a kind of equalisation of the various local poor-rates, by throwing certain charges on the whole of the metropolis, thus compelling the wealthier parishes to assist in lightening the burden of pauperism in the less affluent districts. To secure the efficient working of the new Act, the

Poor-law Board were empowered to nominate one-third of the guardians in each district. During the following year, further improvements in the system of poor-relief were initiated by the passing of an Act giving the Poor-law Board extensive powers of interference in the various unions of England and Wales, with the view of compelling the different boards of guardians to do all that is necessary for the efficient relief of the poor. In 1871, the Local Government Board was formed, to which were transferred all the powers and duties of the Poor-law Board, together with the various functions of the Home Secretary and the Privy-council, relative to the public health and local government.

The union workhouses (647 in number) are in general remarkably well-arranged establishments. The food, both in quality and quantity—the accommodations of all kinds—the moral discipline and order, are in general all that the humane and the enlightened could wish. The arrangements for the education of the young are particularly worthy of commendation. Workhouses are for the most part occupied only by some portion of the aged poor and by young children. Though held open for the reception of the able-bodied under any exigency to which they may be presumedly liable, they are rarely resorted to by such persons, partly because the labour-market being freed, there is in general no lack of means for an independent subsistence, and partly from the natural dislike to a life of restraint. One regulation of these houses may be supposed to have operated powerfully in keeping idle married men at a distance from them. In most instances, they are not allowed to live in the same part of the house with their wives. Partly this was needful for the sake of order, and to avoid sundry gross evils which flourished under the old system. Partly it is owing to a principle laid down by the commissioners, that a pauper is not entitled to be in this respect on a level with the man who works independently for himself and his family. This regulation attracted much clamour and vituperation; and, by an Act of 1847, the separation of aged couples (above 60) was prohibited.

Shortly after the new poor-law was passed, vagrancy assumed very formidable dimensions. Sturdy beggars availed themselves of the inexperience of the poor-law officers, and contrived to obtain casual relief as destitute persons—if only for a single night—the relieving officers scarcely thinking it worth while to apply the workhouse test for a period so insignificant, and the applicants taking care to arrange their migrations so as to repeat their applications to the same unions as seldom as possible, and select those situated in districts where they were strangers. It was soon found necessary to take vigorous measures to reduce this evil. Special instructions were issued by the commissioners; the applications of vagrants were more strictly dealt with, and the labour test applied whenever possible. The number of vagrants relieved on the 1st of July 1848 was 13,714; the number relieved on the 1st of July 1850 had been reduced so low as 2954. On the 1st July 1872, the number was 2372, although the number of population in that year shewed an increase of 4,696,000 over the number in 1848; a fact which conclusively shews the value of the poor-laws as a means of repressing the evil of vagrancy.

SCOTTISH POOR-LAWS.

For a long time there were no poor-laws of any sort in Scotland. The poor were left totally unregulated, and matters became at length insufferable. The whole country was overrun with hordes of sturdy ruffians, who lived at free quarters upon the industrious, a farmer having not unfrequently to provide food for a score or two of able-bodied 'sorners' in the course of a day. These vagabonds, often living in incestuous connections, held routs and revels by thousands in the mountains, and attended punctually at all country fairs, weddings, and festivals. Legislation on this subject opened with three Acts passed in the reign of James I. in 1424, chiefly levelled against sturdy begging, and confining the privilege of asking alms to the necessitous poor, who might beg with 'takinnes' or badges. The statute of 1579, c. 74, with a proclamation of the privy-council, was, until lately, the only authority for a compulsory poor-rate in Scotland. It consisted of two parts: one ordained 'strong and idle beggars' to be scourged and burnt through the ear with a hot iron; and if caught again at their vocation after sixty days, to be put to death. The second conferred a right to parochial relief on certain parties, whom it designated as 'aged, puir, impotent, and decayed persons,' 'quhilk of necessitie mon live bee almes.' Some subsequent Acts made provision for employing able-bodied beggars in common works, and ordained the building of correction-houses, under heavy penalties on the burghs disobeying; but not a single correction-house was ever built, and that part of the law became obsolete. The last proclamation of the privy-council, March 3, 1698, completed the fabric of the old poor-law, which was superseded by the Poor-law Amendment Act of 1845.

There were many disputes in respect to the classes of poor which were vested with an absolute right to require relief under the old law. The general understanding was, that the Act of 1579 only included all who were permanently disabled by age, sickness, or infirmity from gaining a livelihood by labour, destitute children under fourteen years of age, insane persons, and idiots. In practice, also, destitute widows, with several young children, generally received some small modicum of relief; those who were temporarily destitute or infirm were understood to have no legal claim on the parish, but might be relieved at the discretion of the authorities. Speaking in very general terms, a settlement was acquired by three years' continuous residence in a parish. Wives had the settlement of their husbands; legitimate children of the father, and illegitimate children of the mother. When there was no other settlement, recourse was had on the parish of birth.

Where there was a legal assessment, the general purpose seems to have been to tax every man in the ratio of his means. Accordingly, originally the parochial board stented every individual's proportion according to their own estimate of his ability; and if he demurred, he had to lay bare his whole affairs before officials bound to no

secrecy. This was so burdensome, that a rough-and-ready criterion was adopted wherever it was possible. In rural parishes, half the assessment fell on the heritors, according to their real or valued rents, and half on the other householders, in whose case the rent of the houses occupied was generally made the criterion. In burghal parishes, the value of the tenements was the criterion; and sometimes the assessment was laid altogether on the tenants, sometimes altogether on the proprietors, and sometimes half on the one and half on the other. In mixed parishes, the grievous plan of stenting seems to have been continued. Often, however, the assessment was entirely voluntary, and in the majority of cases there was no assessment at all. Relief was given from the collections at the doors of the parish churches, half of which had to be paid into the general fund, the other half remaining at the disposal of the kirk-session.

The administrators of this fund were — in burghal parishes, the magistrates; in landward parishes, the heritors and kirk-session; and in the latter, when vacant, the heritors alone. These bodies had almost despotic power over the pauper—the mode and extent of relief being in practice at their discretion. The only authority competent to review their decisions was the Court of Session; and it refused to interfere with the amount of relief given, unless it was altogether illusory. On coming into that court, the pauper, if an agent of the poor reported that he had a probable cause of action, was put upon the poor-roll, and had counsel assigned to him. Practically, the parochial boards could do as it seemed good to them: there was no central administrative board of any sort.

This state of matters gave rise to great discontent and many complaints, and ultimately a commission of inquiry was instituted, whose Report filled eight quarto volumes, and contained a vast amount of interesting information. This Report was laid before parliament in May 1844. It presents a very vivid picture of the state of the paupers throughout Scotland at and previous to that date. Their condition varied much in different parishes and in different parts of the country. In Glasgow and some other places, they were comparatively well off; and even in districts where the allowances were wretchedly inadequate, they were not so utterly miserable as they seemed, when considered in reference to local circumstances and the condition of the independent poor. Still, the operation of the law was far from satisfactory. To take, first, the Edinburgh parishes: the weekly allowance to a widow with one child was 1s.; the very highest to a widow with six children was 3s., which was considered extraordinary; to a married couple the allowance was at the utmost 7s. 6d. in six weeks. The poor-house was overcrowded; there was no classification of the sexes; and the deaths for five years averaged 80 every year out of 420 inmates. In St Cuthbert's, a widow with two children received 1s. a week. In the Highlands, things were much worse. In Shildag, in Rossshire, the general yearly allowance was 5s. to 6s.; in Kirkwall, a widow with children received 2s. 6d. a quarter; in Poolewe, a widow with four children received from 4s. to 8s. a year; and in Gairloch, 2s. 6d. to 5s. a year. Often the whole sum annually divided in a parish was two or three pounds, as in Kilchoman, in Islay. Of course, begging was the natural and necessary supplement of the allowance. In many instances the pauper made a livelihood by continually roaming in quest of a settlement that never came, and this imposture had become intolerable. Maniacs were allowed in general to rove as they chose, or were boarded in unlicensed and unregulated houses. In short, an immediate change was necessary, and the commissioners reported to that effect.

The Poor-law Amendment Act of 1845 was the consequence of this Report. Its great feature was the creation of a Board of Supervision, 'to inquire into the management of the poor in every parish and burgh of Scotland,' and to report annually to the Home Office on everything connected with the state and management of the poor. It was to fix the number and qualification of the elected members of parochial boards; divide parishes into wards, and allot to each its proportion of representatives; dismiss inspectors and medical officers; and exercise other powers of the most extensive kind. The Act sanctioned three modes of assessment; the first of which has been almost universally adopted; namely, one half the rate is assessed on owners, and the other half on tenants or occupiers of lands and heritages, rated according to the annual value of such lands and heritages.

In the event of no legal assessment, the old administrators were to remain. In assessed burghal parishes, the boards consist of three elements: (1), Four members sent by the magistrates; (2), Four by the kirk-session; and (3), Members elected by the ratepayers. In rural assessed parishes, the boards consist of four elements: (1), Owners of heritable property of the yearly value of £20 and upwards; (2), Magistrates of any royal burgh within the parish; (3), Not more than six members of the kirk-session; (4), Members elected by the ratepayers.

The Board of Supervision entered on its duties on the 4th of September 1845, and gave in its first annual Report in August 1846. At that date, all the parishes had elected inspectors, and more or less willingly provided funds. The working of the new system will be best illustrated by a few leading facts. In August 1845, 230 parishes in Scotland were assessed, and 650 unassessed; in August 1873, the number of parishes having become increased to 885, the number remaining unassessed had fallen to 81. In assessed parishes the whole of the church-door collections were left at the disposal of the kirk-sessions. In the year ending 1st January 1836, the sum expended on the poor did not exceed £171,042; in the year ending 1st February 1846, it amounted to £295,232 —an increase of £124,190 in ten years; in the year ending 14th May 1847, it was £433,915; and in the year ending 14th May 1848, it was £544,334. From 1848 to 1853, the annual expenditure averaged £550,000; from 1853 to 1873 it has been annually on the increase, and in the last-mentioned year amounted to £873,075, 10s. 10½d; the average expenditure during each of the ten preceding years being £845,593, 10s. 1½d.

In 1845, the number of registered poor was 63,070, or about 1 in 42 of the population; in

1846, it was 69,432, or about 1 in 38; in 1847, it was 74,161, or about 1 in 35·3. From 1864 to 1873, both years inclusive, the average number for each year has been 77,324; but since 1869 a steady decline has been perceptible, the number of paupers in 1873 being 71,537, against 80,334 in 1869. These numbers do not include the casual poor, whose ranks have become diminished to a most remarkable extent during the last few years. For the ten years ending with 1856, the average number of casual poor was about 60,000; but during the ten years ending with 1873, it had sunk to 45,531. In 1868, the number was 53,831; in 1873, it had fallen to 34,424, a number less than in any year since 1847. The number of registered poor relieved in every 100 of the population during 1847 was 3·28, while in 1873 it was only 2·83. The number of casual poor relieved in 1847 was 2·30 per 100 of the population; while in 1873 it had become decreased to 1·02. The number of lunatic poor, however, exhibits a marked increase, the number in 1873 being 7590; in 1871, it was 7939—against 6587 in 1864.

In August 1873, the number of poor-houses in operation was 62, with accommodation for 14,375 inmates, the number in progress being 2. The parishes engaged singly or in combination in erecting and supporting these, number 410, having a population of 2,434,173; but other parishes, to the number of 207, with a population of 529,572, avail themselves of the poor-houses by boarding their paupers within them. Besides, in many rural parishes there are poor-houses, so called, or dwellings for infirm paupers, which are not technically regarded as such by the central board. During the year 1873, the expenditure of £873,075, 10s. 10½d. was accounted for as follows: Relief of registered poor, £634,936, 9s. 4½d.; casual poor, £18,598, 15s. 5¾d.; medical relief, £34,066, 7s. 9d.; management, £108,577, 0s. 6¾d.; litigation, £5716, 9s. 11d.; poor-house buildings, £71,180, 7s. 10d. In the year ending May 1848, the whole sum derived from church-door collections was £14,898, 2s. 2d., of which £8452, 13s. 7¾d. was stated to have been expended for the relief of the poor. In 1873, the amount was £26,217, 18s. 10¾d., of which sum £10,608 was actually applied to purposes of poor-relief. These funds are generally employed to afford aid to persons who have fallen into temporary difficulties, with a view to prevent them from becoming chargeable to the parish as paupers; and it is probable that few of the persons so assisted have also been chargeable to the funds raised by assessment.

IRISH POOR-LAWS.

In Ireland there was, till a recent period, no systematic provision for the poor, but the country was by no means destitute of institutions designed for their benefit. Legislative enactments had progressively, during the last century, established county infirmaries, dispensaries, lunatic asylums, houses of industry, and receptacles for destitute infants and old people; and similar institutions, together with schools, lying-in hospitals, houses of refuge, and mendicity houses, had been set on foot in various places by private benevolence. But while much was thus done for the alleviation of temporary and casual distress, there was a mass of mendicancy, and an amount of general suffering from occasional famine, and consequent epidemics, which made Ireland singular among the countries of Europe. It was calculated that, out of a population of between seven and eight millions, upwards of two millions were in a state not much short of permanent mendicancy. The great bulk of the people being an agricultural peasantry, living on small patches of land, and depending mainly on the potato-crop, a failure of that product was attended with wide-spread misery, invariably followed by most destructive fevers. The epidemic of 1817, which was the effect of the failure of the crop of 1816, affected a million and a half of persons, and carried off 65,000. The people, moreover, having no resource but their little patches of potato-ground, landlords found that they were rapidly losing all power over their property. Desperation made the tenants cling to their ground with a pertinacity which nothing could overcome. A common danger having united them in one common cause, the forcible extrusion of a tenant was resisted by one and all, or, if effected, it was sure to be savagely avenged. Practically, the tenant was able to remain on the ground as long as he chose, without much regard to the payment of rent, unless his *good-will* was purchased either by the new tenant or by the landlord. The inconveniences experienced in consequence of the bulk of the people being thus always on the verge of destitution, and without any resource when they reached that point, had become, in addition to those of actual mendicancy, so grievous, that a poor-law began to be contemplated as necessary for Ireland; and in 1833, a royal commission was issued for an inquiry into the subject.

In consequence of the Report made by the commissioners, a kind of modified poor-law was introduced into Ireland, the principal arrangements being somewhat similar to those which had just been adopted in England, and the general superintendence being confided to the same commissioners. But the Irish system of poor-relief differed in one respect from the systems in force in England and Scotland, the relief being administered solely in workhouses. Again, the legal right which destitute or infirm persons in England and Scotland had to relief was not recognised in Ireland. The destitute, under this law, might be relieved, but they could not insist upon it as a right. Under this singularly ineffective law, which has of late years undergone several important modifications, the expenditure for the poor in Ireland, for the year ending 1st January 1846, was only £316,026, and the number of paupers receiving indoor relief, 43,293.

In 1846 occurred the great potato-blight, which almost annihilated that crop for the season, and has recurred with more or less destructiveness each successive season since—the recurrence for the year 1848 having been the severest, and having a second time struck the country with famine. Many people died of starvation, and a still greater number from diseases engendered by feebleness of constitution and unwholesome food. Crowds also emigrated to America, aided partly by funds supplied from the poor-rate and from public subscription, and largely also by funds sent home for the purpose by relatives already emigrated and settled in that country.

From 1847 to 1850 inclusive, the emigration from Ireland amounted to 833,692—nearly all to America. In 1841, the population of Ireland amounted to 8,175,124; in 1851, it had sunk to 6,522,385—shewing a positive decrease of 1,652,739.

As may be well supposed, a period of such severe distress proved a hard trial of the country's resources. The imperial government saw early the approach of famine, and took energetic measures to meet it. They imported maize and other grain largely. They organised a system of public works for the employment of the destitute on a national scale; one half the cost being chargeable to local sources, the other half being charged to the national exchequer; and on this system about a million of money was spent in 1846, and about £5,000,000 in 1847. In July 1847, the system reached its height—3,020,712 persons in that month having received separate rations, of whom more than two-thirds were adults. So free-handed a disbursement of funds was itself found to be attended with mischief: being distributed in return for labour at public works, no one felt deterred from applying through motives of honest independence; and half the cost being charged to the national exchequer, the local administrators had no urgent motive to economise. The system, therefore, was put an end to in 1847; and in lieu of it, the poor-law unions for a time gave outdoor relief. In 1848, under a recurrence of famine, and an attack of cholera, the poor-rates rose to £1,627,700; in 1850, £2,177,651 was disbursed for relief of the poor. Many unions were quite unable to meet the demands upon them; and the funds required in these were raised from the other unions by a rate-in-aid.

The present system of poor-relief in Ireland is gradually being assimilated to those in force in England and Scotland, especially in the matter of outdoor relief. In 1873, the total number of paupers in Ireland was 319,242, being an increase of 22,986 on the preceding year. Of these, 249,133 were in receipt of indoor relief; 69,507 in receipt of outdoor relief; and 602 were in blind and other asylums. In 1857, the total number of out-door paupers on the last Saturday in February was 1096; at the same period in 1874 it was 30,649. This increase is due to the decrease of in-door relief, the daily average of recipients of which having fallen from 53,017 in 1867-8, to 46,573 in 1873-4. The total cost of poor-relief in 1873 was £790,560, being an increase of £61,229 on the amount of the previous year. The number of persons assisted by boards of guardians to emigrate from 1849 to 1874 was 30,167; the amount so expended being £129,421, 8s. 8d. In explanation of the fact, that while in England outdoor relief is continuously declining, in Ireland it is the reverse, it is officially explained that, in England the popular or prevailing opinion is that outdoor relief has been for a long time past in excess of what it ought to be, and active exertions have been made by both the central and the local poor-law authorities to reduce its extent; while in Ireland the popular opinion is, that there has been too little outdoor relief in comparison with the indoor, and it is to the operation of this feeling at boards of guardians that the continuous increase is due.

GENERAL OBSERVATIONS.

Poor-laws are, after all, only an expedient for meeting an evil partly inherent in human nature, and partly the consequence of its erroneous moral and political condition. Were all born equally sound, and were all so instructed and so placed socially that each man realised a reasonable sum for his labour, and was disposed to make a proper use of his gains, there would be no need for poor-laws. Such conditions not existing, this expedient is unavoidably called into use, and we must not be surprised that, as one designed to meet great evils, its own operation is attended by less ones. By far the worst effect of poor-laws is the moral degradation which they produce in those for whose benefit they are established. The man who has to ask for public relief to his necessities, loses from that moment the self-respect on which much of his virtue depends. A fatal lesson is taught him—that his wants may be supplied without his own exertions—and the motive to an independent and industrious course of life is greatly shaken, perhaps destroyed. This is itself an evil of such serious magnitude, that it forms with many an insuperable objection to all regular provision for paupers. Unquestionably, nothing but a consideration of the horrible inhumanity, and the extreme dangers to the common weal which are inseparable from the neglect or repulse of pauper claims, could excuse the deterioration which we unavoidably effect in a man's nature by giving him that for which he has not laboured.

Another great evil of poor-laws is, that they take away part of the fruits of industry from those who have legitimately acquired them, and bestow them upon the idle. Industry is by this means discouraged, and sloth and improvidence are, in a proportionate degree, fostered. In England, the abstraction of more than eight millions annually from the gains of the industrious must operate very seriously in retarding the progress of the country. It is, however, a tax unavoidable in present circumstances, if we would escape more serious evils.

LIFE-ASSURANCE.

Life-assurance, in its ordinary character, is a means of securing, by a present payment in full, or by an annual payment, a sum to be realised after the decease of the party. It is obvious that, to many persons, the having this in their power is of great importance. To none is it so important as to individuals in the middle walks of life, who, for the present, are perhaps able to maintain their families in comfort, but being unable to accumulate a large surplus capital, cannot be sure that, in the event of their death, those dependent on them will not be thrown into poverty. To such persons, life-assurance presents itself as a ready and convenient means of providing for those in whom they are interested.

The principle on which life-assurance mainly rests is one which it has been reserved for modern times to discover—namely, that while the duration of the life of a single person is of all things the most uncertain, it is possible to ascertain, with tolerable accuracy, how many of a *multitude* of

persons, of a particular age, will die within next year, how many in the second, how many in the third, and so on. The medium or average gives what is called the *expectation of life* for each person of the set. A certainty, in short, is attained on this proverbially uncertain subject, when we take a great number of persons, and consider them with regard to the circumstances in which they live. It is found, for instance, that of 100,000 persons, aged 52, residing in this country, the number who will die before another year has elapsed will be about 1521, or rather more than one and a half per cent. Supposing that these 100,000 persons were to associate for the purpose of making sure that the widows or other heirs of all those who died within a year should have £100; it would be necessary, in that case, for each person to contribute as much to a common fund as would make up £152,100, or a hundred times 1521; that is to say, each would have to pay in £1, 10s. 5d. It is clear that those who died, or their heirs, would profit to the extent of £98, 9s. 7d.; but without injury to those who survived, since these also had their chance of gaining, for which it was but fair that they should pay. This would be a simple transaction in life-assurance, and may serve to convey an elementary idea of what life-assurance is, though in practice the transactions are usually of a somewhat more complicated kind.

Life-assurance is effected in this country either in offices established by joint-stock companies, who look to making a profit by their business, or by mutually assuring societies. The former are shortly called *proprietary*, and the latter *mutual* offices. Offices of the first kind are usually held by a joint-stock copartnery, with a large subscribed capital; and the chief advantage which they hold forth is the security they offer in their capital and in the responsibility of their shareholders. An estimate of the value of the insurance policies is made periodically, and is compared with the value of the securities of the company, apart from those representing the paid-up capital. The surplus is paid in dividends to the shareholders, a portion being generally put aside as a reserve fund. The insuree incurs no responsibility, and has no voice in the management. In *mutual societies*, the insurees are partners, and when insured to a certain amount, have a control in the management. The office is an association of customers, each insuring his neighbour. All surplusages, instead of being in the hands of a trading company, remain the property of the insurers, divisible among them proportionally. The members appoint directors. Besides the net annual premium, to cover the risk, the insuree is charged with an additional percentage, which, if the society is successful, is returned to him in various forms, but generally as a bonus, or further insurance on his life. Each insuree is a shareholder, who engages to pay a given call on his share at the beginning of every year, and receives the returned investment and its profits at his death. Mixed societies are companies dealing partly on the proprietary, partly on the mutual, principle. They are managed exclusively by the shareholders, but the insurees participate in the profits of the company—as much as four-fifths of the profits, after deducting the expense of management, being in several offices divided among them.

THE RATE OF MORTALITY.

The rate of mortality and the rate of interest are the two principal data on which life-assurance practically depends. Mortality tables are constructed either by comparing the number of deaths at each age with the number living at that age, or by comparing the number of deaths at the several ages with each other. From the data thus supplied by experience, is deduced what is called the 'Expectancy of Life' at each several age.

The tables of mortality adopted in this country as the basis of calculation for assurance companies are various. That known by the name of the *Northampton Table* is the oldest now in use. It is founded upon observations made by the celebrated Dr Price, of the deaths registered for the population of one of the parishes of the town of Northampton, during the years between 1735 and 1780. This table, it is now acknowledged, shews far too high (or rapid) a rate of mortality, owing partly to no allowance being made for fluctuations in the population of that parish, from immigration and other such causes; partly to the great improvement which has taken place in the value of life since the middle of last century, consequent upon the introduction of vaccination and other improvements in medical science, as well as in the habits and modes of living of the people; and partly to the erroneous graduation adopted by Dr Price.

The *Carlisle Table* was formed, not from the register of burials among a floating population, but from observations of the deaths which occurred, at each year of life, among a certain stated number of persons in the town of Carlisle. The observations were conducted by Dr Heysham, and the calculations made in the most scientific manner by Mr Joshua Milne, author of a valuable work on Annuities.

Tables known as the *Government Tables* were compiled from observations on the progressive mortality occurring among the government annuitants and other selected classes, distinguishing the sexes. They were prepared, under the directions of government, by Mr Finlaison, actuary to the National Debt; and in 1829 were adopted by parliament as the basis upon which their future calculations should proceed. Mr Finlaison's researches established the fact of the longer duration of female life. He also observed a 'very extraordinary prolongation of human life' in the course of the time over which his inquiries extended—so great, 'that the duration of existence now, as compared with what it was a century ago, is as 4 to 3 in round numbers.'

A table was framed by Mr Griffith Davies from the deaths reported from time to time among the members insured in the Equitable Life Society of London from its commencement in 1762 down to 1829, which has since been recalculated and continued down to a later period by Mr Morgan, the actuary to that society. This table is very valuable, as confirming the substantial accuracy of other observations, with which it very nearly corresponds.

Finally, Dr Farr constructed a mortality table based on the deaths registered in England and Wales in 1841, and the number and ages of the population as given by the census of that year.

This table closely agrees with another founded on the same census, and the deaths in the seven years 1838–44; also with tables based on the mortality returns of later years.

The relation of these tables to each other is shewn by the following table of the mean *expectancy of life* at every fifth year of age within the ordinary insurable age, 20 to 60:

Age.	Northampton. 1735–80.	Carlisle. 1779–87.	Government Annuitants. 1785–1825.			Experience of Equitable Society, London.	Population and Deaths in England and Wales, 1841.	
			Males.	Females.	Mean.		Males.	Females.
20	33·43	41·46	38·39	43·99	41·19	41·67	39·88	40·81
25	30·85	37·86	35·90	40·81	38·36	38·12	36·47	37·52
30	28·27	34·34	33·17	37·57	35·37	34·33	33·13	34·25
35	25·68	31·00	30·17	34·31	32·74	30·93	29·83	30·99
40	23·08	27·61	27·02	31·12	29·07	27·40	26·56	27·72
45	28·52	24·46	23·75	27·81	25·28	23·87	23·30	24·43
50	17·99	21·11	20·30	24·35	22·33	20·36	20·02	21·07
55	15·58	17·58	17·15	20·79	18·97	16·99	16·68	17·63
60	13·21	14·34	14·39	17·32	15·86	13·91	13·59	14·40

Until recently, the Carlisle Table was much used as a basis for the calculations of insurance companies. Within the ages 20 and 60, it occupies a mean place between the male and female observations in the table of the government annuitants, and nearly coincides with the experience of the Equitable Society. Compared with the tables of Dr Farr, the expectancy of life of the Carlisle Table within these ages is considerably greater, the average of the Carlisle Table being slightly above the extreme column applicable to female life in Farr's calculations. In lives above 60 years of age, the disparity increases still more. The circumstance which probably has served to counterbalance this error in the Carlisle Table is, that insurance is commonly effected on selected lives—that is, on lives of persons less exposed than others to causes tending to shorten life, and on lives which, on medical inspection, are ascertained to be sound. The Carlisle Table is now being superseded by the mortality experience of life assurance companies, collected by the Institute of Actuaries, and published in May 1869, exhibiting certainly the most correct standard of assured life in this country, and possessing, by reason of the great skill with which it has been graduated, a complete adaptation for all practical purposes.

THE RATE OF INTEREST.

The rate of interest signifies the rate at which the yearly premiums may be expected to be improved. This subject is one which does not admit of the same comparative certainty as the other, and on which, accordingly, there may be great differences of opinion. In 1829, Mr Finlaison wrote: 'I take it for granted that it will be considered safe enough to assume that money, in a long course of years, will so accumulate, through all fluctuations, as to equal a constant rate of 4 per cent.; because, in point of fact, money has hitherto accumulated at 4½ per cent., whether we reckon from 1803 or from 1783.' Other writers, again, and among them the late Professor De Morgan, looking chiefly to the high price of the 3 per cents. of late years, maintain that not more than 3½ per cent. should be counted on. Practically, the investments of assurance-offices are made on terms much more favourable. Most of them state that their funds are invested 'about,' 'at,' or 'above' 5 per cent. Indeed, it is not conceivable that the offices could make such large returns to proprietors and members, in the shape of dividends and bonuses, if they did not generally improve money at about the rate last mentioned. At the same time, it would be unsafe to assume for the calculations of life-assurance a higher rate than those specified by Mr Finlaison and Professor De Morgan.

EXAMPLE OF LIFE-ASSURANCE CALCULATION.

According to the old Northampton Tables, out of every 11,650 persons born alive, there will be 46 living at the age of 90. From these tables being ascertained to be unfavourable to life, this must be understood as not strictly the case, but it may be adopted for the sake of illustration. The same tables make it appear that, of the 46, 12 will die in the course of the first year, 10 during the second, 8 during the third, 7 during the fourth, 5 during the fifth, 3 during the sixth, and the last remaining life will fail in the course of the seventh year. It is a favourite mode of exemplifying life-assurance calculation, to suppose these 46 persons, aged 90, associating for the purpose of assuring £100 to each at death. They are supposed to proceed upon the principle of paying all that is required in one sum at first, thus forming a fund which is to answer all the demands which are to be made upon it. In this calculation, the improvement of money has been assumed at 3 per cent. The object is to ascertain what sum, by way of present payment, each is to contribute to the fund, so that it may discharge £1200 the first year, £1000 the second, £800 the third, and so on. In order to discharge

£		£		£	s.	d.
1200, at the end of the first year, the society must be provided with		1200, discounted at 3 per cent. for one year,		1165	1	0
1000 at the end of 2d year,		1000, ditto, for 2 years,		942	12	0
800	3d	800,	3	732	2	0
700	4th	700,	4	621	18	7
500	5th	500,	5	431	6	0
300	6th	300,	6	251	5	0
And in order to discharge the remaining £100 at the end of the seventh year, with £100, discounted at 3 per cent., for seven years				81	6	2
In all				£4225	10	9

This, divided by 46, gives £91, 17s. 2d. as the sum (technically called *premium*) which each person would need to pay in at the foundation of the society. And this sum of £91, 17s. 2d. is the present value of a *reversion* of £100, at the age of 90, according to the Northampton Tables, and taking interest at 3 per cent.

Supposing such a society to be constituted, and £4225, 10s. 9d. to be paid in by the 46 members, we shall see how its business would proceed until, at the close of seven years, death put a period to the account:

The original contribution of £4225, 10s. 9d. being put out to interest, at the end of the first year amounts to	£4352	5	2
From which deduct for the twelve lives which fail in the course of the year	1200	0	0
Fund remaining at the commencement of the second year	3152	5	2
Which, bearing one year's interest, will amount to	£3246	16	8
From which deduct for the ten lives which fail in the course of the year	1000	0	0
Fund remaining at the commencement of the third year	2246	16	8
Which, bearing one year's interest, will amount to	£2314	8	2
From which deduct for claims	800	0	0
Fund remaining at the commencement of the fourth year	1514	8	2
Which, bearing one year's interest, will amount to	£1559	16	8
From which deduct for claims	700	0	0
Fund remaining at the commencement of the fifth year	859	16	8
Which, bearing one year's interest, will amount to	£885	10	5
From which deduct for claims	500	0	0
Fund remaining at the commencement of the sixth year	385	10	5
Which, bearing one year's interest, will amount to	£397	1	8
From which deduct for claims	300	0	0
Fund remaining at the commencement of the seventh year	97	1	8
Which, bearing interest, will amount to	£100	0	0
Which will exactly discharge the last remaining claim	100	0	0

Practically, life-assurance is not effected upon lives so advanced as 90 years. It is common to confine business to ages under 60; and the great bulk of insurers are between 27 and 40, the time about which men in this country begin to feel the responsibilities of a family. But the calculations followed for the various ages are formed exactly in the above mode. All the persons of a particular age in a life-assurance society are considered as a distinct group insuring each other. Of those, for instance, at 30 years of age, it is calculated what proportion will die the first year, what the second, and so on; and from each the society looks for such a contribution, present or prospective, as may make up an aggregate sufficient, with the accumulation from compound interest, to pay the sum assured upon each life in that group. It is quite the same thing to the society, or, we shall say, to the general interest, whether the individual insurers pay the whole required contribution at once, or in a series of annual payments, which, as the plan convenient for the majority of people, is that generally adopted.

FORMATION OF RATES.

According to the principles of which we have given a slight outline, offices form scales of rates at which they profess to do business. In these rates, very considerable discrepancy exists, for many continue to calculate mortality according to the Northampton Tables, which, as already shewn, give the decrement of life too high; while others proceed upon those more recently formed, which are certainly much nearer the truth; and some, again, assume interest at only 3 or 3½ per cent., while others deem 4 not too high. There is also an allowance for the expenses of business to be added to the naked sums required by a regard to mortality and interest; and here, also, the minds of parties may differ, some allowing more, and some less on this account.

In most cases, the charges for life-assurance are considerably within the verge of safety. Hence companies generally divide good profits, and societies realise large surplusages, which fall to be divided among the insurers, in the form of additions to the sums stated in their policies. The scales of the various offices may be classed in various grades or sets.

Scales of the first or lowest grade proceed upon modern tables of mortality, and the expectation of about 4 per cent. interest at an average, adding from 10 to 15 per cent., according to age, for expenses of management, and as a guarantee against any unfavourable fluctuations of mortality and interest. For an insurance of £100, the Northern Assurance Company require from a person aged 30 an annual premium of £2, 9s. 3d.; the annual premium charged by the Standard Life-assurance Company being £2, 10s. 1d.; the Scottish Provident Institution charging £2, 2s. 6d. The high premiums borne by the stocks of companies that transact business at these rates, and the bonuses divided in the mutual societies, give tolerably fair evidence that these calculations rest on a sound basis. The government life-assurances, which are limited to sums not exceeding £100, are based on a higher scale, the annual payment required from a person of the age of 30, effecting an insurance of £100, being £2, 6s. 7d. This higher rate was adopted for the purpose of preventing the national exchequer suffering from any possible miscalculation of the chances of life among the assured. In other offices higher rates are charged, as in the Economic Company, where a person aged 30, desirous of effecting an insurance of £100, has to pay an annual premium of £2, 5s. 5d. The Norwich Union charge £2, 12s. 11d; the Guardian, £2, 10s. 1d.; and the Scottish Widows, £2, 12s. 11d. These scales entitle the insuree to participate in the profits of the company, the bonuses being equal, for the most part, to an addition to the policies of from 1 to 2 per cent. per annum on the sum insured (reversionary addition).

A third class of offices, adopting the Northampton Tables, and generally of old standing, and acting upon old calculations, present higher scales of rates, and divide, or ought to divide, higher profits. One office, the United Kingdom Temperance and General Provident Association, has established a section in which abstainers from the use of alcoholic drinks may effect insurances at lower rates than in the other sections; it being found that the rate of mortality among total abstainers is considerably under the average, even among selected lives. This is shewn by the fact, that during the years 1866–73, the number of deaths in the Temperance section was 691, instead of 957, the estimated number; while in the General section the number was 1689, or only 50 below the estimated number of 1739. Thus the number of deaths in the Temperance section was 27·8, and in the General section 2·88, below the estimated rates.

The existing British offices number about 120, most of them of recent origin. The oldest is the Amicable of London, established on the mutual

principle in 1706. At the time when it was set up, no calculations as to life existed; and the conductors were accordingly obliged, for many years, to proceed in a great measure at random, charging the same premiums or annual payments for all ages under forty-five! The rates charged by the several offices are very various, and in general they have been found sufficient for the risks. In most instances, the companies divide large profits; while the mutual offices have realised equally large surplusages, which they have divided amongst the insurees, in proportions according to the sum assured and the duration of the insurance, or upon some other principle preferred by the insurees.

POST-OFFICE ANNUITIES.

The government system of life-insurance is conducted in conformity with an Act passed in 1864, whereby the Postmaster-general is empowered to insure the lives of persons of either sex, between the ages of 16 and 60, for not less than £20, or more than £100. The persons whose lives are insured by the Postmaster-general have direct government security for the payment of the money at the proper time. The insurances are effected at certain post-offices, lists of which can be obtained at any post-office, and the payments may be made fortnightly, monthly, quarterly, or annually, thus bringing the advantages of life-insurance within the reach of all, the payment of 2s. 2d. per fortnight, commencing at the age of 30, insuring the payment of the sum of £100 at death. Insurers are allowed to pay their premiums through such post-offices, opened for that purpose, as may suit them best; but they must provide at their own cost such certificates of birth or baptism, or other evidence of age, as shall be required from them; but they are not required to pay any fee for medical examination; or to pay the cost of any inquiry which the Postmaster-general may think fit to make with regard to their health, habits, age, and occupation; or to pay any fee for the issue of any contracts which may be made in accordance with their proposals; or to pay any postage for the transmission of their proposals, or for the transmission of any correspondence arising out of such proposals between them and the Postmaster-general; inasmuch as a provision for all such costs and charges is included in the premiums which they are required to pay, in accordance with the tables framed for the purpose for the insurance of their lives. The number of government insurances thus effected was over 3600 at the commencement of 1874, the sums insured amounting to more than £280,000. It is to be regretted that the labouring-classes do not make a more extensive use of the facilities thus provided for making provision, in case of death, for those dependent on them.

With the view of protecting the public from the tricks of fraudulent insurance companies, an Act was passed, in 1870, whereby every new insurance company is required to deposit the sum of £20,000 with the Accountant-general of the Court of Chancery, before being allowed to commence business, this sum being returnable to the company when the amount of funds from accumulated premiums paid in reaches £40,000. If the company transacts business in other descriptions of insurance, all the moneys, accounts, and other matters connected with the life-assurance department must be kept separate, as though that department formed a distinct company. Each life-assurance company is bound to furnish annual Reports of its condition, also acturial Reports every five or ten years, to the Board of Trade. There are also clauses relating to amalgamations of companies, legal rights of share and policy holders, &c., the whole forming an effectual protection against the future establishment of fraudulent companies, like those which, in previous years, did much to bring the system of life-assurance into disrepute. The number of companies furnishing Reports, in compliance with the Act, during 1873 was 130. Of these, 128 were passed as satisfactory by the Board of Trade. The remaining two Reports were not accepted by the Board of Trade, and have had to be amended.

The funds possessed by several of the life-assurance offices are of large amount. The Equitable, of London, possessed, at the end of 1872, no less than £4,018,935, 7s. 3d., after deducting claims due or unpaid. In like manner, the Law Life-assurance had a fund of £5,512,566, 5s. 6d.; the National Provident Institution, £3,205,055, 15s. 4d.; Standard Life-assurance, £4,220,309, 14s. 6d.; and the Scottish Widows' Fund, £5,439,201, 13s. 5d. Several other companies possess funds ranging from one to two and a half millions sterling.

The rateable rental of property in England and Wales assessed to the poor rate was £133,769,875 in 1880. The total sum raised by poor rates during the year ending Lady Day 1881, was £14,340,592. More than one-third of this amount was, however, expended for other purposes, such as police rates, and for school-board purposes, &c. The actual relief to the poor amounted at the same date to 6s. 3d. per head of the estimated population, while the sum levied as poor rate was equal to 10s. 3d. per head. The number of unions and parishes at the same date was 647, and the total paupers numbered 803,126. In Scotland, the sums received for the relief of the poor in 1880–81, amounted to £939,367, and the number of poor receiving indoor relief was 8683 in 1882. The total average weekly expenditure per head of ordinary inmates of all the poor-houses of Scotland was 4s. 11d. in the half-year ending 30th June 1882. The total number of poor-houses at the same date was 63, with accommodation for 15,432 inmates. Ireland had 589,849 paupers in 1881, and the poor rates amounted to £965,128. The number of indoor paupers at the same date was 363,844, and of outdoor 226,005.

The position of life-assurance in 1880 may be gathered from the following statistics: the total amount insured in all the offices was £425,000,000, and the total assets £136,000,000. The annual charge for premiums was £13,603,721; the total income from all sources was about £20,000,000, and the amount paid for claims £10,535,074.

SOCIAL ECONOMICS OF THE INDUSTRIAL ORDERS.

IT is surely a deplorable feature in the condition of a large portion of the working-classes in this country, that they have little or no provision made against the necessities which arise to themselves or their families in the event of sickness, failure of employment, or death. With some, this is not the case, but it is the case with many; and the result is, that these persons have never more than a thin partition separating them from the realms of want and dependence. The effect which this is calculated to have, need not be largely insisted on, for want and dependence are universally allowed to be productive of many evils. What is there to be expected from the moral nature of one who is every now and then obliged, perhaps, to ask for gratuitous medicine and medical attendance—to take bread from a parish officer or the managers of a charitable subscription—to trust to the pity of neighbours whenever anything like an exigency arises in his family—in short, is, for the supply of a great part of his needs, a stipendiary upon his fellow-creatures? These things are evidently irreconcilable with true manly dignity, with political independence, and with an upright bearing in any of the relations of life.

'But then the working-classes realise such small gains, that they can spare nothing for this purpose.' This may well be doubted, for such has been the gradual and steady rise in the money-rate of operatives' wages, within the last few years, even in the face of the reduction that has been made in the hours of labour, that the industrious man perhaps never before knew a period in which, if he could only be temperate and frugal, he might more easily save money. Yet it has frequently been found that skilled artisans and factory operatives earning from 30s. to 40s. per week, do not, as a class, maintain their households or educate their children so well as those labourers earning from 15s. to 18s. per week. The various savings-banks returns shew that the classes of working-people receiving most wages are the smallest depositors in the various kinds of savings-banks, and that the majority of depositors are persons in the receipt of low wages, such as farm-labourers, domestic servants, and the like. Such facts—and we believe many of the like nature might be readily adduced—seem to prove that the working-classes have much more in their power for the promotion of their physical and moral well-being than is generally supposed.

Those artisans and other members of the labouring-classes who desire to make the most of their limited means, to regularly put aside a portion, however small, of their earnings, with the view of maintaining their independence, or enabling them to face successfully seasons of adversity, will find many facilities afforded them for so doing. Among the foremost of these is

THE SAVINGS-BANK.

Previous to the commencement of the present century, such of the humbler classes as were given to saving had no proper place of deposit for their spare funds, which they were obliged, therefore, to keep in an unfructifying hoard in their own possession, exposed to the risk of loss, or to consign to some neighbour, who, though deemed safe, might turn out to be much the reverse. At the same time, in the want of a proper place for the deposit of spare money, those who might save, but did not, lacked one important requisite to their doing so. About the beginning of this century, it occurred to some benevolent minds that an important benefit would be conferred on these classes if there were institutions of the character of banks, but on a modest scale, in which the poor could deposit the smallest sums they could from time to time spare, certain of being able to draw them forth when they pleased, with accumulated interest. Savings-banks—so named from their main object—were accordingly established almost simultaneously in Britain, the United States, France, and other countries. They were generally conducted by associations of benevolent persons, who gave the security of their own credit for the accumulated sums, and held forth every temptation in the way of liberal interest, courtesy, and promptitude in management, to induce the working-classes to resort to them. The oldest of the English savings-banks is that at Bristol, which was established in 1812.

For some years, this joint-stock, but still private, security was found to be sufficient for the purpose; but when it was understood that millions had found their way into savings-banks, it became apparent that something else was necessary in order to maintain the confidence which had at first been felt. The government was therefore induced to frame a variety of statutes for the better regulation of savings-banks, and one in particular by which its own security was given for the safe keeping of the deposits. This was done under the guidance of the best intentions towards the industrious classes, who generally are depositors in savings-banks, and with as little interference as possible with private and local management. A substantial benefit was at the same time conferred, by the fixing of a rate of interest somewhat above the average of what could be expected in a country under the particular circumstances of the United Kingdom with regard to capital.

In 1863 the various laws relative to savings-banks were amended and consolidated, with the view of more clearly defining the duties and responsibilities of the various officials connected with these institutions. As the law now stands,

all funds deposited in the savings-bank must be paid into the Bank of England on account of government, the money so invested bearing interest at the rate of £3 per cent. per annum, whatever may be the fluctuations in the value of the public funds during the term of investment. Depositors are thus afforded the best of all securities—namely, that of the whole British nation; at the same time, the savings-banks are enabled, after paying all charges upon their establishments, to give a considerably higher rate of interest than most ordinary banks, or even the greater part of private savings-banks, allow on deposits. Since 1880 the highest interest which the law allows the savings-banks under its control to pay to depositors is £2, 15s. per cent. per annum; the difference between this and the rate allowed on the money invested by them in government securities being reserved as a fund for the payment of the officials of the banks and other necessary expenses. The rate of interest which is at present paid by these banks varies with the locality, but the average rate over the United Kingdom (in 1887) was £2, 14s. 5d.; and whatever remains, after defraying all charges, is allowed to accumulate as a surplus fund.

Deposits of from *one shilling* to *thirty pounds* may be received by these banks; but no individual depositor is allowed to lodge more than £30 in any one year, ending on the 20th November, nor more than £150 on the whole: when the sum amounts to £200, no interest is payable. Charitable and provident institutions and Penny Banks, with the sanction of the National Debt Commissioners, may deposit to any amount; without such sanction they are limited to £100 in a single year, or £300 in all, principal and interest included; and friendly societies whose rules have been duly certified by the acts of parliament relating thereto, are permitted to deposit the whole of their funds, whatever may be their amount. Compound interest is given on the sums lodged, the interest being added to the principal at the end of each year in some banks, and the end of each half-year in others, and interest afterwards allowed on the whole. Any depositor may receive on demand the money lodged by him.

The wisest and most effectual provisions are made for insuring the proper management of the affairs of these banks. Each must have a certain number of trustees and managers, whose services are performed gratuitously; then a treasurer, actuary, cashier, clerks, &c.—all of whom must give security, by bond, to such amount as the directors of the establishment may judge sufficient. No portion of the funds invested in government security can be withdrawn, except on the authority of an order signed by several of the trustees and managers. Detailed reports of the transactions of each bank must be periodically forwarded to the Commissioners for the Reduction of the National Debt, and also exhibited to the depositors at the bank-office. Of course, government can only be responsible for the amount actually deposited in the Bank of England; but the respectability of the local managers is sufficient guarantee for the safety of the funds in their passage between the depositor and the national exchequer.

Under both the old and new systems, savings-banks have been highly successful in their object, and the money deposited in them reaches an amount which no one who regarded the habits of

INTEREST TABLE, AT £3 PER CENT.

Principal.	Month of 30 Days.	Year.	Principal.	Month of 30 Days.	Year.	Principal.	Month of 30 Days.	Year.
£ s.	£ s. d.	£ s. d.	£	£ s. d.	£ s. d.	£	£ s. d.	£ s. d.
0 10	0 0 0½	0 0 3½	37	0 1 9½	1 2 2½	74	0 3 7½	2 4 4½
1 0	0 0 0½	0 0 7½	38	0 1 10½	1 2 9½	75	0 3 8½	2 5 0
2 0	0 0 1	0 1 2½	39	0 1 11	1 3 4½	76	0 3 9	2 5 7½
3 0	0 0 1½	0 1 9½	40	0 1 11½	1 4 0	77	0 3 9½	2 6 2½
4 0	0 0 2½	0 2 4½	41	0 2 0	1 4 7½	78	0 3 10	2 6 9½
5 0	0 0 3	0 3 0	42	0 2 0½	1 5 2½	79	0 3 10½	2 7 4½
6 0	0 0 3½	0 3 7½	43	0 2 1½	1 5 9½	80	0 3 11½	2 8 0
7 0	0 0 4	0 4 2½	44	0 2 2	1 6 4½	81	0 3 11½	2 8 7½
8 0	0 0 4½	0 4 9½	45	0 2 2½	1 7 0	82	0 4 0½	2 9 2½
9 0	0 0 5½	0 5 4½	46	0 2 3	1 7 7½	83	0 4 1	2 9 9½
10 0	0 0 5½	0 6 0	47	0 2 3½	1 8 2½	84	0 4 1½	2 10 4½
11 0	0 0 6½	0 6 7½	48	0 2 4½	1 8 9½	85	0 4 2½	2 11 0
12 0	0 0 7	0 7 2½	49	0 2 4½	1 9 4½	86	0 4 2½	2 11 7½
13 0	0 0 7½	0 7 9½	50	0 2 5½	1 10 0	87	0 4 3½	2 12 2½
14 0	0 0 8½	0 8 4½	51	0 2 6½	1 10 7½	88	0 4 4	2 12 9½
15 0	0 0 9	0 9 0	52	0 2 6½	1 11 2½	89	0 4 4½	2 13 4½
16 0	0 0 9½	0 9 7½	53	0 2 7½	1 11 9½	90	0 4 5½	2 14 0
17 0	0 0 10	0 10 2½	54	0 2 8	1 12 4½	91	0 4 5½	2 14 7½
18 0	0 0 10½	0 10 9½	55	0 2 8½	1 13 0	92	0 4 6½	2 15 2½
19 0	0 0 11	0 11 4½	56	0 2 9	1 13 7½	93	0 4 7	2 15 9½
20 0	0 0 11½	0 12 0	57	0 2 9½	1 14 2½	94	0 4 7½	2 16 4½
21 0	0 1 0½	0 12 7½	58	0 2 10	1 14 9½	95	0 4 8½	2 17 0
22 0	0 1 1	0 13 2½	59	0 2 10½	1 15 4½	96	0 4 9	2 17 7½
23 0	0 1 1½	0 13 9½	60	0 2 11½	1 16 0	97	0 4 9½	2 18 2½
24 0	0 1 2½	0 14 4½	61	0 3 0	1 16 7½	98	0 4 9½	2 18 9½
25 0	0 1 2½	0 15 0	62	0 3 0½	1 17 2½	99	0 4 10½	2 19 4½
26 0	0 1 3½	0 15 7½	63	0 3 1½	1 17 9½	100	0 4 11	3 0 0
27 0	0 1 3½	0 16 2½	64	0 3 1½	1 18 4½	105	0 5 2	3 3 0
28 0	0 1 4½	0 16 9½	65	0 3 2½	1 19 0	110	0 5 4½	3 6 0
29 0	0 1 5	0 17 4½	66	0 3 3	1 19 7½	115	0 5 8	3 9 0
30 0	0 1 5½	0 18 0	67	0 3 3½	2 0 2½	120	0 5 10½	3 12 0
31 0	0 1 6½	0 18 7½	68	0 3 4	2 0 9½	125	0 6 1½	3 15 0
32 0	0 1 7	0 19 2½	69	0 3 4½	2 1 4½	130	0 6 4½	3 18 0
33 0	0 1 7½	0 19 9½	70	0 3 5½	2 2 0	135	0 6 7½	4 1 0
34 0	0 1 8½	1 0 4½	71	0 3 6	2 2 7½	140	0 6 10½	4 4 0
35 0	0 1 8½	1 1 0	72	0 3 6½	2 3 2½	145	0 7 1½	4 7 0
36 0	0 1 9	1 1 7½	73	0 3 7½	2 3 9½	150	0 7 4½	4 10 0

the working-classes fifty years ago could have anticipated. In 1840, the total sum was nearly £22,000,000. On November 20, 1872, notwithstanding the large sums which had become transferred to the Post-office savings-banks, the amount was £39,590,652, 7s. 10d., divided as follows: England and Wales, £32,456,400, 19s. 10d.; Scotland, £4,452,492, os. 4d.; Ireland, £2,221,852, 9s. 8d.; islands, £459,906, 18s. The number of savings-banks at the same date was 484: England and Wales having 388, with 1,118,571 depositors; Scotland, 52, with 223,445 depositors; Ireland, 42, with 61,746 depositors; islands, 2, with 21,385 depositors.

It is of great importance that a person who thinks of depositing should have a distinct idea of the benefit he is to derive in the way of interest. Calculating the interest given in savings-banks at the old rate (previous to 1880) of £3 per cent. very nearly, the difference between this and the rate which the Commissioners of the National Debt allow, is, as already mentioned, reserved to pay expenses, &c. This being the interest allowed, any one may readily reckon how his money is to fructify, by supposing an addition of one thirty-third being made to it at the end of every year. For instance, if he deposits 15s., and lets it lie for a year, he is then entitled to 15s. 5½d. It is right that he should be fully aware that, in respect of interest, he is better off than the people of the middle and upper ranks who deposit in common banks; for not only does he get a higher percentage than is generally given by these banks, but he has the advantage of *compound interest;* that is to say, the interest due to him at the end of a year is silently, and without any trouble on his part, added to and considered as a part of the principal, on which interest is to be given in future. Thus, a common bank-account and a savings-bank account for the same sum, if left unattended to for a few years, would in the end come to a very different amount. The preceding table, which shews simple interest for a year on a variety of sums, will enable depositors to calculate the interest receivable on the sums deposited by them.

The following table shews what a certain weekly contribution, paid into a savings-bank, would amount to in a certain term of years, interest being at £3 per cent.:

	One Shilling per week.			Five Shillings per week.		
	£	s.	d.	£	s.	d.
1st year	2	12	9	13	3	11
2d "	5	7	2	26	15	9
3d "	8	3	2	40	15	8
4th "	11	0	10	55	4	1
5th "	14	0	3	70	1	1
6th "	17	1	5	85	7	0
7th "	20	4	5	101	2	1
8th "	23	9	4	117	6	8
9th "	26	16	2	134	1	0
10th "	30	5	1	151	5	4
11th "	33	16	0	169	0	0
12th "	37	9	1	187	5	3
13th "	41	4	4	206	1	6
14th "	45	1	10	225	9	1
15th "	49	1	8	245	8	3
16th "	53	3	11	265	19	5
17th "	57	8	7	287	2	11
18th "	61	15	10	308	19	1
19th "	66	5	8	331	8	4
20th "	70	18	3	354	11	1

POST-OFFICE SAVINGS-BANKS.

The present system of Post-office savings-banks originated in a suggestion made by Mr Sikes, of the Huddersfield Banking Company, in 1859 or 1860. Mr Sikes, profiting by a hint furnished him by the practice of an Australian bank, conceived the idea of making all the money-order offices contributory to the savings-banks. He proposed to establish a central savings-bank in London, to which depositors might send their moneys, in sums of not less than £1, through the money-order offices, and which should issue, in return or acknowledgment for the remittances, savings-bank interest notes to the amount remitted —that is, notes enabling the holder to receive the amount of his deposit, with the addition of interest at the rate of 2½ per cent. per annum.

Mr Sikes's proposal found much favour among those interested in the subject, and in 1861, an Act was passed, authorising the establishment of Post-office savings-banks, in accordance with the views entertained by Mr Sikes, but with the modifications necessary to meet the requirements of the humblest class of depositors. Under this Act the Postmaster-general is authorised to receive deposits of not less than one shilling at any of the post-offices under his control, and to repay the same, under certain regulations, when required by the depositor. The rules with respect to deposits and depositors are similar to those of the ordinary savings-banks. A person wishing to become a depositor in a Post-office savings-bank has to sign a declaration to the effect that he is not a depositor in any other savings-bank, and sign his name in the deposit book given him. The amount of each deposit, with the name, occupation, and address of the depositor, is reported on the same day to the head-office in London, from whence an acknowledgment is forwarded to the depositor. If the depositor does not receive an acknowledgment within ten days, he is required to apply for such acknowledgment to the head-office. The depositor must forward his deposit-book once in each year, on the anniversary of the day when the first deposit was made, to the head-office, for the purpose of the entries being compared with the entries in the books at the head-office, and the interest due inserted. No charge for postage is made for the transmission of these books, for the return thereof, for applications for acknowledgments of deposits, &c., forms and envelopes for this purpose being provided free of charge at the various post-offices where these savings-banks are established. A depositor wishing to withdraw his deposits, or part thereof, is supplied with a form, which, when filled up, is sent to the head-office, from whence a warrant for the amount required is forwarded by post to the depositor. The warrant, together with the depositor's book, is then taken to the Post-office savings-bank, where the amount repaid is entered in the deposit-book, the Postmaster taking a receipt from the depositor for the same. In practice, the system is found to be extremely simple, and, up to the present time, the precautions against fraud have proved singularly successful.

The Post-office savings-banks first came into operation on September 16, 1861. On March 31

1862, the number of these institutions was 2532. Of this number, 1795 were in England, 129 in Wales, 299 in Scotland, 300 in Ireland, and 9 in the islands. The number of depositors was 91,965, and the total amount of their deposits, £735,253.

In 1873, the number of Post-office savings-banks was 4800. In the London district alone, there were 560, so that from almost any point in the thickly populated portions of the metropolis, one might be found within a radius of a few hundred yards. The number of depositors on September 16, 1873, was more than a million and a half, the amount of their deposits exceeding £21,000,000. The cost of each transaction—that is, each deposit or withdrawal—to the post-office is 6d., as compared with 1s. in the old savings-banks. The proportion of depositors in proportion to population during 1873 was—in England and Wales, 1 to about 16; in Scotland, 1 to about 72; but in Ireland it was only 1 to about 105. Yet, singularly enough, the average amount belonging to each depositor is largest in Ireland, being £16, as compared with £14 in England, and less than £9 in Scotland. The limited number of depositors and value of their deposits, in Scotland, is caused by its being the custom of the Scottish banks to allow interest on small sums of money. The fact that, with upwards of 100,000 more depositors, the Post-office savings-banks have much smaller average deposits than the savings-banks, shews that the former are carrying provident habits into a lower stratum of society than was reached by the latter. The chief advantages possessed by the Post-office savings-banks over the old savings-banks, appear to be greater security for the repayment of deposits, and increased facilities for depositing or withdrawing small sums, the Post-office banks being open for at least six hours each week day, and in many places on Friday and Saturday evenings, while most of the old banks were only open for two or three hours in each week.

PENNY BANKS.

Although the old savings-banks and those connected with the General Post-office have proved of such utility to large numbers of the labouring-classes, it is found that there are many persons in humble circumstances to whom these institutions are practically useless, in consequence of their not taking deposits of smaller amount than one shilling. This has led to the establishment of what are termed penny banks, in which sums as low as one penny are accepted. These institutions are generally found existing in connection with religious, temperance, and other organisations, having for their object the encouragement of provident habits among the masses. In many cases the banks take care of the pence of the depositor until they reach the sum of one shilling, when it is placed in regular savings-banks. The greater number of depositors are children belonging to the poorer classes of the community, who are thus early accustomed to those habits of thrift to which they must principally look, in after-life, for any real mitigation of their social condition. There is no regular system of interest adopted in penny banks, but in several it is the custom to give small bonuses to those who have saved a certain sum in a given time. As a rule, when the deposits in a penny bank reach a certain sum, say from five to twenty shillings, the moneys are deposited in a Post-office savings-bank, for which purpose certain facilities have been provided. In 1873, more than a hundred accounts were thus opened between the Post-office savings-banks and the penny banks. There exist no reliable statistics respecting the present number of penny banks, but it is believed that there are not less than 2000 in England alone, more than half of that number being found in London and other great centres of population.

FRIENDLY AND BENEFIT SOCIETIES.

Savings, instead of being stored up in a bank, to be there constantly at command, may be invested by a working-man in a well-constituted friendly society, as a means of insuring for himself certain contingent and fixed benefits. Friendly societies generally embrace several objects, as the securing of a weekly sum during sickness, and a pension after a certain age. They are based on the principle of mutual insurance (see LIFE-ASSURANCE, No. 87); that is to say, members make payments, either at once or in small periodical sums, and thus constitute a fund, out of which such as happen to fall sick or to survive a certain age, are supplied, the uncertainty attached to all individual concerns being lost, in the certainty which attends calculations involving great numbers. In some respects, and for some cases, joining a friendly society may be better than becoming a depositor in a savings-bank. Sickness may come before the savings are considerable; or, if considerable, they may be melted away by a long-continued sickness; but after the first weekly payment is made to a friendly society, the member is secure of succour, however long his illness may continue, besides, perhaps, other advantages. It is possible, on the other hand, that a difficulty may be experienced, in certain circumstances, in keeping up the weekly or other payments required to secure the benefits of friendly societies. Here, however, it may be said, there is no more than the usual uncertainty attached to all things. Assuredly, the arrangement of a rightly constituted friendly society furnishes a very considerable degree of security against some of the uncertainties of life.

It is to be regretted that many of these societies are founded upon erroneous principles, or rather upon no principles at all; and it often happens, therefore, that those who trust to them are disappointed, the funds falling short before all claims are satisfied. Large sums are annually misspent by the industrial classes in the support of these societies, a circumstance which has provoked parliamentary inquiry, with the view of bringing these societies under legislative control. One of the primary mistakes in the formation of such associations is the assumption that each member should pay an equal sum, whatever his age may be. This is unjust; for the younger members have a less chance of becoming burdensome to the funds than the middle-aged; and, indeed, there is a rising scale of probability of sickness throughout all the years of a man's life. The Highland Society, taking the experiences of 73 benefit societies, found that, between twenty and thirty, men are liable, on an average,

to be half a week indisposed per annum; between thirty and forty, the average was about two-thirds of a week; at forty-six it became a full week; at fifty-seven, two weeks; at seventy, eleven weeks. The society, from taking unsuitable grounds for their calculations, made out the probabilities of sickness considerably too low. Various other partial observations exist, compiled by Mr Ansell, Mr Neison, Mr Finlaison, and other actuaries; but as it has been found that sickness varies more considerably than mortality with the salubrity of the localities inhabited and the occupations of the members, no absolute reliance can be placed on their results. Perhaps the most valuable tables are those computed by Mr Ratcliffe, and which are based upon the experiences of the Manchester Unity of Odd-fellows. Previous to their publication, Dr Price assumed, in the absence of direct observation, that the numbers sick at each age bear a certain proportion to the probability of life; and Mr Edmonds followed this up by what is designated by Dr Farr 'a bold and happy hypothesis,' that this proportion is, at every age, simply as *two* constantly sick to *one* annual death. The consequence of such a view is consistent with a result in which all observations agree, that increase of years is attended by increased liability to sickness. Now, a rightly constituted friendly society is bound to advert to this circumstance. To admit all ages at an equal payment, is clearly making the younger members pay for the elder, who should have entered at an earlier age, and been paying all along.

Yearly Societies.

Another great error in the constitution of benefit societies is in making them for a year only. Many of the old friendly societies having ended in disappointment, in consequence of want of right calculations, or bad management, or peculation of the funds, the working-classes have contracted the notion, that there is more safety in a yearly term. The immediate payments are also less than in a well-constituted friendly society. These yearly societies, which are known by different names in different parts of the country, usually originate with some individual—often the keeper of a tavern—who advertises that a society will be formed in his house on a particular day. Applicants for admission pay one shilling as entry-money, which goes into the pocket of the originator of the scheme, by way of rent. The objects are generally threefold—namely, a fund for sickness and funeral expenses, a deposit fund, and a loan bank. Towards the first, there is perhaps a weekly payment of twopence, or more if necessary, together with the interest arising from the loan of money to the members. Towards the deposit fund, there is a payment ranging generally from sixpence to two shillings, the accumulations being received back when the society closes. The money deposited is employed in making loans to such of the members as desire such accommodation, within the amount of their several entire deposits for the year, one penny per pound per month being charged by way of interest. The surplus, if any, of the twopences and interest, after sick and funeral money, books, and other necessaries are paid, is divided amongst those members who may be clear of the books at the close of the society. Some such societies are formed by a spontaneous association of persons, who prefer renting a room for their meetings, and thus escape the temptations of a tavern; but none of them avoid the errors of an equality of payments for all ages, and the yearly dissolution. The youth of fifteen, who is not liable to half a week's sickness per annum, pays as much as the man of fifty-seven, who is liable to two weeks. Should sickness befall any one towards the close of the year, he is left, when the society dissolves, quite unprovided for, because he cannot enter another society in a state of sickness. Considered as a deposit for savings, the yearly society is strikingly inferior to the savings-bank, in as far as the depositor cannot take out money without paying an exorbitant rate of interest. Finally, these societies are generally under the care of obscure persons, who can give no security for the funds placed in their hands, and who in many instances become bankrupt or abscond before the final reckoning. Yearly societies are, indeed, in every point of view, a most objectionable class of institutions, to which working-people would never resort but for their ignorance and unwariness, and the temptations held out to allure them. It is, therefore, satisfactory to find that in some places these associations are losing much of their popularity.

The strongest plea for the yearly society is its simple construction, involving, as it does, no permanent contract between the fund and the contributor of much longer duration than that between the man and the master. It must, however, be certainly conceded that the invariable annual premium cannot claim this advantage, as in its principle it provides for a surplus in the earlier payments, involving questions of considerable complication, when any calculation of the pecuniary interest of the member has to be made. Dr Farr has, however, computed a set of tables which, by adjusting the rate of sickness payment to the increasing age of the member, provides equitably for each contingency, and likewise provides that the connection can at any time be equitably closed. Two specimens of these tables are annexed; the complete tables are to be found in the twelfth annual Report of the Registrar-general for England. The first table may be read thus: A person of the age of 17, or of any age under that following (22), insures, for a premium of 4d. a week sick-pay, at the rate of £1 for every week of sickness, or of 3s. 4d. for every day of sickness, except Sunday.

WEEKLY PREMIUM TO INSURE PAY IN SICKNESS AT THE RATE OF ONE POUND A WEEK.

Age.	Weekly Premium from this Age to the Age Following.			Age.	Weekly Premium from this Age to the Age Following.		
	£	s.	d.		£	s.	d.
15	0	0	3	56	0	1	0
17	0	0	4	57	0	1	1
22	0	0	5	58	0	1	2
33	0	0	6	59	0	1	3
40	0	0	7	60	0	1	4
45	0	0	8	61	0	1	5
48	0	0	9	62	0	1	6
51	0	0	10	63	0	1	7
54	0	0	11	64	0	1	8

The second table may be read thus: A person aged 22, 23, or of any age under 36, insures, for a premium of 2d. a week sick-pay, at the rate of 7s. 6d.

for every week of sickness, or of 1s. 3d. for every day of sickness, except Sunday. These tables will furnish a tolerably fair idea of the payments necessary to secure certain specified benefits.

WEEKLY PREMIUM TO INSURE PAY IN SICKNESS AT THE RATE OF SEVEN SHILLINGS AND SIXPENCE A WEEK.

Age.	Weekly Premium from this Age to the Age Following.	Age.	Weekly Premium from this Age to the Age Following.
	£ s. d.		£ s. d.
15	0 0 1½	58	0 0 5
22	0 0 2	59	0 0 5½
36	0 0 2½	60	0 0 6
44	0 0 3	61	0 0 6½
49	0 0 3½	62	0 0 7
53	0 0 4	63	0 0 7½
57	0 0 4½	64	0 0 8

It is essential to the character of a proper benefit society that individuals be not admitted indiscriminately. To take in a person in bad health or of broken constitution, is unjust to those members who are healthy, because he is obviously more likely to be a speedy burden to the funds. Here, as in life-assurance societies, it is necessary to admit members only upon a showing that they are of sound constitution and in the enjoyment of good health. And it may be well to grant no benefits until after the member has been a year in the society. By these means, men are induced to enter when they are hale and well, instead of postponing the step until they have a pressing need for assistance, when their endeavour to get into a benefit society becomes little else than a fraud.

Government Registration.

Government has thought proper to interfere with its aid in the formation of friendly societies, though not compulsorily. An association of persons forming a friendly society has the means of ascertaining the soundness of its principles, and also entitles itself to deposit funds in savings-banks, with the government security, and at not less than £3, os. 10d. per cent. per annum, by submitting the proposed rules to the barrister appointed to certify them, to whom a fee of a guinea is payable. Under the sanction of government, tables were formed by the late Mr John Tidd Pratt, Registrar of friendly societies in England, and also by Dr Farr, the Actuary of the English Registrar-general—the former, together with useful instructions in the book-keeping of friendly societies, are embodied in the Reports by Mr Pratt, printed by order of the House of Commons for the years 1856–57; and the latter, together with a masterly essay on the mathematical treatment of the subject, are contained in the twelfth Report of the Registrar-general, previously referred to. On the imperative necessity of acting on correct tables for such a purpose, it would be superfluous to dwell; and the necessity of identifying the rates of any society with such responsible authority is the more advisable, as Mr Pratt repeatedly explained that the 'duty of the registrar in examining the rules of a friendly society is confined to the consideration of their being in accordance with law and the provisions of the acts in force relating to such an institution; and that, although the registrar certifies to the *legality* of the rules of a friendly society, it does not follow as a necessary consequence that the constitution of the society is based on good principles, or that the rates of payment are sufficient in amount to guarantee the promised benefits and allowances.' The Rev. John Pratt, son of the late Registrar of friendly societies, states that his father received hundreds of letters from members of bankrupt friendly societies, who stated that they had joined them, because of seeing his father's name attached to the rules. They could not understand that registration did not afford a guarantee of a society being based on sound principles.

Principles of Friendly Societies.

It is to the general ignorance of the principles necessary to insure the successful working of a friendly society, that we must attribute the frequency with which associations of a dishonest character are projected by designing men. The only remedy, apart from that furnished by the law, is to diffuse correct information upon the subject among those who stand in need of it. We can form an idea of a benefit society in its simplest form, if we suppose a hundred men, of exactly 33 years of age, to associate, and make such a payment at first as may be sure to afford each man that shall fall sick during the ensuing year one shilling a day during the term of his sickness. Taking, merely for the sake of illustration, the Scottish Tables, we find that, amongst such a body of men, there will be about 66 weeks of illness in the course of the year. This multiplied by 7, gives the whole sum required, £23, 2s., or a little more than 4s. 6d. each, which, less by a small sum for interest, will accordingly be the entry-money of each man. A society of individuals of different ages, each paying the sum which would in like manner be found proper to his age, would be quite as sound in principle as one on the above simple scheme. It is only a step further to equalise each man's annual payments over the whole period during which he undertakes to be a paying member.

A point for consideration, however, is the rate at which the funds of the society may be improved. In most cases, we believe, it is best for such societies to rest content with taking advantage of the privilege which they enjoy by act of parliament, of depositing their money in the funds or the savings-banks, in which case they are sure to obtain for it interest at a rate of not less than £3, os. 10d. per cent. per annum.

Proceeding upon these or nearly similar grounds of calculation, Dr Farr suggests the following plan for insuring lives and granting pensions to the classes who live on wages, by combining the provision for insurance payable in a sum at death, and for annuity to begin at the age of 65. This union deprives the two operations of their chief risks, and there is little loss by the lives being better or worse than the average. The policies of insurance and annuities can be easily valued every year. It would be necessary to add a little to the premiums for expense of management and for fluctuation in interest and values of public securities. The plan is so constructed that the annual premium is invariable, that depositors can at any time discontinue their premium and withdraw their deposits, without invalidating or diminishing the amount of their policy, or that they can leave the sum in the guarantee fund as an

insurance to a certain extent on their lives—a great advantage to persons of uncertain life-incomes. The table is calculated for 3 per cent. interest on the deposits. Proprietary and mutual life-offices add 19–40 per cent to the calculated premiums for profits, expenses, and bonuses; and Dr Farr proposes to add one-fifth—that is, 20 per cent.—for a like reason.

DR FARR'S PLAN TO INSURE THE LIVES AND GRANT PENSIONS TO THE LABOURING-CLASSES.

Age 20 { Annual Premium to insure the Life.....£1 } To be discontinued
{ Annual Premium to provide a Life-annuity.....£1 } at the age of 65.

No. of Years or Premiums Paid.	Sum of Annual Premiums paid.		Sums in Deposit.		After the Premiums in columns 2 and 3 are paid, the Depositor is insured in the following.	
	For Annuity.	For Assurance.	On Annuity Account.	On Insurance Account.	Sums at Death.	Deferred Annuity, to begin at Age 65.
	£	£	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	1	1	1 0 0	1 0 0	2 16 9	0 17 5
5	5	5	5 8 0	5 3 2	13 15 4	4 0 11
10	10	10	11 19 3	10 14 10	26 10 1	7 7 8
15	15	15	20 0 1	16 16 3	38 5 2	10 2 8
20	20	20	29 19 7	23 8 8	49 1 10	12 7 7
25	25	25	42 11 6	30 13 0	59 1 1	14 4 0
30	30	30	58 16 11	38 10 1	68 4 5	15 13 2
35	35	35	80 10 0	47 1 4	76 12 11	16 16 3
40	40	40	110 17 1	56 6 7	84 7 9	17 14 2
45	45	45	159 1 9	65 15 11	91 11 0	18 7 5
	No further premiums paid.		Diminishing.	Increasing.	Sum insured at death remains constant.	Payment of Annuity commences.

The table reads thus: A person commencing at the age of 20, pays £2 a year until he is 64, and then pays the last premium. He will, at the age of 65, having paid 45 premiums, receive £18, 7s. 5d., also the same sum annually for the rest of his life. At his death, his relatives or representatives will be entitled to £91, 11s. Should he wish to discontinue the annual premium on the insurance account at any time, the sixth column shews his position from that time; thus, after the fifteenth premium is paid, his life will stand insured to the amount against 15 in column 1—namely, £38, 5s. 2d., the amount in deposit at that time being £16, 16s. 3d., which is the present value of his interest in the scheme, and which he may be allowed to withdraw subject to any conditional by-law of the society.

In like manner, the annual premium in the annuity account may be discontinued, and the deposit withdrawn. Thus the same member having paid 15 premiums of £1, is secured in an annuity of £10, 2s. 8d. per annum, commencing at the age of 65, as before, the present value thereof in deposit on his account being, per column 4 of table, £20, 0s. 1d.

The importance is evident of commencing the insurance at an early age, and of combining the insurance with a deferred annuity. On both the insurance and annuity account, the premiums may be doubled or trebled, and in that case will provide double or treble the sum insured, as well as double or treble the annuity. With equal premiums, the amount in deposit on the two accounts is little less at the outset than the sum insured, and in a few years exceeds it. Some addition to the premium, as has been before stated, is necessary for the expenses and for a guarantee fund; the £1 might be made £1, 4s., the excess being returned as a bonus at intervals of five years.

The Edinburgh School of Arts Friendly Society furnishes a fair example of a friendly society with working arrangements of an approved character. It was established above fifty years ago, and possessed, at the commencement of 1873, nearly 400 members, with funds to the amount of £15,446. This society, although originating with certain of the members of, and friends to the School of Arts (a species of mechanics' institution), and taking its name, is not otherwise connected with that institution, but is open to all persons, male and female, residing in Edinburgh.

It has three separate funds or schemes—namely, a Sickness Fund, a Deferred Annuity Fund, and a Life-assurance Fund. By the immediate payment of the sum of £11, 0s. 6½d., or an annual payment of 14s. 3d., or a monthly payment of 1s. 2d. (first month, 1s. 5d.), a man, aged 30, becomes entitled to 10s. a week, during sickness, for 52 weeks; 7s. 6d. for the following 52 weeks; and 5s. a week for all future periods of sickness until the age of 60, when payments and benefits cease. A slightly decreased annual or monthly payment entitles the member to continue his payments until the age of 65, of course being entitled to share the benefits until that age. In like manner the payment of a sum of £13, 9s. 8½d., or an annual payment of 17s. 5d., or a monthly payment of 1s. 5d. (first month, 1s. 10d.), entitles him at the age of 60, when his payments cease, to an annuity of £8. The immediate payment of £3, 10s. 6½d., or the payment, until the age of 60, of an annual sum of 4s. 6½d., or a monthly sum of 4d. (first month, 10½d.), entitles his representatives to the sum of £10 at his death. All the three benefits can be secured by the payment, until the age of 60, of an annual sum of £1, 17s. 3d., or a monthly sum of 3s. 1½d. The scale is arranged for various ages, from 19 to 50; and for payments to continue until the ages of 60 or 65, according to the wish of the member on entering. The rates are calculated from the Highland Society's sickness table, increased by 50 per cent., which brings them more closely to those computed by Mr Ratcliffe, seeing that only sound healthy men are admitted—and a mortality table compounded of the Northampton, Carlisle, and Swedish, assuming the rate of interest at 4 per cent. accumulated yearly; and the only charges for management are 2s. 6d. entry-money

to each fund, and 1s. a year payable by each member of each fund. Females, being generally longer lived than males, are admitted at a lower rate. The general soundness of these arrangements has been proved by the periodical examination of the society's affairs, although experience has shewn that the Highland Society's sickness table, which has been repeatedly condemned by such men as Dr Farr and Mr Neison, is defective, and needs revision.

Statistics of Friendly Societies.

It is estimated that the various friendly societies in the United Kingdom possess over 4,000,000 members, and that as many more are interested, as wives, children, &c. of members, in the benefits promised by these institutions, the number of which is believed to exceed 32,000—registered and unregistered—in England and Wales alone, the funds at the command of the same being computed at £11,000,000. The societies have been grouped in several classes: affiliated societies or orders, ordinary large or general societies, county societies, local town societies, local village and country societies, trade societies, dividing or yearly societies, deposit friendly societies, collecting and burial societies, annuity societies, and female societies.

Among the affiliated societies, we have the Independent Order of Odd-fellows, with 3488 courts or lodges, and 435,988 members, on the 11th January 1874; and the Ancient Order of Foresters, with 3651 courts or lodges, and 407,009 members, on the 1st January 1874. Taking the various orders in this section, possessing over 1000 members each, we find that in England and Wales they number 34, with upwards of 1,250,000 members. Several of the orders have branches in the various British colonies, and even in the United States. The number of affiliated members in Scotland and Ireland is estimated at 25,000. Sir George Young says that 'the principal drawback incidental to the affiliated system is its expense. The threefold management of order, district, and branch costs much more than that of a local club; not, of course, more by three times, but still more. The expense of sending delegates to the district and general meetings is often a severe tax upon the branches.'

The ordinary large societies are described by the Registrar as 'doing business over the counter—offices for life-assurance and sickness—in which there is no connection or personal acquaintance among the members, as there is in the ordinary friendly society.' Of these societies there are about 100 in the United Kingdom. The Hearts of Oak and Royal Standard are types of this class of society. The members transmit their contributions by post-office order, and receive sick-pay and other benefits in like manner. The affairs are managed by committees sitting in London; the only control possessed by the members being that exercised at the general meetings. The six leading associations of this class in London possess 46,198 members, and funds to the amount of £230,869.

The county, local town, and local village societies are ordinary friendly societies, differing chiefly in extent and in details of management. Several of the local town societies are in a singularly prosperous condition, as at Hitchin, where the Friendly Institution, with 313 members, possesses funds to the amount of £15,273. Trade societies include such associations as the Scottish 'Commercial Travellers' Friendly Society,' the 'Locomotive and Steam Enginemen and Firemen's Society,' and the 'Manchester Warehousemen and Clerks Provident Association.' None of these have anything to do with trades-unions. Of dividing or yearly societies, we have already spoken. They appear to be very numerous, especially in Scotland, where the practice is common of having two societies dividing alternately every six months, the same persons being members of both. The deposit friendly societies are of a somewhat artificial character, being attempts at combining the savings-bank with the friendly society, but hitherto they have not made much progress in this country. Some of the burial societies are on a large scale. One at Blackburn had, in 1872, 130,370 members, and funds estimated at £18,725. It is estimated that in the United Kingdom there are no less than 600,000 members of burial societies. The collecting societies are very numerous and powerful. Among these are the Royal Liver Friendly, with 550,000 members, and £264,795 capital; Scottish Legal, 216,343 members, and £54,982 capital; and the United Assurance, 140,000 members, and £15,311 capital. Twenty of the largest of these societies are found to possess, in the United Kingdom, 1,426,073 members, and funds to the amount of £461,605, 4s. 10d. The annuity societies are few in number, and, in England at least, appear to be dying out. Of registered female societies in England and Wales, we have 283, with 22,691 members, and a capital of £79,053.

These facts shew the extent to which the friendly society system has been adopted in this country, and the important influence it exercises on the social condition of the labouring-classes. Defective as is the management of many societies, they are not wholly useless, and could they be placed, with the consent of their members, upon a sound basis, they would do much to lighten the national burden of pauperism. As it is, they annually save no less than £2,000,000 to the rate-payers of this country.

ANNUITIES.

In addition to the annuity business which forms such an important item in the transactions of our friendly societies, there are numerous companies which grant annuities on the principle of making a profit by them; and sometimes this branch of business is carried on in connection with that of life-assurance. There are also associations of individuals for obtaining annuities and endowments to widows and other nominees on the mutual-assurance principle; and one large class of these, at present flourishing in various parts of the United Kingdom, are said to be based on unsound calculations, and fraught with disappointment to those relying upon them. There is indeed one circumstance generally unfavourable to annuity business—namely, that the ordinary tables of mortality present views of the expectation of life somewhat below what is at present the truth in England. Hence, what makes life-assurance business everywhere so prosperous, is precisely that which tends to make annuity business a source

of loss. It is obvious that, where individuals unite for annuities, and too low charges are made, those dying first will secure an over-proportion of the benefits, and leave those who come behind nothing but an empty purse.

With a view to encourage persons of the humbler classes to provide of themselves for their latter years, the government obtained an Act (7 and 8 Victoria, cap. 83) to enable trustees of the legally established savings-banks to sell annuities of not less than four, or more than thirty, pounds upon the security of the national credit. The same Act provided that, in parishes where there was no savings-bank, a society for granting such annuities might be formed, provided that the rector or minister of the parish, or a resident justice of peace, should be one of the trustees. Any person above fifteen years of age was entitled to purchase such an annuity, which might be to commence immediately, or at a future period of life, or for a limited term of years, at the pleasure of the party, and might be paid either in one sum or in half-yearly sums, convertible into quarterly by dividing the annuity, and commencing the two parts at different periods of the year.

The whole arrangements of this Act were dictated by the most considerate benevolence towards the classes for whose benefit it was mainly intended. In its various clauses provision is made for enabling the party to make his annual payments, or receive the annuity, in any other society than the one with which the contract was originally entered into. Upon the death of the person on whose life the annuity depended, a sum equal to one-fourth part of the said annuity (over and above all half-yearly arrears thereof respectively) will be payable to the person or persons entitled to such annuity, or his, her, or their executors or administrators (as the case may be), provided such last-mentioned payment shall be

PRICE OF AN IMMEDIATE LIFE-ANNUITY OF £1 PER ANNUM, OBTAINABLE THROUGH THE SAVINGS-BANKS.

Age (Past).	Price.		Age (Past).	Price.	
	Males.	Females.		Males.	Females.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
25	19 3 6	20 13 2	46	14 18 11	16 14 8
26	19 1 5	20 10 3	47	14 12 8	16 9 6
27	18 18 10	20 7 3	48	14 6 2	16 4 1
28	18 16 2	20 4 2	49	13 19 7	15 18 7
29	18 13 3	20 1 0	50	13 12 11	15 12 9
30	18 10 2	19 17 9	51	13 6 2	15 6 9
31	18 6 11	19 14 5	52	12 19 9	15 0 5
32	18 3 7	19 11 0	53	12 13 4	14 14 0
33	18 0 1	19 7 6	54	12 7 2	14 7 4
34	17 16 4	19 4 0	55	12 1 0	14 0 7
35	17 12 5	19 0 5	56	11 15 0	13 13 9
36	17 8 3	18 16 11	57	11 9 1	13 6 10
37	17 4 1	18 13 4	58	11 3 3	12 19 9
38	16 19 9	18 9 7	59	10 17 3	12 12 8
39	16 15 3	18 5 9	60	10 11 2	12 5 6
40	16 10 9	18 1 10	61	10 4 10	11 18 1
41	16 6 0	17 17 8	62	9 18 3	11 10 6
42	16 1 0	17 13 5	63	9 11 5	11 2 11
43	15 15 10	17 9 0	64	9 4 7	10 15 4
44	15 10 5	17 4 5	65	8 17 10	10 7 8
45	15 4 9	16 19 7			

RATES FOR THE PURCHASE OF AN ANNUITY OF £5 PER ANNUM, TO BE ENTERED ON TWENTY YEARS FROM THE DATE OF ITS PURCHASE.

Age of the Person at the Time of Purchase upon whose Life the Annuity is to depend.	Males.		Females.	
	Yearly Sum required.	Money to be paid down in One Sum at the Time of Purchase.	Yearly Sum required.	Money to be paid down in One Sum at the Time of Purchase.
(Age past.)	£ s. d.	£ s. d.	£ s. d.	£ s. d.
25	2 12 1	40 3 9	2 17 11	44 15 10
26	2 10 10	39 8 4	2 17 1	44 2 6
27	2 10 0	38 11 8	2 16 3	43 9 2
28	2 8 9	37 15 0	2 15 5	42 15 0
29	2 7 6	36 17 6	2 14 2	42 0 5
30	2 6 8	36 0 0	2 13 4	41 5 0
31	2 5 5	35 2 1	2 12 1	40 9 2
32	2 4 2	34 5 0	2 11 3	39 12 6
33	2 3 4	33 8 4	2 10 0	38 15 5
34	2 2 1	32 12 1	2 9 2	37 17 11
35	2 1 3	31 15 10	2 7 11	37 0 0
36	2 0 0	31 0 0	2 6 8	36 2 1
37	1 19 2	30 4 2	2 5 5	35 3 9
38	1 17 11	29 8 9	2 4 2	34 5 5
39	1 17 1	28 12 11	2 2 11	33 6 8
40	1 15 10	27 17 1	2 1 8	32 7 6
41	1 15 0	27 0 5	2 0 5	31 7 11
42	1 13 9	26 2 11	1 19 2	30 7 11
43	1 12 6	25 5 0	1 17 11	29 7 11
44	1 11 8	24 7 1	1 16 8	28 7 11

claimed within two years after such decease, but not otherwise ; provided also that the fourth part of any expired life-annuity, payable under the provisions of the said Act, will not be payable, nor be paid upon, or in respect of any deferred life-annuity, unless one half-yearly payment of such deferred life-annuity shall have been actually paid or become due at the time of the decease of the nominee.

Independently of the advantages which are thus afforded to the industrious classes, of obtaining, by small payments, a certain provision in old age, or at any other stated period, secured by government, and of which they cannot be deprived on account of miscalculation, the tables of contributions have been so calculated, that if the purchaser of a deferred life-annuity die before the time arrives at which the annuity is to commence, the whole of the money he has actually contributed will be returned, without any deduction, to his family. And if it does not exceed £50, it is not necessary that probate or letters of administration should be taken out. But if he has left a will, or administration is taken out, no stamp or legacy duty is payable in respect of the sum so returnable, if the whole estate, &c. of the member is under £50 ; and again, if a purchaser is incapable of continuing the payment of his yearly instalments, he may, at any time, upon giving three months' notice, receive back the whole of the money he has paid. No annuity granted will be subject or liable to any taxes, &c. ; nor can the same be transferred or assigned, but must continue to be the property, or be received for the benefit, of the party by or for whom it was purchased ; but in case of the bankruptcy or insolvency of the purchaser of an annuity, the same is to be repurchased by the commissioners at a valuation according to the tables upon which the annuity was originally granted, and the money will be paid to the assignee for the benefit of the creditors.

From the above statement it will appear that any deferred annuity, purchased by annual or other payments, from a society established under the

statute, will entitle the purchaser (if he live to the age at which the annuity is to commence) to receive an annuity equivalent to the value of all his payments, with the accumulation of compound interest; if he be unable to continue his yearly instalments, he may have back all the money he has paid, exclusive of interest; and if he die before the commencement of the annuity, his family will, in like manner, receive the whole of the contributions he may have actually made previous to his decease, exclusive of interest.

The tables on which the government annuities are granted have been formed, as might be expected, on sound principles, and are entitled to respect. They relate to four kinds of benefit—deferred annuities upon the continuance of single lives; immediate annuities upon the continuance of single lives; deferred annuities to continue for a certain term of years; and immediate annuities to continue for a certain term of years. Subjoined are two tables, which illustrate the working of the system, and from which an opinion may be formed respecting the other tables.

The number of life-annuities granted through the various savings-banks in the United Kingdom, from their commencement to November 20, 1872, was 11,054; the amount paid being £225,489, 9s. The average amounts were: England and Wales, £18, 9s. 7d.; Scotland, £20, 9s. 8d.; Ireland, £21, 15s. 2d.; the islands, £20, 4s. 6d.

Post-office Savings-Banks Annuities.

The Post-office savings-banks annuities are based upon the same principle as those granted by the ordinary savings-banks, but possess the advantage of affording increased facilities for their purchase by persons in humble circumstances. The amount of annuity must not exceed £50, the sums charged for the same varying according to the age and sex of the person making the purchase. The payments may be made annually, or by monthly instalments, according to the convenience of purchasers, who have also the option of paying a lower rate on condition that none of the purchase-money shall be returnable in the event of the purchaser dying before the annuity commences, or being unable to continue his or her payments. Thus, a person aged 30 can purchase an annuity of £10, to commence at the age of 60, by an immediate payment of £21, 3s. 4d., or by an annual payment of £1, 8s. 4d., until he reaches the age of 60; or, in like manner, he may purchase, by the monthly payment of 8s., a monthly allowance of £2, 7s. 3d., to commence at the age of 60; but if it is required that at any time the purchase-money should be returned, a higher rate is charged. A husband and wife may purchase a joint annuity or monthly allowance. In every case the purchasers are allowed to make their payments at such post-offices as may suit them best. It is a prominent feature of these annuities, that purchasers need not purchase the whole amount of such annuity or allowance at one time. They may begin by purchasing such part as they can afford to purchase, and go on increasing their purchases from time to time as their circumstances will permit. Tables of the rates of payments required to secure given amounts of annuities or allowances are obtainable at most post-offices. At the commencement of 1874, the number of immediate annuities was about 4000, the amount payable for the same being over £54,000. The total amount of the deferred annuities is comparatively small, not exceeding £5400.

LOAN AND PAWNBROKING SOCIETIES.

Of all advice a poor man about to borrow stands in need of, by far the most urgent is—to pause ere he take what too often proves so fatal a step. The poor man should avoid borrowing, if by any means he can help it; if he must needs borrow, our second advice is, that he should do it as much on a commercial footing as possible—as a contract betwixt parties, not as the object of a personal favour, nor as an object of charity. To receive a loan as charity, impairs the feeling of independence: to receive it as a favour, too frequently makes one the tool or the slave of another. The poor man who, by means of a loan, has got over his difficulties, should—if he possess any feelings of self-respect or independence—fight against the natural tendency to think that borrowing is not so difficult a process after all. He should take it rather as a warning. Let him *save*—save in order to pay off the debt he has incurred; save in order to secure against the need of borrowing a second time; save a provision for himself, for his family, to meet bad times, sickness, and age.

Small loans are obtained in two ways: on security of the borrower's promise to pay, backed by the guarantee of one or more neighbours; or on security of some article of movable property, deposited with the lender. These two methods of lending are practised commercially: the first, by loan-societies; the second, by pawnbroking. Many of the existing loan-societies are fictitious, the society generally consisting of the individual who finds the money for loan-purposes. In the larger English towns, the majority of loan-societies transact their business at public-houses, the proprietors of which are frequently the actual money-lenders. The system, as thus developed, is of a most wasteful character; it being estimated that for every shilling borrowed, the borrower has to repay from 1s. 3d. to 1s. 5d., so rapidly do fines for non-payment of instalments, and other charges, accumulate. Sometimes a second loan is resorted to, for the purpose of assisting in the repayment of the first. The ruinous manner in which some of these transactions are effected, may be inferred from the following example. A person borrows 20s., to be repaid by weekly intalments of 1s., but 1s. being deducted for interest, and 2d. for the loan-book or paper, the borrower receives in reality only 18s. 10d. If the instalments are not regularly paid, fines are imposed; but the payment of instalments can be avoided by the monthly payment of interest on the amount borrowed. The rate of interest is frequently as high as 1s. per pound for every four weeks. In every case, the object of the money-lenders is to extract as much money as possible from the pockets of their customers, who, of course, become heavy losers.

In some places, the working-men have formed loan-societies of their own, principally in connection with co-operative associations. These loan-societies are generally conducted on equitable principles, the rates of interest being moderate, and the amount of fines reduced as much as possible. In other places, the management of the

loan-societies is in the hands of the leading tradesmen, but the principle adopted is the same as in the working-men's associations. Some idea of the extent to which the money-lending system prevails in this country may be formed from the fact, that during 1873, no less than 124,664 loans were granted by 464 loan-societies, representing a total sum of £613,963 in England and Wales alone. The amount paid for inquiry fees and forms was £7891; and for interest, £30,568. During the same time, 8021 summonses and 1614 warrants of distress were issued. The ample manner in which the loan-societies secure themselves against loss, is shewn by their recovering £12,772 out of £15,896 owing to them by defaulters. The largest number of these societies is to be found in Middlesex; and the largest individual societies in the northern English counties—Bolton, in Lancashire, having eight associations, one of which possesses 232 members, and a floating capital of about £14,600; and Birmingham having another association, the Loan-society, with 390 members, and a capital of £5624. The great number of loans are for sums under 20s. A very large amount of business is also transacted by individual money-lenders, especially in rural districts, where thousands of loans for sums under 10s. are annually granted at exorbitant rates of interest. The comparative ease with which loans are now obtainable by respectable tradesmen and working-men, has tended to check the amount of pawnbroking business done in this country; but the difficulties and extortions which formerly appeared inseparable from the loan and pawnbroking systems, led to attempts at replacing them by two other institutions, the Loan-fund and the Mont de Piété, both of which were conducted on charitable principles.

The Loan-fund.

The working of the loan-fund system has been confined principally to Ireland, where it was originated in the year 1836. In that year, an Act of parliament (6 and 7 Victoria, c. 91) authorised the appointment of a central board of commissioners, called the Loan-fund Board of Ireland, which still subsists. Every society registering itself with this board must conduct its business according to the Act, and such rules as the central board may issue with the sanction of Her Majesty's Treasury; they also become liable to inspection by an officer of the central board. The gentry of a district usually originate a society. The funds are raised by subscription on debenture bonds issued by the society. In some societies, the funds are entirely the gift of some charitable individual; in others, interest is paid upon them, generally at the rate of 4 per cent. The funds being subscribed, a treasurer, secretary, and directors are appointed; and the rules being drawn up with the sanction or emendation of the central board, the society is constituted. In applying to obtain a loan, the applicant receives a printed form, for which he pays a penny. Into the blanks in this note he has to insert the particulars of his application; his own name, and the names of his sureties. The application is then considered by the officers of the society, and granted or refused, as deemed advisable. The loan has usually to be repaid in weekly instalments of one shilling per pound, and runs, therefore, for twenty weeks—interest at the rate of sixpence per pound being deducted from the original advance. The interest charged is thus equivalent to a discount of about 7½ per cent. per annum. There are likewise monthly loans granted, on which discount is charged at the rate of 1½d. per pound. The commissioners of the Loan-fund Board send an annual Report to parliament, and from these Reports we learn that in 1845, there were in Ireland 255 Loan-fund societies, which, during the year, had granted 507,339 loans, representing the amount of £1,857,457. During the disastrous years succeeding the failure of the potato crop, the system was exposed to a severe ordeal, from the effects of which it has never recovered. The number of societies sank to 160, the number of loans to 175,673, and the amounts circulated to £649,934. In 1856, the number of societies was 115; the number of loans, 202,420; and the amount circulated, £917,686. In 1871, the number of societies was 81; the number of loans being 115,095; and the amount circulated, £542,295.

The steady decrease in the amounts circulated through the instrumentality of the Loan-fund societies is attributable, to some extent, to an alteration for the better in the circumstances of that portion of the industrious agricultural poor of Ireland which constituted the principal borrowing class, but mainly it must be ascribed to the practice which has been adopted by the branch banks throughout the country of issuing loans so low as £10, and even £5, to borrowers of that class of small farmers and dealers on a small scale, who could only heretofore get loans of such small amounts from Loan-fund societies. It was expected that the Irish Loan-fund would confer a considerable benefit on the saving Irish poor—that it would, in fact, become a sort of savings-bank; paying a higher interest to depositors than the ordinary institution of that name—the great bulk of the capital being subscribed by industrious peasants and small traders. This expectation has been only partially realised, the number of depositors in 1871 being 1060, against 2461 in 1856. Appended to the thirty-fourth Report is a list of thirty-three societies which the board, in virtue of its powers, had ordered to be closed, and their affairs wound up. The result of the operations of these thirty-three societies was a loss of £10,700 to the depositors. In addition to these thirty-three societies, upwards of 100 others wound up their affairs without the intervention of the board, but with what result to the depositors does not appear from the Reports.

The Mont de Piété.

Benevolent persons, impressed by what seemed the abuse and extortion of pawnbroking, have at various times attempted to establish institutions for carrying on that business for the exclusive advantage of the poor. Several years ago, an attempt of this description was combined with the loan-fund of Ireland. The first so-called Mont de Piété (a term of French origin, *mont* being applied to a heap of money, while the word *piété* expresses the religiously benevolent views with which the fund is administered) was established in Limerick. It commenced operations in 1837, at the instigation and under the auspices of Sir Matthew Barrington, who took great interest in it, and made considerable pecuniary sacrifices in its behalf. The working of this institution during

its earlier years is shewn by the following table, from the earlier edition of Mr and Mrs S. C. Hall's work on Ireland:

Years.	Amount lent on Pledges.	Amount Received for Released Articles.	Gross Profits.	Net Profits.	Net Loss.
	£	£	£	£	£
1837	14,130	9,668	335	..	..
1838	17,885	16,923	1074	..	..
1839	21,091	20,727	1172	90	..
1840	25,488	23,675	1357	168	..
1841	28,607	26,398	1497	..	89

In the Report for 1842, the only allusion to the Limerick mont de piété is a complaint on its imperfectly kept accounts. In that for 1843, it is spoken of as winding up its affairs. In 1844, we have a Report from several gentlemen appointed to investigate the state of its affairs. From this Report we learn that the total amount of assets at that time was £4200, while the amount owing to depositors must have been more than double that sum. The gentlemen reporting recommend that the business of the institution be carried on; but it henceforward vanishes from the Reports of the Loan-fund Board. The rates charged at the monts de piété appear to have tallied pretty closely with those charged under the various pawnbroking Acts now in force, but certain of the conditions with respect to the amounts advanced and the repayments of the same, were more favourable to the pledger than would have been the case had he gone to a regular pawnbroker. In 1847, when apparently at the height of its operations, the mont de piété of Tanderagee suddenly stopped—why, we are not told. In 1841, there were eight monts de piété in Ireland. By 1848 they had all vanished, except one—the small establishment at Portadown—which lingered on until 1853, and then also passed away. We observe in the Reports an inclination to attribute the failure of these establishments to the circumstance that the better class of pledgers preferred to go to pawnbrokers, and pay more for accommodation from them, believing that they enjoyed greater secrecy. This, however, does not seem to be the fact. The average, per pledge, in the mont de piété of Limerick, for example, appears to have been 3s. 8d.; while the average, per pledge, of all the pawnbrokers doing business in Limerick, in the year 1852, was 2s. 7d. The monts de piété failed for two obvious reasons, which, in some respects, resolve themselves into one: First, They were charities, and being such, their management wanted that energy and vigilance which can only, on a large scale, be got from most parties under the stimulus of personal interest. Secondly, They had to compete with the pawnbrokers, so stimulated, and possessing, moreover, greater experience. In such circumstances, a charitable establishment of this description would require to charge more, instead of less, than a merely commercial one.

Pawnbroking.

Many pawnbrokers (perhaps most of them) deal in a most honest manner, assisting the police in the discovery of theft, and refusing loans to young or intoxicated persons. Nay, some may take the trouble of verifying a suspicion that their customer has come dishonestly by his pledges, or makes a bad use of the loan upon them. Such considerations, however, do not make the pawn-office, or even the mont de piété, an unmixed good. The evil of pawnbroking, before which every other abuse of it sinks into insignificance, is the hand-to-mouth system of domestic economy which it fosters, and the misery, destitution, degradation, and crime that are the consequences. To assist in eradicating these terrible evils of modern society, the pawnbroker or administrator of the mont de piété must inform himself of the domestic affairs of his customers. He must judge whether a loan be required for really useful purposes, and whether it would not be more advisable to refuse it. If inevitable, though for a purpose which ought to have been foreseen and provided for, the loan may be granted in the meantime, but on the understanding that the next application will be refused, whatever the consequences. This cannot be done by any merely commercial establishment, but it is very doubtful if it is done efficiently even by the mont de piété, notwithstanding its great political privileges. Regular pawnbrokers are required to have a license, which costs £7, 10s. per annum, and are compelled to carry on their business under certain stringent regulations, by which they are prevented from receiving pledges except during certain specified hours, or from charging more than certain rates of interest.

Illicit pawning is largely carried on in all parts of the United Kingdom, and is perhaps the most expensive mode of raising money to which the labouring-classes can possibly resort. In England, illicit pawning is chiefly carried on at what are termed 'leaving-shops,' while in Scotland 'wee pawning' is carried on by brokers ostensibly by buying or selling. They receive articles nominally as bought, but which there is at least a tacit understanding the seller will have an opportunity of repurchasing at a certain well understood increase of price, reckoned according to amount and time. Most, if not all of them, will come under an obligation—tacit, of course—that the article they are purchasing will be kept and resold to the seller at an understood rate of profit. The general understanding as to charge is a penny per shilling per week; and it is understood that the article will be sold to some one else if not taken away within a month. The purpose for which the money is sought is perhaps to purchase provisions—oftener for drink—and the broker is resorted to instead of the pawnbroker, because the article is one which the pawnbroker will not take, or will not give so high an advance upon. The mode of business and rates of charges in illegal pawning are the same in England and Scotland. The actual money loss to the customers of these places is very large, and represents an amount of misexpenditure frightful to contemplate.

THE PROVIDENT DISPENSARY.

On the subject of medical attendance, the working-man, in ordinary circumstances, may well be at a loss how to act; for, on the one hand, when he calls in a doctor on account of himself or his family, he is oppressed by the high charges for attendance and medicine; and, on the other, if he

resorts to a dispensary or hospital, he loses his independence. That these are evils of serious character, and widely prevalent, might easily be shewn. In England, the ordinary medical practitioner charges for medicine only, but he gives much of that, and places a high price upon it. A working-man, ill for three weeks, will find, on his recovery, a bill of 30 or 40 shillings run up against him, either causing him to break up his little hoard in the savings-bank, or keeping him in embarrassment for the ensuing twelvemonth. Conducted as the medical profession is in that country, it is impossible, in short, for a poor man to have independent medical attendance which he means to pay without the most serious pecuniary distress being entailed upon him. So severely is this felt, that the resort to medical charities has of late years been rapidly on the advance in England, involving both more individuals, and individuals of a better class than formerly.

As a remedy to these evils, some benevolent persons, with the co-operation of a few of the more liberal of the medical profession, have instituted what are called *Provident Dispensaries*, the main feature of which is, that the working-man contributes a small sum weekly from his earnings, to entitle him to medical attendance and the requisite medicines, in the event of illness entering his household—the united contributions of a few hundred members being sufficient to engage a respectable physician, and defray all the other expenses. Such institutions have been tried with marked success in London, Manchester, Coventry, Derby, and various other places. They are limited strictly to the class who are unable to fee medical attendants in the ordinary way, but who are yet anxious to keep themselves in all respects above the condition of paupers. Individuals wishing to belong to the provident dispensaries must join when in good health, as the object is in reality an 'assurance' against sickness, and the provident character of the institution could not otherwise be maintained. One penny a week is paid for each adult of the family, and a halfpenny for each dependent child. Individuals of the more affluent classes contribute without the design of benefit for themselves, in order to encourage the institution, and from them in general the directing body is chosen—the only part of the arrangement which we cannot fully approve of. From the proceeds a medical man is feed, and medicines are provided; and it is remarkable that a thousand sick persons connected with a provident dispensary have been found to cost considerably less than a similar number of patients resorting to the medical charities. Of the same nature with these dispensaries is the practice, now pretty extensively adopted at public works where a great number of hands are employed, of compelling each workman to deposit a certain amount of his wages for the purpose of medical aid.

CO-OPERATIVE SOCIETIES.

The rise of the co-operative system forms one of the most remarkable and hopeful features of modern industrial life. For many years various attempts had been made to form working-class joint-stock companies for various purposes, but the general ignorance of business matters displayed by the members, the absence of proper legislative protection for the funds of such bodies, and the widely-spread distrust with which the public invariably regarded the different experiments, to say nothing of the wild and even mischievous social and political views propounded by some of the leading members, caused almost every attempt to come to grief. At last, however, a successful beginning was made at Rochdale, in Lancashire, where a few working-men clubbing their pence and shillings together, commenced business on such a humble scale as to provoke the derision of their neighbours and fellow-workmen. But they were patient and persevering. They were not to be deterred by the formidable difficulties which stood in their way, but shewed such a bold and determined spirit, that their example became infectious, and in the course of a few years the once insignificant Rochdale provision-shop became transformed into an establishment doing business of such colossal proportions as to excite the attention of the whole civilised world. Commencing with 28 members in 1844, in 1861 the Rochdale Equitable Pioneer Co-operative Society numbered no less than 4000. At the end of 1872, the number of members was 6444. The original capital was £28; in 1872 it amounted to £134,167! The amount received by the society for goods sold during 1872 was £267,572. The business of the society includes the sale of groceries, provisions, butcher-meat, drapery, clothing, &c.; the various shops, or stores, being distributed over the town and suburbs of Rochdale.

The manner in which a co-operative society is formed is extremely simple. A number of persons join together, and agree to take one or more shares each, paying for the same by weekly or monthly instalments. The value of each share is generally fixed at £1. As soon as a sufficient fund has been formed, a shop is taken, and stocked with groceries and provisions. The members are charged the current market price for all articles purchased by them; the difference between the wholesale and retail prices of the goods, after paying expenses of management and interest upon subscribed capital, being divided among the members, according to the amount of purchases made by each, every quarter. As the business increases, a reserve fund is formed, for the purpose of meeting the depreciation of stock, fixtures, &c. The excise licenses are taken out in the names of two or three members appointed as trustees. In 1867, an Act was passed giving greater facilities for the formation of co-operative societies, on condition of their being duly registered; and a later Act, passed in 1871, confirmed many of the privileges conferred by the previous Act.

The vital principle of all successful co-operative societies is ready-money payments. The moment that credit is given, the chief guarantee against financial loss becomes withdrawn. The management of the stores is generally confided to an experienced man, engaged expressly for the purpose, and who is required to provide substantial sureties for honesty, &c.; the affairs of the association being confided to a committee elected for that purpose. The accounts ought to be audited every week, and there should be a taking of stock every three months. The majority of co-operative associations are simply trading societies, dealing in groceries and dry-goods, and generally

thrive best in manufacturing towns, where large numbers of people are employed in each industrial establishment. In London, the most successful co-operative trading associations are those established by the various employés in the General Post-office, and other government departments. One of these, the Civil Service Supply Association, with about 4500 members, has an annual business of about £1,000,000.

Although the co-operative system is best known in connection with trading operations, it has been successfully utilised for manufacturing purposes. The Rochdale Co-operative Manufacturing Society possesses extensive cotton-spinning works, in which hundreds of operatives, many of whom are shareholders, are employed. The number of members is 1283; the amount of capital, £74,127; and the value of the assets, £113,298; the liabilities being estimated at £112,458. In Northumberland, there is a co-operative shipbuilding company; and in other parts of the country, we have societies devoted to the manufacture of silk, chairs, boots and shoes, cigars, clothing, &c.; but at least eleven-twelfths of the total number of co-operative societies in the kingdom are simple trading associations. The others, however, form the co-operative societies proper—that is, those in which the members make or produce the various articles sold by them. The North of England Co-operative Wholesale Society, the headquarters of which are at Manchester, is a federation of co-operative societies, formed for the purpose of purchasing direct from producers, and selling wholesale to themselves; in other words, taking upon themselves the functions of the wholesale dealers. This society contains 277 members, each of whom represents a co-operative association, and has a capital of about £31,352. The amount received for goods during 1872, was £1,139,767; the net profits on the same being £11,118. One feature in most of the co-operative associations is, that a certain portion of the profits is reserved for the establishment and maintenance of reading-rooms and for other educational purposes.

Among the largest co-operative societies in England, are those at Accrington, with 2882 members, and £41,253 capital; Bacup, with 2457 members, and £44,859 capital; Bolton, with 2566 members, and £40,785 capital; Bury, with 6460 members, and £86,946 capital; Leigh, with 2502 members, and £46,569 capital; Manchester, with 4466 members, and £35,596 capital; and Halifax with 7400 members, and £171,394 capital. These form a portion only of the larger societies. Rochdale has six co-operative associations, representing 11,425 members, a capital of £276,033, and annual business to the extent of £712,576. Oldham has four societies, with 7725 members, capital to the amount of £155,969, and a yearly business of £434,145. Co-operative societies are most numerous in Lancashire and Yorkshire, and fewest in Hampshire, Herefordshire, and the agricultural counties generally. The total number of societies in England and Wales at the end of 1872 was 749, representing 301,157 members, a capital of not less than £2,786,965, and annual business to the amount of £11,397,225; the profits approaching nearly £1,000,000!

The co-operative movement has made some progress also in Scotland. At the end of 1871, there were 225 Scottish co-operative associations, the largest being those in Lanarkshire, where the Bridgeton Old Victualling and Baking Society in 1871 possessed 651 members, with a capital of £5206, and an annual business of more than £20,000. The Edinburgh Professional and Civil Service Supply Association in 1874 had over 2000 members, and its sales amounted to £56,000. The official returns, however, are so defective, that the actual condition of most of the Scottish societies has yet to be ascertained. It is believed that generally they are in a prosperous state. Most of these societies have been formed since 1860. In 1871, there were only 10 co-operative societies in Ireland, the number of members and amount of capital in each being extremely limited.

BUILDING SOCIETIES.

The origin of benefit building societies dates as far back as the middle of the last century, for, in Mr J. A. Langford's *Century of Birmingham Life*, we find recorded, under date December 3d, 1781, 'certain proposals for establishing a society for building on lands belonging to William Jennings, Esq.,' which embrace several of the features of modern building societies—monthly payments, a committee annually elected, &c. Fourteen years later, building clubs had become common in Birmingham; but the real start of these bodies was immediately after the passing of the Benefit Building Societies Act in 1835. According to that Act, a building society is established for the purpose of raising, by the monthly or other subscriptions of the several members of such societies, shares not exceeding the value of £150 for each share, such subscriptions not to exceed in the whole 20s. per month for each share, a stock or fund for the purpose of enabling each member thereof to receive out of the funds of such society the amount or value of his or her share or shares therein, to erect or purchase one or more dwelling-house or dwelling-houses, or other real or leasehold estate, to be secured by way of mortgage to such society until the amount or value of his or her shares shall have been fully repaid to such society, with the interest thereon, and all fines and other payments incurred in respect thereof.

Terminating Societies.

Mr Davis, in his useful work on the *Law of Building and Freehold Land Societies*, describes the principal characteristics of the two classes into which such societies are divided. The general principles upon which *bonâ-fide* building societies are formed seem to be the following: When the society is a *terminating one*, members subscribe monthly or other periodical sums, which are accumulated till the fund is sufficient to give a stipulated sum to each member, and then the whole is divided amongst them. But one main object is to enable members to obtain the amount of their shares by anticipation, on their allowing a discount. For this purpose, when a sufficient fund is in the hands of the society, the members who desire to get their shares in advance bid, by a sort of auction, the sum which they are ready to allow as discount; and the highest bidder obtains

the advance. Thus, if, at the end of the year, a sum of £500 is in the hands of the society, arising from the subscriptions, and the holder of 10 shares of £100 each is willing to allow a discount of £50 per cent. (no one offering more), the £500 is or may be advanced to him, being £50 in satisfaction of each of his 10 shares. For this accommodation he is bound to pay, in some societies, until a fund is raised sufficient to give all the other members the full ultimate value of their shares, not only his original periodical subscription, but also a further periodical sum, called redemption, the amount of such subscriptions and redemption money being fixed by the rules of each society. Further advances are made from time to time in the same manner, as funds are accumulated; and, as members are inclined to give high discount in order to obtain payment of their shares by anticipation, the gain to the society (that is, to those members who do not receive their shares in advance) arises mainly from the high rate of discount which members in want of money are ready to give. In order to secure the due payment of the monthly subscriptions and redemption money by the members who have received their shares in advance, they are obliged to give satisfactory security to the trustees of the society, by mortgages of real or leasehold property. If a person wishes to join the society either as an investing or borrowing member, after the society has been some time established, he is obliged, in order to put himself on an equality with those who have been members from the commencement, to pay up the amount of subscriptions paid by those members, and this, being felt to be a great drawback, has, with other causes, materially assisted in directing attention to the formation and improvement of a second class of these societies—namely,

Permanent Societies.

This class of associations generally have the same objects in view as terminating societies, but instead of being dissolved upon the completion of the shares, continue as long as business and funds can be found. The great difference between them and the first class consists in this, that whereas, in the former, a person must either become a member at the time the society is established, or else pay a large amount of back subscriptions, in the latter he may become a member at any time, without making any such payment. And the latter class offers many advantages to both investing and borrowing members, which a terminating society cannot offer. In a permanent society, the investors can always ascertain the exact length of time during which they will have to pay their subscriptions, if the regular payment be enforced by fines; and it is always comparatively easy to ascertain the amount to which any investing member, who may wish to withdraw, is entitled; whilst in a terminating society the members will be unable to calculate, with any degree of certainty, how long the society will exist, and, consequently, how long they will be required to subscribe, and it will be absolutely necessary to impose fines on those members who do not pay their contributions regularly. But it is to the borrowing member that the permanent system holds out the greatest inducements, for it enables him to extend his repayments over any fixed number of years, at his own choice, with the absolute certainty of clearing his property from the encumbrance, and freeing himself from all further liability, at the end of that time; and to feel, when he mortgages it, that he can redeem it at any time, on payment of a sum easily calculated, and that whether the society prove successful or not.

The number of building societies in England and Wales is estimated at 2000, and the number of members at 800,000. The subscribed capital is estimated at more than £9,000,000; the loan and deposit capital at over £6,000,000; the assets at £17,000,000; the advances on mortgage, £16,000,000; and the amount of annual income, £11,000,000. In Scotland there are about 150 building societies. Many of these associations have been formed by working-men, as at Hawick, where there is a society which builds houses and sells them to the shareholders, who borrow money from the society, to be repaid by instalments of 7½ per cent., spread over 22 years. The shares are £5 each, paid up by an entrance fee or deposit of 2s. 6d. and monthly subscription of 1s. 6d., and cannot be withdrawn. The society is, in fact, in the position of a limited company with a capital consisting of £5 shares fully paid. There are also many societies which only 'invest' in property already built. In Ireland the number of societies is extremely small; and the scale of operations is proportionately limited. The Starr-Bowkett system, so named after its founder, allots its capital among the members by ballot, according to the number of shares they nominally hold. The Building Societies Act of 1874 limited the liability of investors and borrowers, and the borrowing powers of the company.

MINOR ECONOMIC FUNDS.

The Rev. Lord Sydney Godolphin Osborne, whose interest in the social progress of the labouring-classes is well known, published a little work, in which he gave some account of the working of several minor economic funds established by him in a Buckinghamshire village, and which have subsequently become successfully established in many other parts of the kingdom. Among these is

The Coal Fund.

The labouring poor in most agricultural districts generally suffer from the want of coal during the winter season, especially since the great increase which has taken place in the price of fuel, and when the weather is unusually severe, it is found necessary in many parishes to subscribe to obtain for them a portion of that domestic necessary. In the village of Stoke, the poor are induced to commence in June paying one shilling a week each into the clergyman's hands, until twelve shillings have been paid. Coal is there generally from 1s. 5d. to 1s. 10d. a bushel; yet the managers of the fund undertake that each person shall have twelve bushels of coal delivered to him, during the course of winter, at his door, free of all charge—a sack of three bushels being given every three weeks four times. The extra money required is contributed by the benevolent people of the neighbourhood. Charity is here partially employed; but it is to be

remembered that the benefit is conferred upon a class who might otherwise be entirely dependent in this respect. Lord Osborne considers it a great matter that the poor are induced to contribute the larger share of the funds: their spirit of self-dependence is encouraged to that extent. In the large towns coal-clubs are extremely common. The great loss to the working-class consumers arises from their having to purchase the coal in small quantities, thereby causing its price to them to become increased at least 50 per cent. To avoid this, a number of workmen subscribe together for the purchase of a ton or upwards of coals, which is purchased direct from the wholesale dealer, and divided among the members according to the amount of their subscriptions. Many of the co-operative associations have turned their attention to the supply of coal, less for the purpose of profit, than of furnishing assistance to the members. One London firm is stated to have supplied 1050 tons of coal in a single year to members of coal-clubs and co-operative societies.

Clothing Funds.

Among the institutions started by Lord Osborne was a *Penny Clothing Fund.* In this, however, the proportion of charitable contribution is greater than in any other of Lord Osborne's schemes. The object is to encourage the poor to exert themselves to furnish decent clothing to their children. A benevolent person pitches upon some child belonging to a poor neighbour: the patron and the child each pay 1d. weekly into the fund—that is, 8s. 8d. annually. Some persons take two, three, or more children under their care. Lord Osborne speaks of 150 in all his parish being clothed by these means in one year.

Female Societies.

The *Wife's Friendly Society* is designed by Lord Osborne to enable married women of the poorest class to have a small fund which they can draw upon, to defray the expense of a proper medical attendant at their confinements, and furnish some of the comforts required on those occasions. Generally, this class of persons have no provision for such occasions, and the consequences are, that they depend on charity, and sometimes suffer from the indifference which the midwives in that case employed are apt to feel where their care is not to be remunerated. A poor woman recommended to the Wife's Friendly Society pays 2d. weekly for a year to the treasurer—the vicar's wife—making 8s. 8d. in all. To this the society, from charitable contributions, adds 2s. 10d., making 11s. 6d. If she is confined that year, she gets an order for 10s., which serves as payment for her medical attendant. The remaining 1s. 6d. serves to furnish gruel and other little comforts—a small sum for such a purpose, but better than nothing. The person who recommended the member guarantees that, after this payment is made, she will continue to pay her weekly twopences till the end of the year. Should no confinement take place, the money is spent on clothes. Female Provident Societies are numerous in the manufacturing districts.

The principle of self-help appears to have made wonderful strides in this country in modern times, and although the tendency to accept charitable aid, to rely upon the assistance of others rather than upon one's self, yet largely prevails, even to a most deplorable extent, yet no reflective person who has watched the growth of habits of self-reliance among the labouring-classes during the last forty years, can fail to note their influence in evoking feelings of a more manly and independent character among those to whom such sentiments were frequently unknown. This is as it should be. That community thrives the best in which the various members learn to rely on themselves, for, politically, socially, or morally, a man can be said to fulfil his proper function only when he trusts to his own right arm for the support of himself and family, and leans upon no one save in the general sense in which mankind are all mutually dependent.

Since the date of the foregoing, progress has been made in almost every department with which it deals. Many of the societies mentioned have been the subject of fresh legislation since this was written. In 1887 the amount standing at the credit of depositors in savings-banks amounted to little short of 100 millions of money. In 1880, when the new Savings-bank Act came into force, the rate of interest to depositors was reduced to £2, 15s. per cent.; the average rate of interest in 1887 being £2, 14s. 5d. The number of accounts in connection with Trustee Banks in 1885 was 1,592,997; the total amount due to depositors was £46,355,908. At the same date the Post-office savings-bank had 3,535,650 open accounts, representing a sum of £47,697,838: total capital of Trustee and Post-office savings-banks at that date, £94,053,846. This did not include nearly £2,500,000 separately invested in government stock, for which facilities now exist for investment in consols, reduced, or new 3 per cents. The sums invested in this way must not be less than £10, and must not exceed £100 in any one year; the total sum for any one investor being limited to £300. A novel extension of the Post-office savings-bank system was introduced in 1880 in the shape of blank forms, with twelve ruled spaces, which are issued to intending depositors, who might wish to secure their penny savings by affixing ordinary postage-stamps to the form. Postal orders are also issued from the post-office for sums varying from 1s. to 20s. at a charge of a halfpenny upwards, which are payable at any office in Great Britain. The number of postal orders issued in 1885–6 amounted to 25,790,316, the value of which amounted to £10,788,946.

The growth of co-operative and building societies has also been very remarkable. The share capital invested in co-operative societies, which was £425,000 in 1862, exceeded £9,000,000 in 1887. The co-operative societies in England and Wales in 1885 numbered 974, the number of members 681,482; sale of goods amounted to £24,723,285, yielding a profit of £2,357,635. In Scotland, 305; members, 121,386; sale of goods, £5,134,640; and profit, £523,823: Ireland had 9; members, 879; goods sold, £24,754; profit, £2008. From 637 in 1887, building societies had risen to over 20,000 in 1884, or more than threefold; the assets exceeding £50,000,000.

SOCIAL STATISTICS.

SOCIAL STATISTICS, or Political Arithmetic, is a branch of the science of Society, founded about 1750, by Achenwal of Göttingen. It furnishes facts, which give averages leading to general laws of human phenomena, as to the social condition and prospects of a nation. Social statistics are very important in Political Economy, and give the statesman facts for his guidance. Statistical inquiries include facts as to crops, industry, commerce, currency, wealth, institutions, population, births, marriages, deaths, health, disease, education, religion, crime, &c. Numerical results are obtained, and may be expressed in tables.

Statistical conclusions rest on two principles: 1. The law of *stability*, or the regular recurrence of particular phenomena, as shewn by observation; 2. the law of *variation*, or the mode and limits of human and other powers brought into play to modify human life and action and material phenomena. Thus, individual human actions, (especially voluntary), liabilities, and tendencies, present diversities, irregularities, and uncertainties; but these in a large area of cases are found to neutralise each other, as they occur in excess and defect of a mean value. They obey definite and constant laws, often complex and difficult to discover, and this is true even of the most fleeting movements of the mind. Thus, the same proportion of letters are annually posted unaddressed or unsealed, many inclosing money, &c.

Statistical investigations lead to results connected with the mathematical theory or calculus of probabilities. They conduct to averages or approximations to actualities, with a margin of variation, which is less, the greater the number of the cases from which we infer. The laws are reached especially by the inductive method of Concomitant Variations, and enable us to foresee and control the future.

Statistical calculations were first practically applied to annuities and insurances, after ascertaining the probable duration of life of a large number of human beings, so as to distribute the increased risk in exceptional lives. At first, the mean duration of human life was considerably underrated, entailing a loss on annuities, and a gain on insurances granted.

Most civilised governments collect and publish statistics. The population of the United Kingdom has been enumerated every tenth year since 1801. Since 1832, there has been a Statistical Department of the Board of Trade. Births, marriages, and deaths have been registered by law in England and Wales since 1837; in Scotland, since 1855; and in Ireland, since 1865; and Reports published. Our government also periodically publishes statistics on agriculture, trade, the census, education, emigration, health of the army and navy, pauperism, crime, public health, railways, and on many other subjects. The British Association has a statistical department, as also the Social Science Association. The Statistical Society of London, founded in 1834, has published a Journal since 1839. There is a periodical European Statistical Congress in some European city, the first having been at Brussels, 1853, under the presidency of M. Quetelet, the greatest statistician of the age. Numerous individuals have long been labouring in the same field in all countries. Such sustained efforts supply a continually broadening basis of correct statistical data, so indispensable to generalisation. In the following pages, we give the results, from reliable sources, on some of the more important elements in the life of nations.

BIRTHS, MARRIAGES, AND DEATHS.

The mean annual ratio of births, persons married, and deaths per 1000 of the population, in various countries, is as follows:

	Births.	Persons Married.	Deaths.
England and Wales (1838–1871)	33·8	16·5	22·4
Scotland (1855–1870)	34·6	13·8	21·9
Ireland (1865–1872)	26·8	10·6	18·5
France (1853–1870)	26·2	15·2	23·4
Austria "	40·2	17·1	32·4
Prussia "	39·2	16·9	28·7
Italy (1863–1870)	37·4	14·9	30·1
Spain "	37·2	15·1	29·7

In England and Wales, the annual ratio of births to 1000 of the population, 1838–71, has varied from 30·3 to 35·8; of persons married, from 14·7 to 17·9; of deaths, from 20·5 to 25·1. In the British Isles, the ratio of births to the population is now greater, and the deaths less than formerly, and the births have always exceeded the deaths. Compared with Britain, the above table shews a low birth-rate in France, and high death-rates in Austria, Prussia, Italy, and Spain.

The ratio of births, marriages, and deaths also varies with the temperature of the seasons, the state of trade, the price of food, the occupations, hopes, fears, enjoyments, sufferings, and density of the people, &c. There are more marriages and births, and fewer deaths, in fine seasons, and in long periods of cheap food, plentiful work, high wages, brisk trade, high consols, and low interest; the reverse in opposite conditions; but in general, many births, many marriages, and many deaths accompany each other. In England and France, most births occur from January to May. In England, most marriages occur in the three months after harvest, especially in the rural districts, and there are three marriages in the last quarter of the year to two in the first. In France, most marriages occur in February, during the Carnival; and fewest in March, during Lent. In English towns, and manufacturing and mining districts, where wages depend less on the seasons, the autumn excess of marriages is less. In London, most marriages occur in the third and fourth quarters. Most deaths occur in the cold months—January to May, and fewest in the warm

season—July to September; but they sensibly increase in France towards the end of the great heat in August and September. The aged succumb most in great cold, and infants in great heat, as in France. In England, there were few marriages during the commercial depression towards the end of 1842, and they also became fewer after the potato rot of 1846. In the great scarcity in England in 1799–1800, marriages were 18 per cent. fewer than in previous abundant years. Even the commercial failures in the end of 1857 made sensibly fewer marriages in December than in the same month in 1855 and 1856. After a longer time, scarcity and commercial depression are followed by fewer births. In Scotland, as in England, most births occur in the second quarter of the year, most marriages in the last, and most deaths in the first.

The birth, marriage, and death rates increase with the density of the population, being lowest in agricultural, and highest in manufacturing and mining districts, and in towns. In Scotland, 1855–70, to 1000 of the population the annual variation, in insular districts, of births was from 22·7 to 31·6; of persons married, from 8·8 to 1·16; and of deaths, from 12·9 to 18·5; in mainland rural districts, 30·7 to 34·0, 11·0 to 12·4, 16·5 to 20·0; and in town districts, 34·0 to 39·4, 15·6 to 18·8, 25·2 to 29·6. In England and Wales, 1861–70, the mean annual death-rate to 1000 persons living was 24·8 in 130 districts and 59 sub-districts, and only 19·7 in the remaining districts and sub-districts, comprising chiefly the small towns and country parishes. During the same period, while the mean annual birth-rate in 1000 of the population of all England and Wales was 35·2, it varied in the counties from 30·2 in Westmoreland to 42·0 in Durham. In London and other 19 large towns in the United Kingdom, to 1000 persons living in 1871, the birth-rate varied from 33·3 to 44·1, mean 36·0; and the death-rate from 19·3 to 36·5, mean 26·9.

We now enter into more detail as to births, marriages, and deaths.

Births.

Proportion of the Sexes.—In Europe, says M. Quetelet, about 106 males on an average are born to every 100 females, but the excess of males is afterwards decreased by their greater death-rate. In England and Wales, the ratio has been for many years 104 males to 100 females; only twice, 1852–71, has the ratio reached 105 to 100, and only twice has it been under 104 to 100. In Scotland, the mean ratio of male to female births, 1855–70, was 105·5 to 100, and in illegitimate births 106·4 to 100. In France, 1817–60, these ratios were 104 to 100, and 105 to 100 respectively. Thus proportionally more males are born out of, than in, wedlock. A country life also favours male births. At the Cape of Good Hope, female births predominate among the free inhabitants, and male births among slaves. Within certain limits, the sex of the child is oftener that of the older parent; thus, there is a less overplus of boys when the husband is older, and when both parents are much under 20 years of age. From peculiar causes, the annual ratio of male to female births varies in different divisions of a country. In England and Wales, 1861–71, in the different counties, the annual ratio of male to female births varied most in Rutland, the extremes being 94·3 male to 100 female births in 1868, and 123·5 to 100 in 1870.

Number of Births to a Marriage.—Fertility denotes the number of children born in a population, and includes fecundity, which is the capability of bearing children. The number of children born to married women increases from the age of 15 to 25, and then decreases, and rapidly so after the age of 40, on to the end of child-bearing life, soon after the age of 50, though child-bearing has been recorded at the age of 60. At least 7 in 8 children are born to women of the ages 20–40, and 3 in 5 are born of women under 30 years of age. In Sweden, marriage is generally four years later in life than in Scotland; and most children are born to women of ages 30–35 in Sweden, but to those of ages 25–30 in Scotland. In England, there are on the average 5, and in Scotland, 4·5 births to a marriage, and in France, only 3·2. Of wives, 100 of ages 15–55 bear yearly in England and Wales 22 children, and in France 15. Early marriage hastens sterility. Some females bear 20 to 30 children.

The nobility and higher ranks of a country have fewer children than the other ranks, and many of their marriages are unfruitful; hence the extinction of many noble families in all ages. The marriages of English peers yield on the average 4·4 children, when the female is married under the age of 16, and the children to a marriage increase to 5·43, when she marries from the age of 24 to 27. The families of peers marrying heiresses, soon die out, as an heiress is generally an only child, and transmits a tendency to produce few or no children.

Plurality of Births.—Women normally bear only 1 child at a time. But a woman may conceive 2 to 5 children in one pregnancy; not above 4 of these have been born alive at one lying-in. European statistics shew 1 pregnancy in about 81 to produce twins; 1 in 7271 to produce triplets; 1 in 160,000, quadruplets. Among idiots and imbeciles, and their relatives, a much higher ratio of children are twin-born than in the general community, and twinning is often accompanied with deformities. Newly married women are more likely to have twins than others, and women of the ages 25 to 29 have most twins. Twins are oftenest of opposite sexes, and twin-males are more frequent than twin-females.

Pathology of Births.—Of births, 10 in 11 are natural, or require no artificial aid; 1 in 20 require surgical aid. One pregnancy in 78 is followed by abortion, and 1 in 22 by a still birth. Still births are comparatively more frequent in cities than in rural districts; in first pregnancies than in subsequent; in male than in female children, males being larger; in illegitimates than legitimates. Abortion or miscarriage is more frequent among the higher ranks, from their luxuriousness, sensitiveness, and excitability, than among the hard-working, though the latter are more exposed to accidental causes of abortion. The mean yearly deaths in England and Wales, 1847–71, of women in childbirth, was 49 to 10,000 children born alive. The mortality of women in childbirth at the ages of 25–35, 35–45, 45–55, is in the ratio of 2, 3, and 4.

Legitimate and Illegitimate Births.—Illegitimate children become generally less healthy,

vigorous, and happy than those born in wedlock. They are often a public burden, and have less chance of becoming useful citizens. Their paucity in a community may arise from two opposite causes—high moral purity, or extreme licentiousness. Of the total births in England and Wales, the annual average of illegitimate births declined from 6·7 per cent. in 1845–50, to 5·6 per cent. in 1869–71. In the different counties of England and Wales, 1845–71, illegitimate births varied from 3·9 per cent. of the total births in Surrey (extra-metropolitan) to 12·1 in Cumberland. Illegitimate births are proportionally fewest in the districts south of the Thames occupied by people of Saxon descent; they are more numerous in Wales, and what was ancient Mercia; and most occur in Cumberland and Westmoreland. For all England and Wales, 1000 married women, of the ages 15 to 55, bear yearly 220 children, and 1000 unmarried bear 16. In Scotland, 1855–70, to 100 births the annual illegitimate rate decreased from 18·6 to 10·6, in the mainland rural districts, and varied from 4·3 to 6·6 in the insular, and from 7·1 to 9·8 in town districts. Only 3·2 per cent. of the annual births in Italy, where marriage is early, are illegitimate. In France, 1817–60, the yearly average of illegitimate births was 7·8 per cent. of the total births. But other European countries have a higher illegitimate birth-rate; it is high in Austria, and even 25 per cent. of the total births in Würtemberg and Bavaria. In cities, the illegitimate birth-rate is often very high. It is said to be 50 per cent. of the total birth-rate in Lisbon and Stockholm; 33 per cent. in Berlin, Vienna, and Naples; 25 per cent. in Milan and Copenhagen; and 20 per cent. in St Petersburg and Turin. In London, 1852 to 1871, it averaged only 4 per cent. of the total births. In the eight chief Scotch towns, 1870, it varied from 5·1 per cent. in Greenock to 12·3 per cent. in Aberdeen. Continental foundling-hospitals encourage illegitimacy.

Birthplace of the People.—Most people do not remain all life fixed to their birthplaces, but move from house to house, from town to town, and from country to country. The people of the British Isles are especially noted for wandering over the earth. Seats of industry and trade are constantly receiving people from rural districts. Of 100 inhabitants of England and Wales in 1871, 95 were native born, 3·5 were born in the rest of the British Isles, and 1·5 in other countries. Of 100 inhabitants of London in 1871, 63 were born in it, 30 in the rest of England and Wales, 1·2 in Scotland, 2·8 in Ireland, and 3 in the rest of the world. London contains natives of all parts of the British Isles, and from all the chief countries of the world. Of the 4,500,000 inhabitants of the other 62 chief cities and towns in England and Wales, 93 in 100 were born in England and Wales, 1·5 in Scotland, 4·5 in Ireland, and 1 in other countries. In 1851, of 100 inhabitants of Scotland, 1·6 were born in England, and 7 in Ireland. Proportionally to the populations, a great many more Scotch go to England than English to Scotland; but the population of Scotland contains proportionally many more English than that of England contains Scotch. The Irish have, of late years, migrated in large numbers to Scotland. In the 58 years 1815–72, 7,561,285 emigrants, mostly in the prime of life, left the United Kingdom, in the ratio of 27 to the United States of America, 13 to British colonies, and 1 to other places. Of the 6·8 million Europeans, mostly in the prime of life, who emigrated to the United States, 1820–70, 3·8 millions were from the British Isles, and 2·3 millions from Germany.

Marriages.

Ratio to the Population.—To every 1000 persons living, the mean annual ratio of persons married, over Europe, is 16·1, variation 14·0 to 22·2; in England and Wales, 1838–71, 16·5, 14·4 to 17·9; in Scotland, 1855–70, 14·14, 12·9 to 14·8; in France, 1817–60, the mean ratio was only 8.

Many conditions vary the number of marriages in a community. Above a certain point of education, comfort, and respectability, the desire of marriage is less, if it were to lower the two latter. The desire is greater in a dense population, especially among operatives, than in a scattered one; and it is greatest in the half-destitute class. An increased marriage-rate is generally attended by an increased death-rate, especially in children. Early and improvident marriages, and bastardy, are both above the average for all England in the northern and mainland, and in the mining and agricultural counties; but below the average in the metropolitan and south maritime counties. Improved trade increases improvident marriages and bastardy in manufacturing and mining districts. To every 1000 persons living in Scotland in 1870, there were 46 marriages in the insular districts, 60 in the mainland rural, and 89 in the town. In England and Wales, 1871, first marriages on both sides were 82 per cent. of the whole; first marriages only on one side, 13 per cent.; and remarriages on both sides, 5 per cent. In England and Wales, 1861–71, 356 divorced persons married, in the ratio of 5 men to 4 women.

Age of Marriage. — This influences public manners, and the number, character, and vigour of the offspring. In England and Wales, the mean age of first marriages is 25·7 years for the male, and 24·3 for the female, and the mean age of all marriages, 1st, 2d, &c. is 26 years for males, and 25 for females. Of first marriages, 8 in 10 are between the ages of 20 and 30, when the body is full grown and matured. In France, 1866, the mean age of first marriages was 29·9 years for males, and 24·8 for females. The ratio of the married in a community increases with the ages of the individuals. Thus, in every 100 persons living in England and Wales, from 0·4 male under the age of 20, to 81 of the ages 45 to 50, are married; and from 2·5 to 75 females at those ages. After the age of 50, death rapidly dissolves marriages; and after the age of 80, only 37 men in 100 have wives living, and only 12 women have husbands living. During the last 70 years in England and Wales, of 100 couples married at the age of 25, 54 are found to live 25 years together, and nearly 7 live 50 years together. The marriages of minors, or persons under the age of 21, in England and Wales, to every 100 marriages, increased from 14·3 in 1841 to 16·6 in 1855, and 29·8 in 1871. Nearly three times as many female minors marry as male. Of married couples in England and Wales, the mean lifetime of a surviving husband is 9·4 years, and of a surviving wife 11·3, and the mean duration of the

longest life is 47·8 years. There would thus be 27 married couples to 9 widowers and 11 widows; but re-marriage reduces the widowers to 3, and the widows to 6, a fact of much social importance. In the British aristocracy, bachelors delay marriage much longer than in the general population. This is also the case among officers in the Indian service; and the older they are before marriage, the younger are their wives.

In 1861 and 1871, in England and Wales, 1 in about 2·8 of the population were living married. In England and Wales, 1871, of married men in 100 of the general population, there were at the following ages: 23 at ages 20–25; 60 at 25–30; 75 at 30–35; 82 at 35–40; 83 at 40–45; 84 at 45–50. About a sixth fewer Scotch are living married, than English. About 4 in 6 of the males, and 4 in 7 of the females, in Great Britain are living married. Never above 3 in 4 females of any age are married, but 4 in 5 males of the age of 45–50 are married. Husbands are to widowers as 9 to 1 in England and Scotland; and wives are to widows as 4 or 5 to 1 in England, and 3 or 4 to 1 in Scotland. On comparing the conjugal conditions of England in 1871 and France in 1866, we find that in every 100 of the population of the age of 20 and upwards, there were in England and France respectively 27·10 and 28·68 bachelors; 66·10 and 63·37 husbands; 6·80 and 7·95 widowers; 25·80 and 23·71 spinsters; 60·60 and 61·33 wives; and 13·60 and 14·96 widows. Males while serving in the army and navy marry in far less ratio than those in civil life. In the army, 1 in 4 officers, and 1 in 6·6 men, marry; and in the navy 1 in 3·3 officers, and 1 in 4·2 men. In Britain, 1851, the mean age of the wife was 40·65 years, and of the husband, 40·05. Of ages at and above 20, 1 in 10 men, and 1 in 8 women, never marry.

Deaths.

The duration of life of the individual human being is proverbially uncertain, but from the recorded ages at death of a multitude of persons, can be predicted the average lifetime of those still living. This gives the law of mortality, or numerical relation between the number of persons living at any assigned age, and the number remaining alive at every subsequent age, and so the number dying in the intervals. This law varies with the observed causes of the mean duration of life, such as climate, soil, civilisation, food, clothing, progress of medicine, sanitation, &c. Ignorance, incautiousness, and accident constantly expose man to conditions destructive of life, and in large bodies of men these operate regularly.

Rate of Mortality.—In England, during the period 1690–1820, the ratio of deaths to the population fell no less than two-fifths. This decrease of mortality arose chiefly towards the end of the period, from the introduction of vaccination. The annual mean mortality rate in England and Wales, 1838–71, was 22·4 in 1000 persons living; extremes 20·5 and 25·1; and in Scotland, 1855–70, mean 21·9, extremes 19·5 and 23·5. The mortality of France fell from 36 in 1000 of the population in 1775 to 23 in 1845; the annual mean, 1853–70, was 23·4, and extremes 21·7 and 28·3. From records for various periods, 1817–55, the mean annual mortality of 1000 of the population was 20 in Norway, 22 in Denmark, 23 in Sweden, 29 in Holland and the north of Russia, 25 in Belgium and Switzerland, and 33 in Italy, Turkey, and Greece. In New Zealand, the mean annual mortality, 1860–71, was only 12·6 in 1000 of the population; and it was 18 in 1871 in New South Wales. For males, the mean annual mortality rate in England and Wales, 1838–71, was 23·3 in 1000 living; and for females 21·5. In France, 1817–60, it was for males 24·3, and for females 23·6. In the following large cities, the mortality in 1000 of the population was, in 1871—In London, 24·7; Portsmouth, 19·3; Liverpool, 35·1; Sunderland, 36·5; Calcutta, 24; Madras, 30; New York, 29; Rotterdam, 34; Haarlem, 24; Amsterdam, 29.

Mr B. Gompertz, F.R.S., in 1820, gave a physiological theory of mortality or duration of human life. Assuming that the power of the body to resist destruction or disease loses equal proportions in equal successive small intervals of time, he derived in terms of three constants (determined by observation, and subject to nearly sudden changes), the number of survivors of any number of persons of any given age, at the end of any number of years from that age. This theory gives a mortality table for all ages, approximating to the mortality tables based on observation alone. But many causes influence the rate of mortality of a people, and for practical purposes, as in insuring lives, we must trust not to an *a priori* theory, but to tables shewing the observed ratio of the number of subsequent annual deaths among a large number of persons who have entered a given age. This ratio is the law of mortality of that age, or the probability that a person entering that year of age will not survive it.

New English Life and Mortality Table.—This table, published in 1864, was deduced by Dr W. Farr from the ratio of the population living in England and Wales at the censuses 1841 (15,914,148) and 1851 (17,927,609) to the 6,470,720 deaths at different ages registered, 1838–54, in the same country. The base of the table is 100,000 children born alive during these 17 years, in the ratio of 51,174 males to 48,825 females, and the rates of mortality and survivorship are given for each successive period of life. The following extract gives, for a few years of life, the number of males and females living, or attaining the years of age noted, to every 100,000 births; the number of males and females of the population who die in those years; and the mean or expected after-lifetime of the survivors at those years. Age means past lifetime.

ENGLISH LIFE AND MORTALITY TABLE FOR 100,000 BIRTHS.

Age.	Number Living.		Number Dying in Year.		Mean After-lifetime in Years.	
	Males.	Females.	Males.	Females.	Males.	Females.
0.....	51,174	48,825	8372	6577	39·9	41·8
1.....	42,803	42,248	2752	2616	46·6	47·3
5.....	37,036	36,646	503	487	49·7	50·3
10.....	35,303	34,948	198	204	47·0	47·7
20.....	33,361	32,914	276	282	39·5	40·3
30.....	30,453	29,919	307	316	32·8	33·8
40.....	27,207	26,651	353	340	26·1	27·3
50.....	23,322	23,106	439	375	19·4	20·8
60.....	18,235	18,748	593	541	13·5	14·3
70.....	11,437	12,361	769	749	8·4	9·0
80.....	4,111	4,902	583	638	4·9	5·3
90.....	477	674	126	167	2·8	3·0
100.....	8	14	3	6	..	..

This table shews many interesting points, discovered by observation, as to the lives of persons born in England and Wales, supposing no emigration, and no excess of births over deaths. Like ratios apply to every intermediate year of life. Of a certain number of children born alive, a variable number live on to die at different ages, and the survivors become fewer and fewer each successive year, till all die. 104 males are born to 100 females, but 92 females of all ages die to 100 males; thus, females live longest. To the number of persons living, the death-rate is highest in infancy and old age. While 1 in 44 living at all ages dies in the year on the average, 1 in 6 dies in first year of age (1 in 3 a century ago). Above half the children of the working classes, but only a fifth of those of the upper classes, die before the age of 5. The higher ranks rear proportionally more of their children than the lower; and thus the former include proportionally more feeble youths and adults. 1 in 14 of all children under the age of 5 dies yearly, and 1 in 7 died a century ago. The death-rate declines from birth to the age of 13, when it is only 1 in 204 of the living, the least for any age, and little above a fifth of the mean for all ages. It is much less for the quinquennial period 11–15 than for any other. It then gradually increases to the age of 55, when 1 in 43 living dies. By this time the generation has reared the next to replace it. After this, the death-rate rapidly increases, and more than doubles every ten years. At the ages 65 to 75, it equals that in infancy, and after 75 it is greater. The death-rate remains under the mean for all ages between 5 and 55. Females of all ages have a better chance of living, or have a longer after-lifetime than males. Even the dangers of child-bearing are less than those incident to males of like ages in common life.

The following table shews the mean annual mortality in 100 living of males and females of all ages, and of 12 different ages in England and Wales, 1838–71:

Ages.	Males.	Females.	Ages.	Males.	Females.
All	2·33	2·15	45	1·85	1·56
0	7·26	6·27	55	3·20	2·80
5	·87	·85	65	6·71	5·89
10	·49	·50	75	14·71	13·43
15	·78	·80	85	30·55	27·95
25	·99	1·01	95 &c.	44·11	43·04
35	1·30	1·23			

This table has been deduced from the registered deaths during these years, compared with the numbers and ages of the population at the censuses. It shews that more males than females die before the age of 15, and after that of 35, but the most females die between these ages.

The expectation of life, or mean after-lifetime of males at birth in England, is 39·9 years, and of females 41·8. It is highest at the age of 5 (49·7 years in males, and 50·3 in females); and at this age, and for some years before and after, it is higher than at birth. The expectation of life varies in different counties and cities; in London, at birth, it is 27 years. The great majority of the people have only two-fifths of the years attained by those in good conditions of life.

Longevity.—Human beings in favourable conditions live, in a few cases, even 100 years and more. In England and Wales, in 1861–71, an annual average of 21 males and 57 females were registered as having died at ages of 100 to 109; but registrars have no authority nor time to investigate the truth or not of these great ages. Mr W. J. Thoms found only 4 cases proved in 30 of alleged centenarianism. The greatest age at death, on documentary evidence, of any life insured in this country was 103. There is no satisfactory proof of the alleged higher ages, as 130 or 150, at death of individuals in recent times.

Mortality, Rank, and Occupation.—Observation shews that at the age of 30, the expectation of life of a clergyman is 35 years; of an agriculturist, 40; of a sovereign, 22 or 23. The average reign of sovereigns is as the expectancy of life at their succession. Their mean age at succession is higher, and their reigns longer, if elective than if hereditary. As a class, sovereigns are short-lived, but they have lived longer and longer since the 13th century. On the average, 38 German sovereigns have reigned 19 years; 41 Swedish, 18; 50 Russian, 15; and 35 English, 22; their mean age at succession being 30 years. Of 156 popes, 800–1823, each reigned on the average 6·5 years. Of 675 English peers, the mean age at succession was 30 years, and the mean duration of their peerages 26 years.

In the higher ranks, life is shortened by self-indulgence and want of healthy mental and bodily exertion. Of 53 English sovereigns, only 3 have lived beyond the age of 70; they died at the average age of 53, or 11 years under the present expectancy of life of English adults at the age of 30, the mean age at succession of English sovereigns; 20 of them died by violence, and only 1 of old age.

In England, 1839–41, out of 25,000 deaths in certain towns and counties, among the gentry and professional persons, 1 in 3·5 died under the age of 20, 1 in 4 of the ages of 20 to 60, and 1 in 2·2 above the age of 60; among farmers, tradesmen, &c. 1 in 2, 1 in 3·5, 1 in 5 at these ages; and among agricultural labourers, artisans, and servants, 1 in 1·5, 1 in 4, and 1 in 8. The deaths were chiefly at the ages 34 to 52 among the gentry and professional men; at the ages 22 to 48 among farmers and tradesmen; and ages 15 to 34 among labourers, artisans, and servants.

The comparative healthiness of occupations among the lower ranks in London is given by Dr Letheby for 1855–56, the mortality being in the direct ratio of the confinement and roughness of the work. At and above the age of 20, the mortality of males of all ranks was 1 in 44 living; butchers, fishmongers, poulterers, shopkeepers, merchants, 1 in 62 to 1 in 66; tailors, weavers, shoemakers, printers, compositors, 1 in 43 to 1 in 50; wine-dealers, publicans, waiters, porters, messengers, 1 in 38 to 1 in 41; blacksmiths, gas-fitters, painters, glaziers, dyers, bargemen, watermen, 1 in 33 to 1 in 36; cabmen, draymen, hostlers, carmen, stable-keepers, 1 in 32; clerks, needle-women, 1 in 28 to 1 in 29; hard-working carpenters, masons, labourers, 1 in 22 to 1 in 23. Again, in London, adult males in general die at the mean age of 51; merchants, shopkeepers, domestic servants, at 57; butchers, poulterers, fishmongers, at 53; painters, dyers, costermongers, hawkers, bargemen, watermen, at 48 or 49; printers, compositors, at 45; bakers, confectioners, at 42. Most *adults* of other classes live to the ages of 50,

51, 52. The wives of these classes live to like ages, but the widows of labourers often live to great ages in workhouses. *Adult* females die at the mean age of 55 in London, and at that of 60 or 61 in all England, and the influence of occupation on their mortality, when unmarried, is less striking, except that adult needlewomen die at the mean age of 40.

Dr Farr shews the comparative healthiness of different industrial occupations in England, from the mortality of males at and above the age of 20 in these industries in 1851, compared with the persons enumerated in them at that census. While the general rate of mortality in England, 1851, in 1000 males living at and above the age of 20, was 20; that of 1000 farmers living was 28; shoemakers, 18; weavers, 17; grocers, 11; blacksmiths, 18; carpenters, 19; tailors, 19; labourers, 21; bakers, 17; miners, 15; butchers, 21; innkeepers, 20. Farmers live longest; though much exposed to the weather, they have pure air, daily outdoor exercise, and good fare. Chiefly from intemperance, irregular sleep, and contagion from intercourse with all sorts of people, the mortality of inn and beershop keepers, in all decades of life, exceeded that of all the other classes, except butchers of the ages 55–65. From intemperance, slaughter-house effluvia, and too much animal food, the mortality of butchers was far above that of any other class, except innkeepers, under the age of 65. Bakers of the ages 35 to 65, and miners and blacksmiths at advanced ages, died in undue ratio. Tailors died in considerable numbers at the ages 25 to 45. Each occupation has its peculiar dangers and advantages, which cause a nearly equal mortality in many. Thus, the tailor is free from the explosions so fatal to the miner, but wants the exercise of the labourer.

Mortality in the Army and Navy in Peace and War.—Soldiers, though picked men, living in costly barracks during peace, are nearly as unhealthy as the people of our worst cities, and often almost twice so. Their excessive mortality has been due to ill-ventilated and overcrowded barracks and military hospitals, too great sameness of diet, and want of healthy exercise; hence the great expense in recruiting. While the mean mortality of the English male population, of the ages 15 to 40, is 9·7 in 1000 living, the average annual mortality of the British army at home and abroad, 1861–70, was 16·17 in 1000; of British navy, 1856–72, 14; and of merchant-seamen at sea, 1852–71, 21·3; of soldiers, 97 per cent. are between the ages 15–45; and the mean age of the men in the three services is 26 to 28. The dangers in the navy are 4 times, and in the merchant-service 15 times as great as those on land. Two in three deaths in the navy are from disease, but, in the merchant-service, from injury and accident, including drowning. The death-rate in 1000 of the Austrian army was 31·5 in 1859; 12·6 in 1863; 18·4 in 1866; 6·4 in 1870.

The annual death-rate, from all causes, in the British army, 1793–1815, was 56 in 1000, but in the troops in active service, 165. Nearly 3 in 7 of war-deaths occurred in the last three of the 23 years; 49 in 1000 troops died yearly of disease, while only a mean of 9·7 in 1000 males of military age now die yearly in England. By the war 1793–1815, the British population lost 8000 men in the prime of life yearly out of an annual average of 198,000 soldiers, and 110,000 sailors. The British navy, 1793–1815, lost 176 yearly in 1000; but, 1820–40, only 16 yearly.

The mean constant sickness in the British army in the Peninsular campaigns was 209 in 1000 men, only 15 in 1000 being laid up from wounds; and in the French army, 130 in 1000 were constantly sick. On an average in England about 20 males in 1000 of military age are constantly medically sick. In the Peninsula, 3 officers were injured in battle to 2 privates, but only 2 officers died of wounds to 3 privates, and 8 officers died of disease to 5 privates. In ten weeks, our army at Walcheren, 1809, lost 640 in 1000 privates, and 181 in 1000 officers. In the Waterloo campaign, 1815, the allies lost 159 in 1000 men. In the British army in the Crimea, October 1854 to September 1855, 37 in 1000 soldiers died, besides those killed in action; while only 1 in 13 of the hospital admissions, and only 1 in 15 of the deaths, arose from wounds or injuries, the rest being from disease, and insufficient food, clothing, and shelter. At Borodino, 1812, the French lost in killed and wounded 211 in 1000 men. On the average, 1861–70, in 1000 British troops, 16·2 died annually at home and abroad; but only 9·4 in 1000 died at home; 50·4 were constantly non-effective from sickness at home and abroad, 46 at home, 30 in Canada, and 81 in India.

Accidents, Suicides, &c.—On railways in the United Kingdom, 1840–43, 1 passenger was killed in 944,550, and 1 injured in 22,160; in 1851–56, 1 in 16,168,449, and 1 in 458,370; in 1871, 1 in 17,619,784, and 1 in 139,500; all in circumstances beyond their own control, and exclusive of season-ticket holders. The ratio of railway servants killed and injured on the lines far exceeds that of passengers. In 1872 there were almost daily 4 or 5 railway servants killed or seriously injured on the railways in the United Kingdom. Around the British Isles, 1851–56, a yearly average of 724 persons were lost by shipwrecks and ship collisions; in 1870, 774 were so lost, or 1 in 7 of the persons imperilled in the shipwrecks or ship collisions. Of our coal-miners, 1 in every 318 was killed in the ten years 1851–60, and 1 in every 388 in the ten years 1861–70. In the three years ending June 1872, in the streets of London, 382 persons were killed, and 6890 injured. In England and Wales, 1861–70, the annual rate of deaths by lightning was 6·50 in 10 millions living.

In England, 1858–71, the annual number of suicides was very uniform, the variation being from 62 to 73 in 1,000,000 of the population, or on the average 1 in 15,000. In Scotland, 1870, there was 1 suicide in 25,088 of the population. In late years the yearly suicides were 1 to 92,375 inhabitants in Sweden; 1 to 8446 in Saxony; 1 in 34,246 in Russia; 1 in 15,000 in the United States. In Paris, 1 suicide occurs in 2700 citizens; in St Petersburg and London, 1 in 21,000. Most English suicides are by hanging, fewer by cutting, stabbing, and drowning, and fewest by poisoning, shooting, &c. Many of the suicides in France are by charcoal fumes. The suicide-rate in 10,000 men in Austro-Hungarian army is 8·5; in Prussian, 6·4; in Belgian, 4·5; in French, 4·9; in English, 3·8; and only 1·09 in the male civil

population of England of the ages 20 to 45. Thus fewest suicides occur in the British army, in which there is no conscription or forced service, and forced withdrawal of men for a time from the general occupations of life. Most suicides occur between the ages of 20 and 35, and are connected with temporary or permanent mental derangement.

Variation of the Mortality Rate with Density of Population, Locality, and Climate.—Under present imperfect sanitation, mortality increases in all countries with the crowding of the people together; but a more insalubrious or damper site, more overcrowding, a virulent or passing epidemic, or a strike, may produce a higher death-rate in a smaller than in a much larger town. In England and Wales, in the rural and small town districts, containing nearly 10,000,000 inhabitants, the death-rate in 1871 was 19·5 in 1000 living; and in the urban or great town districts, containing nearly 13,000,000 inhabitants, 25·0; the yearly average for all England and Wales being 22·6. In England, in the country, there is 1 person to above 4 acres, and in the towns above 24 persons to 4 acres. In Scotland, 1855–70, in 1000 living there died annually 25·7 to 30·7 in the chief towns, 22·3 to 26·3 in the large towns, 19·6 to 23·7 in the small towns, and 15·0 to 18·3 in the rural districts. As to the mortality of children, England is intermediate between Norway, in the cold north, where it is lowest, and Italy, in the warm south, where it is highest. The deaths of children are 40 or 50 per cent. of all the deaths in towns.

In the healthiest parts of England, only 17 in 1000 living die annually, hence any higher death-rate is as unnatural as if the persons were purposely killed by their fellows, and is preventable by proper sanitation. In London, in the 16th century, the mean duration of life was only 20 years (now 37), and 50 in 1000 living died annually (now 24·4). For one preventable death, there are 30 or more preventable cases of sickness or disease of varying duration, and probably half the poor-rates go to relieve preventable illness. In England, above 140,000 die yearly from preventable causes, and twice the number are constantly suffering from diseases absent from healthy localities. Life is long and healthier the better the food, the less the indoor confinement, the more commodious and cleanly the houses, and the more provident and virtuous the habits.

Mortality in Large Towns.—The death-rate at all ages is much greater in towns than in the country. The mean death-rate in 1000 persons living in 1871, was 27 in 20 of the largest towns, including London, in the United Kingdom, and containing above 7,000,000 people; 26 in 1000 in 17 of the largest English towns, and 50 other large town districts containing above 8,700,000 people; and 21 in the rest of England and Wales. Of the deaths, 6·5 in 1000 arose from the seven chief zymotic diseases in the largest towns, 5·3 in the 50 other large towns, and only 3·4 in the rest of England and Wales.

The death-rate, in 1871, in 1000 persons living in large towns, was 19 in Portsmouth; 20 in Dover, Chatham, Cheltenham; 23 in Hull, Bristol; 24·6 in London; 26 in Dublin; 27 in Edinburgh; 31 in Manchester; 32 in Newcastle; 33 in Glasgow; 35 in Liverpool; and 37 in Sunderland. The last three were the highest death-rates in large towns. In the 17 largest English towns, in 1871, of the total deaths, 26·2 per cent. were of infants under one year old, and 18·2 per cent. of persons 61, &c. years old; 5·8 per cent. of the deaths involved inquests; and 3·2 per cent. were from violence. The constant influx of healthy adults into towns from the country, especially females, many of whom live in health and comfort as domestic servants, keeps down the mortality of the citizens of the ages 15–35. In London, the annual mortality of women of this age is only 6 in 1000; but in the counties around, 7 to 8; among men in London of like ages, it is 8.

London covers 122 square miles, and is the largest city in the world. The population increased from 2,362,236, in 1851, to 3,254,360, in 1871; but that of the City proper, 1 square mile 48 acres, decreased from 127,869 to 74,897; while above 729,000 persons, including above 170,000 mercantile, commercial, and professional men, enter this part of London daily on business, and leave it before night. London has on an average 7·8 persons to a house, and 41 to an acre; and they live at a mean height of 39 feet above high-tide, and from 11 feet below to 429 above it. London is healthier than the average of the other large English towns. Its yearly death-rate has fallen from 50 in 1000 living in 1750, to a mean of 24·31 in 1840–70. This is under the mean, 26, of the other large English towns, and above the mean, 22·4, of England and Wales. The death-rate is above the mean in the eastern, central, and southern parts of London, which are also the poorest, densest, and dirtiest; and below the mean in the northern and western parts, or the richest, least dense, and cleanest: In 1871, it was 25·1 in 1000 living in the former, and 22·8 in the latter, the mean for all London being 24·7. The birth-rate is also highest, 36 in 1000 living, in the unhealthiest districts, and lowest, 30, in the healthiest. Drainage in the southern districts has in the three decades, 1840–70, reduced the death-rate there from 26·2 to 24·4, to 23·2 in 1000 living. Of the total deaths in London, 1856, 40 per cent. were of infants, and in 1871 only 23 per cent. In an average healthy year, in 100 deaths of all ages in London, 25 are under 1 year of age; 29 under 5; 25, 1–15; 25, 15–55; and 25 above 55. The high mean health of London is due to the few deaths of ages 10 to 35; below and above these ages the death-rate is much above the average of the rest of England. The chance of death in London and other large cities is 40 per cent. above that of some English counties. In the 17th century, most deaths occurred in London in July, August, and September, from diseases of hot weather, as the plague and dysentery; now fewest occur in these months, and most in December, January, and February. Epidemics are frequent in the lower parts of London, but rare in the higher. London, 1840–70, had ten smallpox epidemics, which killed 25,061 persons. Scrofula, tabes, and hydrocephalus cause 95 in 1000 deaths of infants in London, but only 36 in the rest of England.

In the eight chief Scottish towns, 1860–69, the mean annual death-rate in 1000 living was 31·39 in Greenock; 30·67 in Glasgow; 28·78 in Dundee; 28·00 in Paisley; 25·85 in Edinburgh; 25·23 in Perth; 24·94 in Aberdeen; and 23·95 in Leith.

Glasgow is one of our unhealthiest towns. The death-rate in 1000 living was 25 in 1821, 33 in 1831, 23 in 1838, 28 in 1856, and 29·9 in 1873. In

1872, the death-rate in the 24 districts of the city varied from 19 to 39 in 1000, mean 28·7 ; and the deaths under the age of 5 were 45 per cent. of all the deaths. In 1832, cholera added 10 per cent. to the deaths. In the two years ending September 1872, an epidemic of relapsing fever attacked some 15,000 persons. The high death-rate in Glasgow and some other towns arises from the hordes of miserable people, as the Irish, in the worst parts of the towns.

In Edinburgh, in 1000 living, 29 died on the average annually, 1780–89 ; 28, 1790–99 ; 25, 1800–29 ; 28, 1830–39 ; 28, 1840–49 ; and 25, 1860–69. The death-rate in this and other of our great towns increased after the immigration of the Irish, who, in 1847, formed 9 in 10 of the paupers in Edinburgh.

The Seasons and Mortality—'A green Yule makes a fat kirkyard ;' but a mild and fine winter wards off disease, and prolongs life, especially of the weak. Cold following exceptionally mild weather, kills off at once the weak, who had been lingering on, and so crowd the kirkyard. The death-rate is increased not only by exceptional cold, but varies with the ordinary changes of temperature of the seasons ; and so do disease and sickness. The annual mean quarterly death-rate, to 1000 persons living in England and Wales, 1838–71, was 25·0 in 1st quarter ; 22·1 in 2d ; 20·7 in 3d ; and 21·9 in 4th ; in Scotland, 1871, 28·9, 25·4, 21·6, and 24·0 ; and in London to 100 deaths, 1864–73, 28·0, 23·7, 23·2, and 25·1, on the average in the four quarters respectively. Thus fewest deaths occur in Britain in the warmest quarter, and most in the coldest. But great summer heats in other countries, and even exceptionally hot summer weather in Britain, increase the sickness and death-rates in bowel complaints. In England, in autumn, there are 4 deaths in towns to 3 in the country.

Estimated Statistics of Humanity.—At present, about 1,377,000,000 human beings are calculated to people the earth. They speak 3064 tongues, and profess above 1100 creeds. About 333,000,000 persons die yearly, 92,000 daily, 3730 hourly, 60 every minute, and 1 every second. The loss, however, is more than balanced by new births. Only 65 persons in 1000 *contract* marriage. The average duration of life is 33·3 years. A fourth die before their 7th, and a half before their 17th year of age. Only 1 in 17 persons reaches the age of 60 and upwards, and only 1 in 8 males can bear arms.

HEALTH, DISEASE, AND MORTALITY.

Few persons enjoy constant health, vigour, freedom from accident, and a due proportion of business, pleasure, exercise, and repose. Bad air, water, and drainage, and disregard of the rules of health, produce discomfort, illness, disease, and premature death. Hence the loss of health and life in a community. The sickness and death rates both decrease from birth to puberty, then increase slowly to the age of 50 or 60, and afterwards rapidly.

Man is subject to natural decay, to more than 900 diseases arising from specific causes, and to the effects of poisons, parasites, and injuries. These causes produce discomfort, or disable from work for a time, or end in death. The causes of death are divided into disease and violence : the diseases are divided into four classes—zymotic or epidemic, constitutional, local, and developmental. Zymotic or epidemic diseases include small-pox, measles, scarlatina, diphtheria, hooping-cough, fevers, erysipelas, influenza, dysentery, diarrhœa, cholera, rheumatism, syphilis, scurvy, worms, alcoholism, hydrophobia, &c. Constitutional diseases include gout, dropsy, cancer, scrofula, phthisis, hydrocephalus, mortification, &c. Local diseases include those of the brain, heart, lungs, intestines, urinary and generative organs, and skin. Developmental diseases are those of premature birth, malformations, childbirth, teething, old age, atrophy, debility. Violent deaths are those produced by homicide, suicide, accident, or negligence. In the 20 years 1850–69, the mean annual number of deaths in England and Wales to 1,000,000 persons living was 22,340 from all causes, and 22,093 from specified causes. Of the latter, the deaths from zymotic, constitutional, local, and developmental diseases, and from violence, were in the ratio of 6·6, 5·6, 10·9, 4·7, and 1. Of 80 deaths, apart from infantile, senile, and violent, 16 arise from structural diseases, with phthisis ; 15 from lung diseases, excluding phthisis ; 14 from contagious and infectious diseases ; 9 from diseases of infants and children ; 7 from brain and nervous diseases ; 6 from diseases of the digestive organs ; 4 from diseases of the circulating organs ; and 3 from other diseases. In 1000 deaths, 638 arise from diseases of the organs and parts of the body, and 362 from all other diseases. Of the former, 320 arise from diseases of the lungs ; 144 from those of the brain and nerves ; 104 from those of the digestive and assimilating organs ; 35 from those of the heart and vessels ; 10 from those of the urinary and generative organs, and 6 from those of the skin.

An attack of acute recoverable disease or sickness lasts only 6—13 weeks, and chronic recoverable cases of sickness or disease exceed a year. The records of Friendly Societies shew that after the age of 15, when infantile diseases are over, and when youth merges into manhood, human beings on the average are subject to a certain duration of sickness (5 to 7 days yearly in this country at the age of 15), which increases with age, though varying a little with race, climate, &c. The sickness and death rates vary with each other. In adults, there are to 1 death at least 2 years of sickness or disease requiring medical aid, and implying inability to work ; besides, a host of persons are subjected to temporary or permanent minor indispositions and ailments destructive of comfort. This so far reduces the productive power of a nation. Thus, in London, in the year, there are 74,000 deaths, 150,000 persons confined to bed for a time and unable to work, and a vastly greater number always or for a time uncomfortably unwell, though not necessarily requiring medical aid. In the Friendly Societies of this country, up to December 1850, of nearly 800,000 members of the ages 10 to 86, 25 per cent. were returned as sick ; on a yearly average, each person was sick 10·12 days, and each sick person was sick 40·5 days. In England and Wales (1871), 3·8 in every 1000 of the population was an asylum or hospital patient. On an average (1861–70), in 1000 mean strength of the white troops of the

British army at home and abroad, 50·42 were constantly non-effective from sickness; and in the British navy, 1870, 46·3 in 1000 were constantly sick.

Epidemic Diseases attack many people at once, or in succession, and also travel from place to place, often in the most frequented routes. They are most deadly where the people are most massed together and filthiest, and most negligent of sanitation. In London, 1258, an epidemic killed 15,000 persons, and the Black Death (1348) killed half the people. In London, the plague, a malignant typhus fever, killed in 1625, 35,417 people (other diseases, 18,848), in 1665, 82,000 (other diseases, 28,710). In 1613, the plague killed 200,000 persons in Constantinople.

Cholera was the next great epidemic in England and Wales, and killed 30,924 persons in 1831–32, 53,293 in 1849, 20,097 in 1854, and 14,378 in 1866. In the United Kingdom, 1848–49, and 1853–54, it attacked nearly 5,000,000 persons, and killed 250,000. The death-rate from cholera, in this country, 1831–32, was 1 in 452 of the population; in 1848–49, 1 in 333; in 1853–54, 1 in 999; the death-rate from diarrhœa being in these years 1 in 999. The cholera death-rate in town districts, 1848–49, was 1 in 153 of the population; 1853–54, 1 in 476; and in other districts, 1 in 1666, and 1 in 2500. There were 3 deaths in coast to 1 in inland districts in 1848–49, and 5 to 1 in 1853–54. In London, the death-rate was 1 in 161 in 1848–49; and 1 in 232 in 1853–54; and varying from 1 in 1000 in the highest parts of the city to 1 in 66 in the lowest. In London (1831–32), the cholera attacked 11,020 persons, and killed 5275. The district death-rate of cholera epidemics has varied from 3 to above 70 in 10,000 of the inhabitants. In one epidemic, cholera has attacked as many as 1 in 20 inhabitants in Russia. In the British army, the cholera death-rate has been generally 1 in 3, or 3·5 of those attacked.

Small-pox used to decimate nations, and disfigure, and often render blind those that survived its attacks; but vaccination, discovered in 1798, and now enforced by law in most civilised countries, has vastly diminished its frequency and virulence. Before its introduction, hardly 4 in 100 persons of the age of 30 escaped small-pox; 65 in 100 infants and children under the age of 5 had it, and of the infants attacked, 1 in 3 died; of all ages, 1 in 7 or 8 attacked, died. Before the introduction of vaccination into Scotland, 1799, 120 to 140 in 1000 annual deaths were from small-pox, nearly 20 in 1000 survivors of its attacks became blind, and many had their faces disfigured for life. Since 1799, the average annual death-rate from small-pox has been only 15 in 1000 of the total deaths, and even that number has been chiefly of unvaccinated persons. England had a mean of 83 deaths from small-pox in every 1000 deaths, 1701–1809; 28 in 1810–47; 12 in 1848–54; and 44 in 1870 during an epidemic.

In London, an influenza epidemic, in the end of 1847, attacked 500,000 persons in six weeks, and raised the death-rate 80 per cent. above the average. Of this excess of deaths, which was above the mortality from cholera, during the 21 weeks of its prevalence, 1831–32, only a fourth were from influenza, the rest being from a great increase in other lung diseases.

Countries are often subject to minor epidemics of cholera, small-pox, influenza, fever, dysentery, scarlatina, measles, &c. which have in London carried off 8000 or 10,000 persons at an outbreak. An epidemic rarely attacks the whole people of a country at once, and has never alone increased the death-rate 30 per cent. above the average. Epidemics generally occur at irregular intervals. In fever, 10 persons, and in small-pox, 5, are often disabled for a time, to 1 death.

Mr Christie, of the Scottish Equitable Life-assurance Company, in the following table, shews the comparative fatality of diseases from the causes of deaths registered in England and Wales, 1848–54, and the ratio of deaths from each group of diseases to 100,000 deaths.

Diseases, &c.	Deaths.		Deaths in 100,000.
	Males.	Females.	
Contagious	340,493	348,291	24,003
Of uncertain seat	57,002	80,767	4,801
Tubercular	224,754	234,856	16,017
Of nervous system	186,137	159,954	12,061
Of circulatory organs	41,703	41,721	2,907
Of respiratory organs	183,232	155,018	11,788
Of digestive organs	81,339	82,262	5,701
Of urinary organs	18,719	5,806	855
Of childbirth and generative organs	125	22,482	788
Of locomotive organs	9,026	7,841	588
Of skin	3,311	2,234	193
Malformations	3,120	2,627	200
Premature birth and debility	70,466	57,079	4,445
Atrophy	41,160	41,477	2,880
Age	81,730	108,216	6,620
Sudden disease?	14,638	10,733	884
External causes	71,289	27,617	3,442
Causes not given	26,788	25,494	1,822
Total deaths	1,455,032	1,414,475	100,000

Some diseases are more fatal in towns than in rural districts. To 100 deaths, in English rural districts, by the following diseases, there die in towns by asthma, 380; erysipelas, 371; convulsions and teething, 257; cephalitis and hydrocephalus, 241; pneumonia, bronchitis, and pleurisy, 199; delirium tremens, 198; typhus, 188; small-pox, 173; heart-disease, 173; childbirth, 163; syphilis, 159; gout, 155; hernia, 148; purpura, 146; sudden deaths, 145; liver disease, 145; hepatitis, 135; tetanus, 132; consumption, 124; croup, 123; violence, 117; stone, 111; mortification, 110; malformation, 107; apoplexy, 107; hæmorrhage, 102. But to 100 deaths in rural districts, there die in towns of paralysis, dropsy, jaundice, 99 each; diabetes, 97; cancer, 92; hydrothorax, 88; hæmatemesis, 79; debility, 75; atrophy, 75; scrofula, 46. Of lung diseases, 53 males die in London to 39 in the country; and of typhus, 5 to 1.

The diseases and injuries most fatal to children are acute lung diseases, as bronchitis; measles, scarlatina, and hooping-cough, almost peculiar to children; small-pox, if no vaccination; croup; diarrhœa; convulsions; hydrocephalus; fever; tabes mesenterica; enteritis; dropsy; scrofula; burns and scalds. To adults: consumption; brain disease; typhus; cancer; epilepsy; liver disease; diabetes; joint disease; childbirth; uterine disease; poison; fractures; contusions; wounds. To the aged: apoplexy; paralysis; bronchitis; pneumonia; asthma; kidney and heart diseases; dropsy; stone; rheumatism.

The following table shews the order of fatality, and the ratio of deaths, to 100,000 persons living, from 19 of the most fatal diseases in Scotland and England, in 1870:

Scotland.		England.	
Diseases.	Deaths in 100,000 living.	Diseases.	Deaths in 100,000 living.
Phthisis	283	Phthisis	243
Bronchitis	240	Bronchitis	209
Old age	198	Atrophy, debility, premature birth	178
Scarlatina	134	Scarlatina	146
Atrophy, debility, premature birth	123	Old age	129
Heart, &c. diseases.	110	Convulsions	119
All fevers	97	Diarrhœa	113
Pneumonia	74	Heart, &c. diseases.	113
Hydrocephalus	63	Pneumonia	106
Diarrhœa	58	All fevers	80
Hooping-cough	55	Hooping-cough	53
Paralysis	55	Paralysis	52
Apoplexy	43	Apoplexy	52
Cancer	42	Cancer	43
All liver diseases	34	All liver diseases	38
Tabes mesenterica	32	Hydrocephalus	33
Convulsions	30	Measles	33
Teething	29	Tabes mesenterica	31
Fractures and contusions	29	Fractures and contusions	29

This and like tables of former years shew a different death-rate of the same diseases in the two countries, with a varying death-rate from the diseases in different years. Scotland is more liable than England to sudden changes of temperature. Hence bronchitis prevails more in Scotland; but diarrhœa prevails more in England in the warmest months, when the temperature is much higher than in Scotland.

Intimately connected with disease is the state of the insane, the deaf and dumb, and the blind. In the United Kingdom, 1870, 78,945 lunatics, idiots, and imbeciles were confined in asylums, in the ratio of 2·89 in 1000 of the population, or 2·44 in England and Wales, 2·27 in Scotland, and 3·07 in Ireland. Of the confined, to 100 males there were 113 females in England and Wales, 112 in Scotland, and 88 in Ireland. In England and Wales, 1871, 1·3 in 1000 persons were idiots and imbeciles, the males being about equal in number to the females; 1·7 in 1000 persons, 100 males to 112 females, were lunatics; under the age of 30, male idiots and imbeciles were in excess, but above that age, female. Over the earth, the ratio of insane men to women is stated at 100 to 103. Britain has more insane, in the ratio of the population, in agricultural than manufacturing districts, and in the lower than higher ranks. In 1871, 2 in 3 of the insane in Britain were paupers. Insanity is said to be rarer in the south than north of Europe, as 2 to 10—40 in 10,000 persons. In many countries, most insane occur in hilly districts and on north exposures. Insanity is rare in tropical countries. More women are insane in proportion to men in France than in England. Of lunatics sent to asylums at the beginning of the malady, 7 in 8, or 9 in 10, recover. The cure is generally in 5 to 10 months. There are most cures between the ages of 20 and 30. More women recover than men. Few recover after the age of 50.

In the United Kingdom, 1871, there were 19,237 persons mute, or deaf and dumb, or 0·6 in 1000 of the population, about the mean for all Europe. England and Wales, 1871, had 107 male to 100 female mutes. After the age of 15, the ratio of mutes to the population decreases with age; hence the former must die in higher ratio than the latter. In England and Wales, 30 persons were returned as deaf and dumb and blind in 1861, and 111 in 1871. In Britain, mutes are proportionally fewer in civic than in rural, and especially hilly, districts. Other mountainous countries have a large ratio of mutes; some Swiss cantons have 1 in 200 inhabitants. The United States, 1850, had 1 mute in 2073 whites, 1 in 2936 free coloured, and 1 in 6221 slaves. France, 1853, had, in proportion to the population, most mutes in the mountains, table-lands, and moors, and fewest in the central plains and most cultivated tracts. In Ireland, 1861, of 2962 families, 2512 had each one mute child; 287, two mutes; 127, three; 32, four; 8, five; 3, six; 1, seven; 1, eight. The ratio of acquired to congenital deafness is 25 to 100 mutes in Britain, 42 in the United States, and 52 in Germany.

In the United Kingdom, 1871, there were 31,159 blind persons, or 0·98 in 1000 inhabitants; and to 100 males, 90 females were blind in England and Wales, 102 in Scotland, and 111 in Ireland. Of the blind, 1871, in England and Wales, 1 in 11 had been blind from birth, and 1 in 10 in Ireland had become blind by zymotic diseases. Blindness is more common in agricultural than in manufacturing and mining districts, and in the level parts of the middle of Europe than in the mountainous. Blindness occurs in all ranks and employments, and is a common infirmity of old age. Nearly half the number of the blind are above 60 years old.

HEALTH, MORTALITY, AND PROGRESS.

National health and longevity increase with knowledge and wealth. A century ago, the spread of the steam-engine, of mechanism to supersede hand-labour in spinning, and of improved communication, greatly increased the produce of manufacturing industry, and the national wealth, lowered the death-rate, and brought conveniences, comforts, and luxuries to those who before could not buy them. More comfortably clothed, housed, and fed, by their personal exertions, men had less sickness, and lived longer. The English death-rate fell from 28 in 1000 living in 1780, to 20 in 1820; and the London from 50 in 1000, in 1750, to 24 in 1820. While the wages of the industrial classes increased two or three fold, 1770–1838, house-rent (but for better accommodation) and the price of food remained nearly the same, and incomes could purchase far more comforts. In 1770, half the English people lived by the wages of labour, now three-fourths do so; but national wealth has far more increased. In 1801, we paid fivefold for our cottons, threefold for our flannels, and twice for our linens, what we do now; hence the greatly improved dress of our working-classes. Luxuries—as tea, coffee, sugar, pepper—are much cheaper, and from being hardly, are now universally, used by the working-classes.

But the social benefits of the greatly increased productive powers of industry have not reached a degraded class unwilling to work. Thus, in Limerick city, 1838, the poor occupied a large district, and had a death-rate of 52 in 1000 living,

and of the deaths, 400 in 1000 were from epidemic and endemic diseases, or double the ratio in England and Wales. The most advanced nations contain many who grow up, live, and die the unreflecting creatures of impulse, ever scrambling for a precarious subsistence, now gorged, now starved, ignorant of responsibilities, some even thorough savages, while their squalid dens spread contagion among the civilised and comfortable classes. The increased public health and longevity during the last 100 years have been promoted by the spread of knowledge, inventions in industry, and cheap literature. Formerly, even the houses of the gentry exhibited small rooms, deficient ventilation and sanitation, and overcrowding. The universal deep drinking has long ceased among the wealthy. Improved tastes and pursuits have improved their morals and health.

POPULATION.

The periodical census of a population gives interesting data about its increase or decrease, its density, and the proportion of the sexes, and their ages.

The population of England and Wales was estimated at 2,150,000 in 1066; at 5,500,000 in 1688; and has regularly increased, at each decenial census, from 8,892,536 in 1801, to 22,712,266 in 1871. The population of Scotland was estimated at 1,050,000 in 1707; and at the census has regularly increased, from 1,608,420, in 1801, to 3,360,018 in 1871. The population of Ireland was estimated at 1,320,000 in 1672; and at the census was 5,395,456 in 1801; 8,175,124 in 1841; and 5,411,416 in 1871. The total population of the United Kingdom has increased from 16,160,047 in 1801, to 31,619,681 in 1871. The ratio of increase in the 70 years in England and Wales has been 100 to 255; in Scotland, 100 to 228; but in Ireland, there was an increase, 1801–41, in the ratio of 100 to 120, and then a decrease, 1841–71, in the ratio of 100 to 66. The emigrants from the United Kingdom, chiefly in the prime of life, 1831–71, amounted to 6,536,908. The population of Great Britain, at each successive decade, 1811–61, shewed an increase at a decreasing rate, but the increase, 1861–71, was at an increasing rate. In 1851–71, the urban population of England and Wales increased 37 per cent., and the rural 11. In Scotland, 1861–71, the population of towns increased 19 per cent., and of villages 29 per cent., but the rural population decreased 9·3 per cent. There are some remarkable cases of local increase of population, from development of mines or transit. Thus, the population of Middlesborough, in Yorkshire, has increased from 154 in 1831, to 46,643 in 1871. But facilities of transit have greatly diminished the night or sleeping population of the central or business parts of towns, though they are crowded in the daytime.

The increase of the population has been such as to double itself in England in 55 years; in Prussia, in 54; and in France, in 108. England has 1 birth in 28·6 inhabitants; Prussia, 1 in 26·5; and France, 1 in 37·4. The paucity of births in France appears from every 100 women, of the ages 15 to 55, having in Paris only 10·47 children, and in France 15·10; but they have in Bavaria 18·02; in Belgium, 18·03; in Denmark, 19·09; in Saxony, 20·00; in Holland, 21·00; and in England, 22·35. In France, the low birth-rate, and slow increase of the population (following the rapid increase for 30 years after the partition of the great estates of the nobles), arise from the laws of inheritance, the great subdivision of landed property, and an inordinate desire for material comforts and luxuries. To avoid poverty, and leave each child a good patrimony, the French marry late, and systematically limit the number of their children.

The population of the earth is estimated at 1,377,000,000, and its density, or the average number of people to an English square mile, at 26; or 75 in Europe, 45 in Asia, 16 in Africa, 5 in North and South America, and 1·2 in Oceania. The density in Belgium is 451; England and Wales, 390; China, 288; Great Britain and Ireland, 265; Italy, 237; British India, 207; German Empire, 193; Ireland, 169; Austria and Hungary, 158; France, 150; India, British and Native, 123; Denmark, 111; Scotland, 110; Spain, 90; Russia in Europe, 32; Turkey, 20; Norway and Sweden, 19; United States, 11; Russian Empire, 10; Mexico and Persia, 9; Brazil, 3; Argentine Confederation, 3; Russia in Asia, 1·6. The mean proximity of the people on the land of the earth is about 345 yards apart; in Europe, 203; Scotland, 170; England, 96. In England and Wales, 1871, the counties varied in having 3498 persons to a square mile in Middlesex, to 178 in Monmouthshire; and the mean number of persons to a house has decreased from 5·45 in 1811, to 4·98 in 1871—a moral and sanitary advance. There are 14 acres to a household in the United Kingdom; 17 in India; and 2534 in our colonies. In the United States, 1870, there were 5·47 persons to a house. In Britain, 1851, the towns as a whole contained 3337 persons to a square mile, and the country only 120. Scotland, 1871, had a mean of 12·2 persons to 1 house in towns, 5·8 in villages, and 5·3 in rural parts; but there are 10 rooms in both towns and villages to every 17 persons, and towns are not much worse off for room accommodation than villages or rural districts. Of the Scotch, 88 per cent. live in houses of 1–4 rooms, and few of these pay taxes; and the remaining 12 per cent. live in houses of more rooms, and form the wealth and support of the country. Shetland is the worst housed Scotch county, but the most healthy and moral. In the eight chief towns in Scotland, the percentage of families living in houses of 1 to 4 rooms is 94·5 in Glasgow, 94 in Dundee, 93·5 in Paisley, 92·7 in Greenock, 89·3 in Aberdeen, 88·7 in Leith, 85 in Perth, and 78 in Edinburgh. The building of tenements, divided into blocks of 3 or 4 rooms, in towns, for the labouring and artisan classes, has not diminished overcrowding, for nearly a third of the families living in such houses let rooms to strangers. More evils arise from the sexes of different families crowding together in the same house, than when one house had only the sexes of one family; hence probably the recent increase in the general mortality and illegitimate births. In Aberdeen, 1874, there are cases of 9–12 persons living in two rooms, and 7–12 in one room.

As to the proportion of the sexes, 1871, to 100 males, England had 106 females; Wales, 102; Scotland, 110; Ireland, 105; United Kingdom, 104; India (1868-72), 93; United States (1870), 98; France, 100·2. Over the world, more males

are born than females, but disease, and the perils of industry, trade, and war, cut off a higher ratio of males at all ages. To 100 females are born 104·8 males in England and Wales, and 105·4 in Scotland; but the higher death-rate of males equalises the sexes by the 18th year; finally, however, from emigration and perilous land and sea occupations of males, there are in this country 105·3 females to 100 males of all ages. The ratio of females to 100 males in Scotland varied at the censuses 1801–71, from 118·5 in 1811 to 109·6 in 1871. The Scotch serve in the army, navy, and mercantile marine in greater ratio to the population than the English. In 1871, in England and Wales, males preponderated in 8 counties, and females in 32; and in Scotland, males preponderated only in 1 county, Linlithgow. In England and Wales, 1871, to 100 males of ages 0–20 there were 99·94 females; of ages 20–40, 110·12; of ages 40–60, 107·81; of ages 60–80, 114·46; of ages 80 &c. 140·32; and of all ages, 105·37. In Scotland, 1871, to 100 males of all ages, there were 112·26 females in towns; 118·42 in villages; and 105·16 in rural districts. The per cent. of females in the rural districts is hardly higher than the average of European populations. Certain places shew a still greater disproportion between the sexes; thus, in 1851, females were 13 per cent. in excess in London; 17 in Edinburgh; 19 in Dublin; 42 in Hampstead; 50 in Bath and Manchester. This chiefly from immigration of domestic servants from rural districts. But males were 9 per cent. in excess in Monmouthshire, a mining district; and 17 in Chatham.

The population of Britain contains many more females than males of the ages 20–40, from the greater emigration and mortality of males of these ages; and there are still more females at riper ages. Manufacturing town populations are generally much younger than rural; the latter contain an excess of persons, especially females, of great ages. Most immigrants from rural districts to towns are of ages 20–30. Armies consist of men of the athletic ages of 20–40. During the Russian war, the English army contained 1 in 12 of our population of this age, or about double the ratio in peace.

The proportion of persons of different ages living at any time was formerly known by the registration of baptisms by the church, and is now by the censuses, and the legal registration of births and deaths. While the whole population of England and Wales, 1851–71, increased 25 per cent., the increase under the age of 20 was 26 per cent.; of ages 20–40, 21 per cent.; of ages 40–60, 28 per cent.; of ages 60–80, 25 per cent.; of ages 80–100, 20 per cent.; but there was 44 per cent. fewer of ages above 100. Thus the number of persons in the prime of life increased most, and the strength of the nation increased more than its numbers. In England and Wales, 1801, there were 1,351,422 men of the athletic, soldier, and reproductive ages 20–40, and 3,304,477 in 1871. In 1871, to 100 persons, in England and Wales, living under the age of 20, there were 65 of ages 20–40, 38 of ages 40–60, 15 of ages 60–80, and 1 of ages 80, &c. The numbers of the population above and below the age of 22½ are equal. The number of children of school age, 3–13, as defined by the English Education Act, is 23 per cent. of the population. The mean age of the population of England and Wales at the three last censuses was 26·4 years; that of the people of 20 years of age and upwards, 40·4, 40·7, 40·8; and that of the males was 0·8 year under that of the females. Supposing no emigration, and a constant birth-rate, the mean age of the whole people would have been 32·1 years, or 31·8 for males, and 32·3 for females. Emigration, chiefly of adults, and an annual increasing birth-rate, gives an excess of young over old people living, and reduces the mean age of the whole people. The people of this country are younger than that of many others, not from life being shorter, but because births are always increasing. Little above a third of the nation is self-supporting. In the British Isles, 1851, the number of persons living of ages under 20, 20–40, 40–60, 60–80, and above 80, were in the ratio 12, 8, 4, 2, 1; and the ratio of persons living of these ages in England and Wales 1871 was 12·3, 7·8, 4·6, 1·9, 0·14.

CRIME.

Crime is a malicious violation of public duties, requiring the offender to give satisfaction to the community, and to repair, if possible, the injury done to person or property. The number of crimes which become publicly known varies with the efficiency of the police of a country, and the disposition to prosecute. Crime, especially the graver offences against the person, has long been decreasing in Britain. Since 1810, however, the increased efficiency of the police has multiplied annual committals six times in England and Wales, and seven times in Scotland, and since 1815, twelve times in Ireland —an increase far above that of population. The police now bring to light many minor offences which before eluded punishment, or were summarily punished by the populace. The increase of crime in England since 1810 has been least in the best policed and educated districts, as the metropolitan; and most in the worst, or the mining and manufacturing.

In England and Wales, 1805, 4605 persons (1 female to 2·4 males) were committed, or bailed, for trial by indictment, and 58 per cent. convicted; in 1820, 13,712 (1 female to 4·5 males) were committed; in 1840, 27,187 (1 female to 4·2 males) were committed, and 87·4 per cent. convicted; in 1863 the numbers were 20,818 (1 female to 3·7 males) committed, and 75 per cent. convicted; in 1873, 14,809 (1 female to 3·4 males) committed, and 73 per cent. convicted. In Scotland, 1863, 3404 (1 female to 2·7 males) were committed, and 71 per cent. convicted; in 1872, 3042 (1 female to 4 males) were committed, and 74 per cent. convicted. In Ireland, 1863, 6078 (1 female to 4 males) were committed, and 54 per cent. convicted; in 1872, 4476 (1 female to 4·4 males) were committed, and 55 per cent. convicted.

Besides the offenders committed or bailed for trial by indictment, many others, called misdemeanours, were committed for trial by information. Of both classes, 231,184 persons (1 female to 2·5 males) were committed to prison (except convict and military prisons) in the United Kingdom in 1870; or 1 in 133 of the population in England and Wales; 1 in 106 in that of Scotland; and 1 in 165 in that of Ireland. Of these,

218,398 were committed as criminals, the rest being Civil and Military Act prisoners. Of the 231,184 prisoners, there were 1 female to 3 males in England and Wales, and 1 to 1·6 in Scotland and Ireland.

But committals by indictment or information tried by the higher courts, include only a comparatively small number of offences. The others are tried summarily by local magistrates and justices of peace. Recent summary conviction acts have lessened the number of committals. Of criminals, 5 in 6 are petty offenders.

The following facts shew the state of crime in England and Wales during the year ending 29th September 1870. 51,792 indictable offences were known to 26,441 police to have been committed, and 26,613 persons were apprehended, of whom 16,742 were committed for trial in the higher courts, and 2 in 3 were convicted. There were also 3 in 4 convicted out of 526,869 minor offenders proceeded against summarily in the lower courts of justice. Thus, a total of 553,482 offenders (1 female to 4·5 males) were proceeded against. Besides prostitutes, vagrants, and tramps, 52,987 persons (1 female to 3·6 males) were known to the police as belonging to the criminal classes. During the year, 168,134 persons were prisoners.

The number of annual criminal committals shews curious annual fluctuations, depending on the price of food, and briskness of industry and trade. In England and Wales since 1834 they have varied from 14 to 19 in 10,000 of the population. Recommittals, 1841–51, varied from 29·9 to 33·4 per cent. of the committals. Of the recommittals, in 1856, 1 in 3·9 was of a previous offender. In Edinburgh, 1854, there were 1001 recommittals once; 544, twice; 234, thrice; 226, four times; 142, five times; 375, 6 to 10 times; 337, 11 to 20 times; 218, 21 to 50 times; and 23, above 50 times. But in spite of this, there are now fewer habitual and juvenile criminals. Though London has nearly doubled in population since the establishment of the London police, 72,824 persons were apprehended for crime in it in 1831, and only 71,961 in 1871; 35,601 were apprehended as drunk and disorderly in 1833, and only 28,241 in 1871.

In Scotland, 1871, a total of 141,644 offenders, or 1 female to 2·4 males, were proceeded against, and nearly 1 in 2 convicted. To 1 offence against the person, there were two against property, and 27 miscellaneous. 28,588 persons (1 female to 1·5 males) were received into Scotch prisons; but counting the same person only once, only 18,815 (or 1 female to 2·5 males) prisoners were received in the year into the prisons. Each was confined, on the average, 31 days. Of those imprisoned, 352 had been in the same prison above 50 times.

In 1870, in London, 71,269 persons were apprehended by the police, and 43,338 summarily disposed of or bailed; in Dublin, 34,994, and 31,602; in Liverpool, 32,405, and 26,185; in Manchester, 26,084, and 19,453; in Edinburgh, 10,499, and 9686. This includes recommittals.

Crimes have been divided into six groups: 1. Against the person; 2. against property with violence; 3. against property without violence; 4. malicious offences against property; 5. forgery and currency crimes; 6. other crimes. In England and Wales, 1834–49, the crimes in these groups were in the ratio of 22, 18, 215, 1, 6, 12; in 1856, 13, 19, 111, 1, 8, 3; in 1870, 8, 7, 47, 1, 1·5, 3. Thus by far the greatest number of crimes is against property without violence, or thefts and frauds. Offences against the person have been 5 in Ireland to 1 in England. Petty thefts are, proportionally to the population, more numerous in Glasgow than in London or Dublin. Fewer females than males commit thefts with violence.

By the census of 1871 there were confined in the 115 convict-prisons, jails, and bridewells in England and Wales, 28,756 prisoners, or 1 female to 4·4 males, and 1 prisoner to 960 inhabitants; and the daily average during the year was 28,011. In 1871–72, the number of criminals in England and Wales was estimated at 77,790, or 1 in 291 of the population. Of these, 46,877 were at large, known to the police as thieves, depredators, receivers of stolen goods, and suspected persons; and 30,913 were in confinement, 16,805 being in local prisons (exclusive of debtors, and military and naval prisoners), 9684 in convict prisons, and 4424 in reformatories. About 3 in 4 prisoners are confined for very short terms. In 1857 it was estimated, allowing each criminal a 5 or 6 years' career, that to keep up the number of persons (105,000 in Great Britain, or 1 in 210 inhabitants) actually engaged in crime, requires an annual supply of 20,000 to 25,000 youths. Each criminal is reckoned to support two other persons, and their annual plunder must be above £5,000,000.

In England and Wales, there are 21 criminal prisoners of the ages 12–60, to 1 of other ages; and 3 in 4 are of the ages 15–50. Of persons aged 17–21, 1 in 232 are committed for crime; of those aged 40–50, 1 in 941; and above 60, 1 in 3391. Thus, the strong and wayward passions of youth tend most to crime, which is also rife during the years devoted by the well-doing to honourable labour and support.

Most criminals are deficient in intellectual, and especially moral education. Of every 100 committals in England and Wales, 1836–48, 35·4 per cent. could not read or write; 54·2 per cent. could only imperfectly do so; 10 per cent. could do both well; and only 0·4 had a superior education. In 1870, the ratios were 34, 63, 3, 0·3. In Scotland, 1836–55, the ratios were 32, 42, 23, 3; and in 1870, 36, 57, 19, 1. More of the Scotch lower classes are educated than the English; hence the superior amount of instruction among Scotch criminals. Of factory operatives, 95 per cent. can read, and 53 per cent. can write in Scotland; but only 86 and 43 per cent. respectively in England. About 20 per cent. of the convicts in Millbank Prison are insane or weak in mind. In Perth general prison, 11·3 per cent. of the convicts are more or less insane. English counties having a greater number of schools in proportion to the population, have been shewn to have proportionally fewer criminal offenders.

In England and Wales, crimes are, in the gross, most numerous in Middlesex, Essex, and Warwick; and fewest in Wales, the four northern counties, Cornwall, and Derby. Taking 10 as the average number of crimes in England and Wales, that of London is 16·1, the highest; and that of Wales 3·1, the lowest. In 1867, under 4 persons in 1000 were committed or bailed for trial in Devonshire, but 12 in Lancashire.

In France, 1854, 403,235 offenders were tried

by police courts; 256,670 by correctionary courts; and 7556 in assize courts; 2 in 5 for offences against the person, and 3 in 5 against property. There were 38,479 recommittals, 1 female to 6 males. Of those sent to the central prisons, about 1 in 2 were under the age of 30, 1 in 2 quite uneducated, and 1 in 2 had only the elements of education.

In the United States, 1850, apart from police and justice court cases, there were 26,679 persons convicted of crime, or 1 in 866 of the population, and 6737 persons in prison on 1st June. To 100,000 of the population there were, 1850, in prison 22 native whites, 78 foreign whites, and 224 free blacks. In 1870, exclusive as above, there were 36,562 persons convicted of crime, or 1 in 1054 of the population, and 32,901 persons in prison on 1st June. In spite of the free institutions, division of land, and education in the United States, murders, desperate offences, and lynch law are numerous. The coloured race are very liable to poverty and crime in the United States, from the social degradation to which they are subjected by the whites, fostering malice and deceit, and leaving them little but sensual enjoyments.

In the United Kingdom, 1871, 238,274, or 1 in 133 of the population, were convicted as drunk, or drunk and disorderly, in public thoroughfares, involving a fine or 14 days' imprisonment. This is 37 per cent. of the total summary convictions for crimes in the year, but the number includes as different persons, the same person convicted more than once in the year. A multitude of drunkards, however, escape the police, or are convicted for other crimes. In Liverpool, said to be the most drunken city in the kingdom, 1 in 10 of the population was apprehended as drunk in 1870. Of crimes against the person, 3 in 4 are connected with drunkenness. This country spent £87,000,000 in intoxicating liquors in 1860, and £140,000,000 in 1873.

Juvenile delinquency has of late years attracted much attention, as it is mainly by preventing the young falling into crime, and reforming them when they do so, that we can hope to diminish adult crime. Juvenile delinquency arises from the influence of depraved parents, home discomforts, corrupting associates, wee pawns, low haunts, as minor shows and theatres, &c. The famous Code Napoleon considers offenders under the age of 16 as subjects not for confinement in a jail, but for correctionary training in a school. This principle and such schools, called industrial and reformatory, have been legally recognised in this country by various acts of parliament since 1854, for the detention, 3 to 7 years, and the intellectual, moral, and industrial training, besides boarding, clothing, and feeding of young offenders, who have been found guilty of some offence against the law, as vagrancy, begging, or petty theft (for which they may be imprisoned not above 14 days), or who have criminal parents and associates, or no settled abode or visible means of subsistence. In addition to private endowments and voluntary subscriptions, the schools are supported by Treasury grants, and forced contributions from able parents. Above 70 per cent. of those discharged from these schools, on expiry of their detention, are known to be doing well. In Great Britain, 1872, there were 100 industrial schools, containing 10,905 young offenders, under sentence of detention, at the yearly cost of £10, 10s. to £18, 10s. per head; and 65 reformatory schools, containing 5575 young offenders, under a like detention, at the yearly cost of £17 to £20 per head. These schools have reduced the number of offenders, under the age of 16, in England and Wales, from 13,981 in 1856, to 8977 in 1871; and in Scotland, from 1228 in 1859, to 1094 in 1871.

EDUCATION.

Education, so necessary to civilised life, is the art, dependent on a knowledge of man's whole nature, by which adults impart mental and bodily aptitude to the young, fitting them for their functions as human beings. Of old it was limited to the higher ranks, Greece wishing to make brilliant, and Rome useful citizens; but with the Reformation came the conviction that all ranks should be educated. Education includes bodily, mental, moral, religious, mechanical, professional, and political training, and continues through life. Education has had to be forced by the higher and middle ranks on the lower. The education of the young is conducted in schools, gymnasia, colleges, and universities.

State systems of primary education for the young now exist in most parts of the middle and north of Europe, and in the United States of America and Canada; but in some of these countries primary education is not yet compulsory. The state leaves religious instruction to be given by each sect. Each parish has one or more schools. Teachers require certificates of qualification. State inspectors examine the schools periodically. In most of these countries, 1 in 10 to 1 in 5 of the population, and 35 to 98 per cent. of the children of school age, are at the public schools; but in London, Paris, and New York, nearly half the children were recently not at school.

The German Empire is the best educated country in Europe. Primary education is in most parts compulsory in rate-supported or other schools, in every town and village. The German system is based on the Prussian, the most perfect system (for classification, support, and inspection) of national compulsory education existing. It dates from the Reformation, and was much improved in 1809. In Prussia, 1 in 8·6 of the population is at the primary schools, and there are 9 sorts of superior schools between the primary and the universities. In different parts of the German Empire, 12 to 17 per cent. of the population attend the schools and universities. The empire has 21 universities, with 1154 professors, and 13,990 students in 1872, or 1 in 2930 inhabitants. German children of all ranks read, write, cipher, know some geography and history, and often attend the same school. The poorest rival the children of the British middle ranks in dress, manners, and cleanliness. Germany has fewer paupers than in Britain, and the lower classes have the information and manners of British shopmen.

In the Austro-Hungarian Empire, primary education was, in 1848, made compulsory for all children of the ages 6 to 12; but the system has only been fully carried out in the German parts of the empire. The empire has 7 universities, with 548 professors, and 10,628 students, or 1 in 3476 of the population.

Primary education of children to the age of 14 or 15 is also compulsory in Holland, Denmark, Norway, Sweden, and Switzerland. In recent years, 1 in 8·6 of the population has been at primary schools in Belgium; 1 in 8 in Holland; 1 in 5 in the Protestant Swiss cantons, and 1 in 9 in the Catholic; 1 in 13 in Spain; and 1 in 36 in Portugal.

In France, primary education is based on the laws passed in 1833 and 1850-67. Each commune or combination of communes must maintain a school by local rates. The schools are mostly denominational. Of the population, 1 in 38 was at school in 1815, 1 in 20 in 1828, and now 1 in 9; but many rural districts have no schools, and 30 per cent. of the population and army have no education. For secondary education, every chief departmental town has a lyceum, and every large town a communal college. The primary and secondary schools are superintended by the University of France, which consists of 18 Academies, or local centres of public instruction.

In the American Union, each state manages its own education. Nearly all the states have established free schools, under committees of the inhabitants, supported by taxes, funds, and lands. No religious body is allowed to have special control of the schools. Besides the primary schools, there are intermediate, grammar, and high schools or academies. Before slavery was abolished, 1 in 5 of the population was at school in the free states, and 1 in 11 of the free population in the slave states; it was then penal to instruct slaves; of whites above 20 years of age, 5 in 100, and of the free coloured people, 21 in 100, could not read or write. In 1870, 1 in 4·5 of the population was at schools of all kinds up to and including universities; but this high ratio arises from the shortness of school sessions in rural districts, and the increased number of winter attendants during a greater number of years. There were 221,042 teachers, 4 female to 1 male. The teachers are mostly women in the primary and grammar schools, even in towns, and the rural ones are ill-paid, ill-qualified, and always changing. They are often boarded by the farmers, and the schools are often open for less than the yearly statutory time of six months. American education wants thoroughness, and does not sufficiently aim at developing the faculties. The Union, 1870, had 80 universities, most of which are quite unworthy of the name, with 1035 male, and 113 female teachers, and 17,678 male, and 2723 female pupils, or 1 pupil in 956 inhabitants. 'Where the schools are most improved,' says Sir Charles Lyell, 'the people are least drunken, improvident, and criminal, and most conservative and industrious; and they can rough it better in the backwoods and log-house, than the illiterate Highlander, Irishman, or factory-girl.' New England has a school for every 200 inhabitants, the largest ratio, perhaps, in the world, and a classical school for every 4000 inhabitants.

Scotland has had a legalised system of elementary education since 1696, Ireland since 1831, and England since 1870. Since 1833, but chiefly since 1846, our government has aided elementary education by inspection and annual grants, which are now above £2,323,000 for the entire kingdom. The average daily attendance of children in the government aided and inspected schools, 1871, was 1 in 14·5 in Great Britain, and 1 in 15 in Ireland, of the population. Government have instituted normal schools for the training of elementary teachers. The inspectors find teaching higher, and more thorough in Scotland. About 80 per cent. in Scotland, and 61 per cent. in England, of the scholars pass the examinations in the three *R*s, entitling the schools to the grants.

In Scotland, the Act of 1696 was passed to establish an endowed school in every parish, under the care of the established clergy, but education was not compulsory. The teachers were chosen by the heritors and minister of the parish, and each had a fixed salary and a house and garden. The Act was immediately enforced in most parishes. In 1707, the General Assembly began to establish more schools especially in the Highlands; and in the course of time, other voluntary, denominational, and private schools arose. In 1834, only 1 in 5 of the teachers in Scotland, and 1 in 4 of the scholars, was under the parochial system. In 1854, 1 in 8 of the population was at 1138 parish, and 3846 other schools; 49,100 of the 279,219 scholars were taught gratis; and there was 1 primary school to 580, and 1 teacher to 412 inhabitants. In the Scotch parish schools the elements of Latin, Greek, and Mathematics were long taught to 5—7 per cent. of the scholars; and 40 per cent. of the students of the Scotch universities came direct from the parish schools. In 1871, 78·6 per cent. of the children in Scotland, of the ages 5-13, were at school without compulsion. The average income of the teachers was £45 in 1834, and £40 in 1854; but the Scotch certificated male teacher has now an average salary of £110, and the female of £58. Scotch primary education has been remodelled by the Act of 1872, which discards clerical control, puts the primary schools, and 11 burgh or higher schools, under the management of local school-boards, elected by the education ratepayers; and compels attendance of children of the ages of 5 to 13. Scotland has 6 normal schools to train teachers. The children of the middle ranks are educated chiefly in day-schools in Scotland, but in boarding-schools in England.

Primary education in Ireland, long retarded by political agitation and poverty, was left to private and religious efforts till 1831, when the state established the Irish National Education Board, and by large annual money grants, and inspection, brought the Irish schools far nearer a true national system than then existed even in Scotland, without enforcing attendance or pandering to proselytism. The National Schools are open to all sects, and religion is taught at certain hours by teachers of the sects of the children. In 1871, 1 in 15 of the Irish population was at these schools, and in 1869, 58·6 per cent. of the schools had a mixed attendance of Roman Catholics and Protestants. Ability to read and write is much more diffused among the lower ranks in Ireland, than in England; many Irish peasants have learned classics and geometry, and have been employed in calculating angles at a halfpenny each for the Ordnance Survey. Of an edition of Euclid, issued by the publishers of the present work, by far the most copies have been sold in Ireland. The average daily attendance of children in the Irish primary schools is 38 per cent. of those on the

roll, but in the English and Scotch schools 84 per cent. First-class teachers have a salary of £42. A teacher is trained for £50. Ireland, in 1870, had 976 endowed schools for secondary education, with an annual income of £68,570 from funds and lands; they are denominational, and mostly for Protestants, but 91 towns of above 2000 inhabitants each, have no grammar-schools. Ireland has many unendowed schools for the Roman Catholics. The only efficient teaching open to the Irish middle classes is in the National Board Model Schools in some of the Irish towns for training teachers; but religious feeling prevents the Irish using them.

In England, elementary education for the lower ranks, who constitute three-fifths of a nation, began with schools attached to the monasteries. Grammar or secondary schools arose in the time of Henry VIII. Then arose parish and charity schools, which for 200 years did much for primary education; but till 1870 England had never a national system. The strictly modern era in the education of the English lower ranks began about 1780 with Sunday schools, and, soon after, the Mutual Instruction System. The state, 1833, began to aid the schools of all sects on condition of inspection; and the Committee of Privy Council on Education was constituted in 1839. Parliamentary annual grants for education in England and Wales have risen from £20,000 in 1833, to £1,830,000 in 1874. The Act of 1870 for the first time established a national system of education in England. The Act empowers, but does not compel the establishment of district school-boards; but once established, they can enforce the attendance at school of all children aged 5 to 13. The old voluntary schools aided by state grants still remain where the Act has not been adopted. In England, 1 in 17 of the population was at school in 1818, 1 in 11·5 in 1833, 1 in 8·3 in 1851, and 1 in 14 in 1871. In 1818, a third of the parishes had no school. In June 1874, not half of the population of England and Wales were under school boards.

In spite of the spread of education of late years in this country, half the poorer classes, and many above them, cannot read or write.

The higher education of the middle classes of this country has been left to the higher or secondary schools, and the universities (mostly endowed by private persons during the last few centuries), and especially in the case of females, to private adventure schools, on no uniform plan, or guarantee for efficiency. At the Scotch universities, there is 1 student in 1000 of the population; at the German, 1 in 2930; and at the English, 1 in 5800.

To improve the education of the higher operatives, artisans, shopmen, clerks, &c. in practical science and art, by classes, lectures, and libraries, mechanics' institutions arose in 1823, and have been much extended. In 1853, there were in the United Kingdom 702 such institutions, with 120,081 members, 18,120 persons at the evening classes, and 815,516 volumes in the libraries. In 1874, the Yorkshire Union of 136 mechanics' institutions had 28,000 members.

To instruct youths and adults of the industrial classes in the principles of science and art, applicable to mechanical and chemical operations, the Science and Art Department of the Committee of Council on Education was founded in 1853. Instruction is given in schools, and by lectures, laboratories, museums; and prizes and money payments are awarded on passing certain examinations. Any schoolmaster in the United Kingdom (certified as having passed the local Science and Art examination, or who is a university graduate), can send pupils to the examinations, and receive payment if they pass. In 1872, at 653 local centres of examination in the kingdom, 19,568 pupils from 1238 schools were examined, and 13s. 8d. paid for each who passed. Special courses of scientific instruction were given to 186 teachers. Connected with the Science and Art Department are the Royal School of Mines, the Royal School of Chemistry, the Royal Irish School of Science, the Royal School of Naval Architecture, the South Kensington Museum, and other museums in London, Edinburgh, and Dublin. On these objects was spent £209,119 of public money in 1872. The Geological Survey of the United Kingdom is also connected with the department, but is paid by a separate parliamentary vote.

At the census of 1881 the population of the United Kingdom was 35,262,762, an increase of about 3½ millions since 1871. The population of the city of London was at the same time 4,764,312. The annual birth-rate in London in 1886 was 32·7 per 1000, and the death-rate 20·7, as compared with 27·6 and 24·4 in Paris, and 33·5 and 25·9 in Berlin. In 20 English towns at the same date, the average birth-rate was 33·5, and the death-rate 21·8. The marriage rate in England in 1886 was 14·2. The number of criminal convictions in England and Wales in 1885 was 10,500, a gradual decrease since 1866. The number of criminal convictions in Scotland, out of a population of less than 4,000,000 in 1885, was 1956. In Ireland, out of a population of over 5,000,000, there were 1573 convictions. The railway accidents in 1885 amounted to a proportion of 1 in 6,835,421 passengers. The total killed in the same year was 957, and the injured 3467. Of primary schools in Great Britain, 21,976 were inspected in 1885; the number of children who could be accommodated was 5,658,819, and the average number of children in attendance was 3,826,980. At the same time, great advances had been made in the cause of technical education, schools for industrial training having been established in many large towns in the kingdom. The parliamentary vote for the Science and Art Department in 1856–57 was £64,675; in 1886–87 it was £400,043. The number of persons receiving art instruction in elementary schools had increased from 30,000 in 1857 to 810,000 in 1885, while 889,149 persons received instruction in some form, in the same year, through the agency of this department.

PRACTICAL MORALITY.

UNDER the head of ETHICS (see No. 76, p. 379) a sketch is given of the *theory* of morals—of the inquiry how some things come to be held right and others wrong, and how the feeling arises of an obligation to do the one and avoid the other. The ground of this is found in the constitution of man's nature, and that of the world in which he lives. The results of all human experience shew that certain lines of personal conduct are indispensable in securing the well-being either of an individual or a community; and the power which man possesses of remembering the past, and inferring from it the future, together with his faculty of identifying his interests with those of others, naturally lead to the feeling that these lines of conduct *ought* to be followed—that they are *duties*. In systems of ethics, the principal duties are commonly called the 'cardinal virtues,' because the whole of human virtue is supposed to *hinge* or turn upon them. Men have not invariably adopted the same classification of these duties, but we may perhaps enumerate without question, Order, Truth, Justice, Benevolence, and Temperance. The proper fulfilment of these is absolutely necessary for the preservation of the individual and the continued existence of society, and is in civilised communities enforced as far as possible by laws framed expressly for that purpose. It is not enough, however, to be convinced of these obligations in a general way, and to wish to act upon them; reason or judgment must be called into exercise to shew us how in each particular case a duty is to be performed. If it be not rationally performed, as much evil may ensue as if the duty had been neglected, though we may not be justified in censuring the doer. For example, let us take the duty of Order. A man may be patriotic, and sincerely desirous of promoting the good government and interests of his country; yet he may be much mistaken as to what line of conduct on his part will best promote those objects, and unintentionally become the means of imperilling the results he is most anxious to see accomplished. Again, everybody should speak truthfully, for where there is no truth, there can be no mutual trust, no confidence in each other; but is the whole truth to be brought out on every occasion? A man may have committed some serious act of folly in his early days, and have afterwards expiated the same. Should we always be mentioning this to his friends and acquaintances, unless circumstances make it necessary? So with Justice; we must be just, but we must also be merciful. A man who becomes bankrupt from causes beyond his control may be pitied, but the evil-doer who makes bankruptcy an excuse for swindling his creditors deserves reprobation and punishment. Benevolence, again, when blindly exercised, often misses its aim. In our attempts to relieve distress, we frequently find our indiscreet charity tending to perpetuate it. It is our duty to aid those who stand in need of our assistance, but the aid thus given should not be sufficient to overcome the incentive to self-help on the part of those so assisted. Moreover, in many instances, we have to reconcile generosity with justice, for the most distressed are not always the most deserving.

But how are we to learn in what manner each particular duty or obligation can be best fulfilled, so as to be productive of the most good, both to the individual and the community of which he forms part? To answer this and similar questions by axioms and precepts, and to enforce those axioms and precepts by argument and example, has been the theme of moralists and sages, prophets and legislators, since the beginning of time. The experience of generations on all points of human conduct is also treasured up in proverbs and other wise sayings; and the chief aim of all literature is to depict how one man is blessed and another the reverse, each according to his deeds. A digest of the wisdom thus treasured up through successive ages, arranged so as to meet the various emergencies of daily life, would form a complete body of Practical Morality. In what follows we can only afford to touch upon a few of the more important duties.

Moral duties are usually divided into (1) those which a man owes to himself, and (2) those which he owes to others. The former are called PERSONAL duties, and the latter SOCIAL duties. Thus Temperance is a *personal* duty, because by habits of intemperance a man injures himself; while Truth is a *social* duty, for by the utterance of a lie a man may injure his neighbour. The distinction, however, is only partial. The intemperate man no doubt injures himself in the first place; but his family and very often his friends suffer to an almost equal extent, and the whole community loses by his becoming a less valuable member, if not an actual burden. A lie is usually intended to serve the purposes of him who tells it, at the expense of some one else. As a rule, however, it recoils in the end upon its author, a fact which finds expression in the maxim that 'Honesty is the best policy.' The truth is, that society is virtually an elaborately organised body made up of mutually sympathetic parts, so that when one member suffers, all the other members suffer with it. It is not correct to say that 'a man is nobody's enemy but his own,' for a man cannot be an enemy to himself, without being also an enemy to everybody else. In like manner, every man who is a friend to himself becomes also a friend of his fellow-men. Not only does he enjoy the happiness which invariably accompanies a well-regulated life, but his example assists in stimulating others to adopt a similar line of conduct, thereby tending to promote the well-being of themselves and their fellow-members of the community. Nevertheless, as the distinction of duties into *personal* and *social* is primarily a real one, and enables us to classify them so that they are readily remembered, we purpose to consider in a practical way the most important of

them under these two divisions. But first of all, it may be desirable to say a few words here regarding the formation of habits, which powerfully affects men in performing both sets of duties.

FORMATION OF HABITS.

Man is said to be the creature of habit. He certainly is what his habits make him. A man's character is the sum of his habits. So powerful is the force of habit, that it is able to give a man inclinations and capacities wholly different from those which he originally possessed. It seems to be a law of our nature that those physical acts are most easily and well done which are most frequently performed. The man who uses a flail, an axe, a scythe, a gun, or a pen, can use it the better the oftener he repeats the operation, until he arrives at a point of excellence at which his power of improvement stops. The same rule holds good with respect to mental acts. Persons who accustom themselves to extemporaneous speaking, acquire a surprising ease and readiness in the complicated action of conceiving, uttering, and expressing, by sounds, looks, and gestures, whatsoever they would impress upon an audience. There are few acts, of which either body or mind are capable, which may not be made habitual by constant repetition. If a man accustoms himself to speaking civilly to others, he will become habitually civil-spoken. The general habits of life are formed with greater ease and facility during the period of youth, than during the years which follow our arrival at manhood; a fact which has found expression in the proverb, 'the child is father of the man,' and which also demonstrates the importance of encouraging the formation of proper habits in children and young persons. The child who has been systematically trained in the practice of industry and honesty is not likely to forsake them in after-life, even under the pressure of exceptional circumstances. Thief-trainers invariably select children as their pupils, because they are more easily taught the nefarious arts of the professional pickpocket or housebreaker than adult persons. This has led to the establishment of reformatories, in which young persons, who are in the way of acquiring habits calculated to make them dangerous members of society, are brought under the influence of a wholesome training, and taught to exchange the evil habits in which they have been reared, for those which enable their possessors to become good and useful members of the community.

The moral deduction which we make from a consideration of the phenomena of habit is this—that there is a continual craving in human nature to do some act to obtain some object; or a continually recurring necessity to do some act to prevent an evil or inconvenience. The frequency of this call upon us to do something, whether it be for eventual good or evil, leads to the practice, custom, or habit of doing; and in some cases the impulse to act becomes so powerful, that reason, self-respect, the laws of society, and even the warnings and prohibitions of religion, present no sufficient barrier to the impulse. It is to this all-important truth in the nature of man that we earnestly invite the attention of the young. The capacity to create habits is the consequence of the power given to us to promote our own welfare, individually, socially, and as accountable beings. Like everything else with which we are intrusted, it may be rightly or profitably used, or it may be misused and perverted to our certain ruin. In youth, the character is plastic and readily moulded into any shape; and habits, as we have said, are easily formed. How vitally important, then, is it that care should be taken to accustom the young to the regular performance of those duties on which their future well-being in life depends! If they have been taught through the twofold discipline of precept and example to love justice and truth, to cultivate a spirit of benevolence, to control anger, to subdue envy, to abhor intemperance, to practise politeness, then the temptations to which in later years they will often be exposed, to neglect or violate these duties, will lose half their power. What others do with difficulty, or altogether fail to do, they will perform, not only with ease, but with pleasure. While others succumb helplessly to pernicious suggestions, or are driven by evil passions like chaff before the wind, they stand firm as a rock. The gambler, the drunkard, the profligate, are examples of the power of habit; but so are all who illustrate in their lives the virtues that adorn and dignify human nature.

PERSONAL OR PRIVATE DUTIES.

It has been already pointed out that none of our duties are merely *personal*—that is, merely affect ourselves; and that the only ground for adopting the distinction into personal and social, is that, though in their issues all duties may and do affect the welfare of society, yet some more immediately and directly concern the individual who has to discharge them. It is the duty of a man to be temperate, first for his own sake, and only secondarily for the sake of others; but it is the duty of a man to be an honest elector or juror, first of all as a member of society. The principal duties which we mean to consider under this first head are: TEMPERANCE, INDUSTRY, PRESERVATION OF HEALTH, SELF-SUPPORT, SELF-IMPROVEMENT, FORMATION OF OPINIONS, CONTENTMENT, ANGER, and SELF-RESPECT.

Temperance.

To maintain health and strength, every person, whether old or young, requires a certain amount of food; some require more than others. There is with every one a certain quantity which may be called *enough*, according as he is a strong and healthy, or a slender and weakly person; and no one can take more than this *enough* without hurtful consequences. It is also important that no one should take too large a proportion of animal food, or of very finely dressed and spiced food, for all such excesses are productive of bodily ailments, and, if much persisted in, permanently injure health.

He who eats much more than he ought to do, is called a glutton: he who is fond of fine food, is called an epicure. When any one thus seeks more enjoyment from his food than prudence would justify, he greatly lowers himself in the eyes of all who think and act rightly. We should take a pleasure in our food, and eat it in moderation, with cheerfulness and gratitude; but to think much about it, and to take great pains about its

preparation, or to make eating the chief source of our happiness, is a thing most unworthy of us. There is scarcely any vice so much despised as that of gluttony. Its objects are low and gross, and he who delights in it must needs become despicable.

If it is bad to eat too much or too nicely, we may err still more in drinking. Man has discovered how to make various liquors—as wine, brandy, whisky, gin, and ale—of which no one can take a large quantity without great hurt to himself, and which, even in the most moderate quantities, are not perhaps to be taken without some degree of injury. In all of these fluids there is an ingredient called spirit, or alcohol, which has the effect, when a large quantity is taken, of exciting and intoxicating us, so that we lose our reason, and become fit to act like madmen. Under the influence of this spirit, men do the most outrageous actions, nay, sometimes commit murder; and even when they take only a little, their talk is apt to become foolish, and they often say what they afterwards bitterly repent of. All young persons should be greatly on their guard against tasting spirituous liquors, for taking a little leads to taking more, and that to taking more still, and in that way ultimately a bad habit is acquired. Any one who is greatly given to drinking these liquors is called a drunkard, or a sot. Such a man, supposing that he avoids committing any very wicked action in his drunken moments, nevertheless is almost sure to suffer from his intemperance. He cannot work so steadily, or to such good purpose, as a sober man. No one can depend upon his executing the duties he undertakes. He therefore ceases to be employed, and becomes poor. The expense of the liquor he drinks adds to his poverty. His family, reduced to misery by his intemperate habits, cannot love or honour him. His home becomes a scene of wretchedness, and disease and penury cut short his days.

There are many other things in which temperance is to be observed, or intemperance avoided, besides eating and drinking. Excessive labour of body or mind is as much an act of intemperance, as to make one's self dull and stupid by taking too much food, or irrational and giddy by taking too much spirits. But there is a wide difference in the degree of immorality in the kinds of excess. An intemperance in study, which brings untimely death in some instances, is not harshly condemned as an immoral transgression—though it certainly is such—for the motive which leads to this intemperance is regarded as an honourable one. The loss of health and character, from abusing the duty of taking nourishment, is universally condemned, because the motive and the acts done in obedience to its impulse are irrational and disgraceful. Indeed, there is no duty which we are called on to discharge in which there is not room for the exercise of this virtue. It is nature's 'golden mean.' Shakspeare saw need for it even in the fervours of dramatic speech. Hamlet says to the players: 'In the very torrent, tempest, and (as I may say) the whirlwind of passion, you must acquire and beget a *temperance* that may give it smoothness.'

Industry.

The Almighty Creator has made the earth productive of many things necessary for our subsistence and comfort, but scarcely any of these things are to be had in sufficient quantities, or are in a state fit for use, without human labour. Grain must be sown and reaped; metals must be dug from the ground, and fabricated into utensils; flax, wool, and cotton must be spun and woven. From these and the like operations arises the wealth both of individuals and of nations. That any one, therefore, may be entitled to have food, or clothing, or any useful thing he desires, he must bear his share in the labours of society, unless he be so weak in body or mind as to be unfit for work, or already have so much wealth, of his own or another's getting, as to require no more.

When a people do not work, but live only on fruits or wild animals, they are said to be in a savage condition. Such are the American Indians, the Kaffirs, and the aborigines of Australia. Their style of living is very miserable; they have no comfortable food or clothing; and having no store against times of scarcity, they often perish in great numbers from hunger. A savage country rarely supports more than one person for every square mile.

When a people are industrious, they live in a much better style. As they rear and tend cattle and sheep, sow and reap corn, build dwellings for themselves, and bring home the productions of other countries in ships, they enjoy many comforts which the savage never tastes. Generally, a people are well or ill off exactly in proportion to their industry. The Germans, Swiss, French, Dutch, and British are the most industrious of all nations; hence their general condition is the best. In their countries, there are from one hundred to three hundred persons for every square mile. We thus see that in a country where there is much industry there are far more people, and these far happier, than in one where there is no industry.

The same rule holds respecting individuals. He who does not work, or in some way serve his fellow-creatures, is left to want; but he who works, obtains the means of living in greater or less comfort. Generally, according as men are diligent and honest, or the reverse, just so do they prosper in their callings. While God has appointed all good things to be attainable only through labour, he has also appointed that labour should in itself be useful and agreeable to man. We cannot be healthy, we cannot be happy, unless we have some occupation for our hands and minds. On the other hand, we should not labour *too* hard or *too* diligently, for then we should exhaust the powers of our bodies, and incur diseases which are even worse than the consequences of idleness. To be actively employed for ten hours every day (Sundays being excepted), is generally thought to be as much as is consistent with health.

Health.

Although a large amount of human disease and mortality is directly attributable to habits of intemperance, a far larger amount is traceable to the neglect of those sanitary precautions which experience has shewn to be indispensable for the proper maintenance of health. Health is the condition of the body when every organ or part of it is sound, and performs without difficulty the functions or duties assigned to it. If the stomach and bowels have all their natural strength, and act properly upon the food; if the heart and its vessels

are in good order, and circulate the blood rightly; if the lungs be entire, and permit the blood to receive its due supply of air; if the brain be sound, so as duly to perform all the mental functions; and if the skin be fit to carry off the perspiration—the chief conditions of health are observed: we then experience no disagreeable or painful sensations, and are able to attend to all our appointed duties. To be in this state, is to enjoy one of the greatest of blessings: to be otherwise, is felt as a severe misfortune. It has been provided by our beneficent Creator, that all the organs or parts of our frames, if we only take care not to injure them, should continue in their original soundness, and that we should consequently be healthy. But if we do not take care to keep them sound, it is impossible that we can be healthy. For instance, taking habitually too much food, or food of an injurious kind, is sure to hurt the stomach; too much thought and care injures the brain, and also the heart and its vessels; a draught of cold air upon the skin, when warm, closes up its pores, so that it is no longer able to carry off the perspiration: each organ is liable to be thus hurt, or deranged in its function, by some erroneous course of conduct, or some accident that may befall it, and the consequence is disease, which, in its worst forms, often occasions death. In order, then, to preserve health, it is clear that we must follow certain rules—we must observe the laws of health. It is one of the highest duties which we owe to ourselves, to study to act in such a way that we may possess all our native strength and health. Some people inherit diseases from their parents. There are also diseases which spread by infection or contagion—that is to say, the air carries them, or they are imparted from one person to another by touch: these diseases consequently seize many persons who had no concern in originating them. Nevertheless, in such cases, as in all others, the malady can be traced to human error, however innocent particular victims may be. The parents, grand-parents, or some other ancestors, must have contracted by imprudence the diseases which they handed down to their children. Infectious and contagious diseases invariably take their rise from people dwelling in unhealthy places, as marshes, or in the close and filthy parts of large cities, or from their not taking wholesome and sufficient food, or from not keeping themselves and their houses clean. It thus appears that, for the sake of our fellow-creatures, as well as for ourselves, it is our duty to use all proper means for preserving health. The chief conditions required for the maintenance of health will be found treated under PRESERVATION OF HEALTH, Vol. I. page 721, but they may be briefly summarised as follows: The place in which a man lives must be dry. His house must be clean, and fresh air must be allowed to circulate through it by night as well as by day. He must frequently wash the whole surface of his body. He must take each day not less than twenty-four ounces of solid food, whereof at least four ounces should be animal food. He must avoid a too great sameness in his food, and also too great a variety at one meal. He must avoid indulgence in spirituous and fermented liquors. He must spend an hour at least, and as much more of his time as possible, every day in the open air. He must have some occupation to give him bodily and mental exercise, and which may engage his attention eight or ten hours every day. If so employed, he must spend some part of his time in cheerful and sensible amusement. He must never sit for a single minute in damp clothes, or in a room through which a cold draught of wind is passing. He must sleep from six to eight hours of the twenty-four. He must be careful to avoid great anxiety of mind, and endeavour to sustain his fortitude against the sorrow which arises from misfortune. If all men were to live in accordance with these rules, disease would in time be little known on earth, and human happiness would be increased to a degree of which we cannot now form any notion.

Self-support.

It appears to have been designed by Creative Providence that every human being should depend chiefly on the means within himself for his own subsistence and advancement in the world. It was never intended that we should depend upon each other for food, clothing, or any other things we desire: we are called upon to labour, that we may obtain these things for ourselves. The support and comfort of each person is thus made much surer than it could have been by any other arrangement.

It is of importance, therefore, for young persons that they should accustom themselves from their earliest years to trust as little as possible to others for what they want. They should learn to put on their own clothes, to wash themselves, to take their food with their own hands, and not to expect that their mothers or servants are always to do these things for them. They should learn to read, to write, to cast accounts, and should store their mind with knowledge, in order that they may be able, as soon as possible, to go into the world and earn their own bread. At the proper time they should be prepared, if necessary, to commence learning some art, trade, or profession, by which they may maintain themselves through life. The more they can serve themselves, and the more they can live by their own exertions, the more will they be liked and respected by others. It is justly considered shameful for any one who has hands to labour, and a mind to think, to remain in idleness while others are at work, and to look to them for enjoyments which he might, by a little activity, obtain for himself.

Whatever we trust to others to do, is scarcely ever so well done as that which we do for ourselves. Often, too, it is not done at all. We should never, then, commit any duty to another which we ourselves can perform.

Self-improvement.

Whatever may be the extent of school education, it does not supersede the necessity for self-improvement. Even the most liberal academic instruction leaves many gaps to be filled up, much to be done for moral and intellectual advancement. Moreover, it is a law of our nature that there is no standing still. We must either go forward or go back. Moral or intellectual stagnation is in reality retrogression. It is this law of progress that makes self-improvement a duty. If we do not obey it, we lose the power of retaining what we have already acquired, and become less fitted than before for the performance of many other duties. The man who thinks he knows

enough, or is good enough, and who does not strive to know more and to become better, will probably find in the long run that the *love* of wisdom and virtue was the condition of their remaining with him, and that the penalty of his apathy has been to forfeit their companionship. There are many lesser reasons why the duty of self-improvement should not be neglected, of which the most obvious is, that if we fail in this respect, others may not, and may therefore attain to distinctions and advantages from which we will be shut out.

In ordinary circumstances, young men embarrassed by onerous, and perhaps exhausting labours, have little time for mental culture. Borne down by professional drudgery, where are those hours they can spare for useful study? Every one will answer this question for himself. We can fully understand that innumerable difficulties lie in the pursuit of knowledge; yet, can it be forgotten that a vast amount of valuable time is systematically misspent—worse than wasted—which might be devoted to a good purpose. How many hours in the morning are thrown away in bed! How many are wasted listlessly in the streets! What a misexpenditure of time, means, and health in coarse convivialities! And what might not society be, were these things properly considered! Assuming that you have at command only two out of each twenty-four hours, much may be done with that brief period during successive years, if, as Johnson says, you set to work 'doggedly.' It might be possible, with no greater opportunities, to learn Latin and one or two living languages, to acquire a good knowledge of English composition, and to be acquainted with the writings of some of the best authors. All this has been repeatedly done, and there is no reason why it should not be done again.

The perusal of the biographies of distinguished men will shew some remarkable instances of triumph over early difficulties. Could there be anything more discouraging than the early helplessness of Gifford, who ultimately became the distinguished editor of the *Quarterly Review*? He was left an orphan at the age of thirteen; was put to sea as a cabin-boy; was afterwards bound apprentice to a shoemaker; and in this condition was so poor that he could not buy paper, but used to work algebraical questions with a blunted awl on fragments of leather. Through the kindness of a gentleman who noticed his abilities, he was rescued and educated, and he afterwards manfully fought his way into public notice. But were not many of the distinguished men of modern times originally shoemakers, gardeners, carpenters, printers, masons, or connected with other employments equally humble? And is it not seen that their mental improvement was due in a great measure to their own resolute determination? Telford, who became an eminent civil engineer, was originally a stonemason, and spent his leisure hours in poring over such volumes as fell within his reach, with no better light than that afforded by the fire, or 'ingle' as he calls it, of his mother's cottage.

A more recent instance of self-culture in a stonemason is that of the late lamented Hugh Miller, who became eminent as a geologist and man of letters. How, while a boy, he took a fancy to geological inquiry, and, unaided, made some remarkable discoveries among the rocks on the sea-coast at Cromarty; how, when working for a livelihood with chisel and mallet as a stone-hewer, he devoted his spare hours to his favourite study, and lived untainted amidst dissolute companions; and how, in the course of events, he very naturally arrived at literary eminence—are all facts well known.

On the Formation of Opinions.

Opinion signifies belief. There are right and wrong opinions. It is our duty as rational beings to cultivate correct opinions upon every subject, and to eschew those which are of a contrary description. There is nothing more easy than to form hasty, inaccurate opinions, but it is very difficult to form a correct belief on many topics. Opinion is found to be more or less dependent on times, circumstances, and bodily temperaments. It frequently arises out of prejudice, and is often influenced by impulse. When we form an opinion upon any subject, we are inclined to believe that all opinions of an opposite character are erroneous. We are apt to laugh at everybody's opinion but our own. All this betrays a deficiency of sober reflection, an ignorance of the history and faculties of mankind, and a want of knowledge of the world. The people of every country entertain opinions favourable to their own fashions, customs, laws, and religion, and unfavourable to those of other nations. A love of one's own country is certainly a commendable feeling, but it should be a love arising from examination and conviction, not from prejudice. The Hindu worships the river Ganges. *We* have been so brought up that this is seen by us to be superstitious folly. The bigoted but conscientious Turk will go to death upon it that Mohammed was a true prophet. *We* believe this to be a delusion. The people who lived in our own country a hundred years ago were convinced that certain old women, whom they termed witches, could, by supernatural powers, raise tempests at sea and land, and malevolently interrupt the course of human affairs. Yet *we* are now as firmly convinced that this opinion was a gross absurdity. Opinion is therefore a thing of time and place. The opinion that is supposed to be right in one century, is wrong in the next. What is considered to be a right opinion in Asia, is thought wrong in Europe. What is deemed a correct and praiseworthy belief in Britain, is reckoned an absurdity in France. Indeed, it is often seen that the opinion which is held good in one district of a country, is looked upon with contempt in other districts—so that the whole world is found to be covered, as it were, with a variety of opinions and shades of opinions like the diversified colours by which countries are depicted in a map. Opinion, we have said, is also dependent on temperament of the body. This is a melancholy truth. A fat and choleric man does not think in exactly the same way as a lean man. A man who enjoys all the comforts which opulence can purchase, has a tendency to think differently in some things from a man who is suffering under misfortunes or poverty. Nay, most men have reason to alter their opinions on many points in their progress through life.

What does all this wonderful contrariety of opinion teach us? Since we see that opinion is dependent on the locality of our birth, on the age

in which we live, on the condition in which we may chance to be placed, and on the physical qualities of our bodies, have we therefore no power over opinion? Must we be its slaves? Certainly not. But the contrariety of opinion existing in times and places teaches us, in the first place, *humility*, which is the foundation of many beautiful virtues. It shews us that the opinions which we may form, particularly on abstract subjects, may possibly neither be the most correct nor the most enduring. Perhaps what we have taken up and cherished as truth, may, after all, be a delusion. In learning a lesson of humility and distrust of our own way of thinking, we are impressed with a tender regard for the conscientious opinions of others.

Although opinion is commonly dependent on those circumstances which we have noticed, it cannot be allowed that we have no power over it. We have a power over the formation of opinion to a certain extent, and it is our present object to shew how this power can be exerted in order to enable us the better to fulfil the duties of life. The reason why opinion is so illusory in its nature is, that mankind have ever been excessively careless in the adoption of their opinions. They allow the floating notions that come in their way by chance to take hold of them, and grow into a system and a habit; and after having thus made up their minds, as they call it, they will listen to no explanation of the opinions of others. Their obstinacy, their self-conceit, their self-interest, their wish to please the party to which they have attached themselves, induce them to hold fast to their original opinion, even when experience has shewn it to be false or doubtful. In the apposite language of Scripture, these men war against the TRUTH.

From these considerations, it is clear that we ought to be very cautious in the formation, and, most of all in the display of our opinions. Speaking to the young, we would say—while yet under the training of parents, guardians, and teachers, it is your duty to receive with confidence the instructions by which it is attempted to enlighten your minds, and to put you in the way of well-doing. But these friends of your youth will probably tell you, that when you pass from under their guardianship into the active scenes of life, you become a responsible being—responsible alike to human and Divine laws—and that you must now think for yourself. At this critical period of your existence, you have every chance of coming in contact with the idle, the dissipated, the frivolous, who will try to make you embrace erroneous opinions, and who will possibly put the most mischievous books into your hands. Do not be led away by such machinations; neither be dismayed by the number of wits or profane jesters who may assail you. Do your duty manfully. In order that you may attain a correct opinion on the great debatable subjects that you will hear rung in your ears through life, begin a course of reading those good and authoritative works which intelligent friends will recommend to your notice. Take every opportunity of cultivating your understanding, of enlarging your ideas, of banishing prejudices. Look always at the different sides of a question; for you must remember that there are always many ways of telling a story. In proportion as you advance in your private studies, and acquire a knowledge of the passions and conduct of mankind, you will more and more be able to form a correct opinion. There is one thing which you will learn with surprise from this kind of experience; and that is, that many, though holding different opinions, are driving towards the same end in the main. They have only differed upon trifles, and perhaps fought about mere words. This is one of the strange weaknesses of the human race, into which you will find it difficult to avoid falling. The more you learn, the more will you see cause to entertain a liberal view of the opinions of others. Having formed our own opinions on solid grounds of conviction, let us uphold them on all fitting occasions with firmness, but at the same time with that regard for the opinions of others which forms a part of the great Christian virtue of Charity.

These observations apply indifferently to various subjects upon which opinions may be formed; and we would, in conclusion, beg to say a few words in particular on opinions of a political nature, which are the most difficult of all to form correctly. Political opinions are those that regard the theory and practice of national government. The policy of national government is not something that can be laid down absolutely. It is a thing dependent on time, place, and other circumstances. The form of government which suits one age or country would not suit another age and country. Some nations are best governed by a despotism, others by a mixture of monarchy and democracy, others by a pure republicanism. The genius and necessities of the same people, too, are subject to change, and consequently their government must change with them. If we feel the force of these facts, we shall be cautious how we assume an unalterable opinion upon any mode of administering government. The young are particularly liable to take up notions on this subject which they afterwards see necessity to fall from. We would admonish them to read and digest the history of their country, and reflect well upon the genius of the nation, before they come to a determinate opinion in politics. They are called upon by duty to examine extensively, and deeply, the grounds upon which they form their opinion. National exigences sometimes call upon us to engage more deeply in politics at one time than another. Discretion must here be our guide; yet there is generally greater danger in our wasting much precious time on political disquisition than in falling into an apathy upon public affairs. He is a wise man who knows how so to guide his steps as to preserve himself from falling into either extreme. Every one who has been for a long series of years politically busy, will acknowledge that, though he thinks he was right in the main—in which opinion he may be right or wrong—yet that he has spent many busy hours and anxious thoughts on subjects which, looked back upon, are seen to have been profitless and insignificant.

Contentment.

There is a right and a wrong kind of contentment. We may be in a condition not quite agreeable to us; our food, clothing, and other necessaries may be deficient; we may possess faculties of mind and body capable of improving our condition; and it may be in no way imprudent to make the attempt to better ourselves. *In such a case it*

would be wrong to remain contented. It may also happen that we are in a situation where real evils press upon us. We may be injuring our health by living in a damp house; or we may have a hole in our clothes, which might be easily mended. In these circumstances, it is equally *wrong to be contented.* If all men from the beginning of the world had felt contented as they were, and had submitted patiently to evils easily remedied, the earth would have still been the residence only of savages.

True contentment is to be patient and happy in the situation which is suited to our faculties and means, and under evils which no exertion or care can remedy. All admire this kind of contentment, and every good man endeavours to practise it.

One who does not easily content himself with any good which he may reach, is said to be *ambitious.* A useful end is served, under Providence, by ambitious men; but they themselves never can be truly happy, for they never are quite content. Give them one thing, they wish for another; whatever honours they may attain, they long for more. Alexander, when he had conquered a large part of the world known in his time, wept when he reflected that there were no more worlds to conquer. In high station, and in the possession of great wealth, there is always danger, and consequently uneasiness; while the man who is contented with a moderate share of the good things of life, lives in ease and safety. It is good, therefore, *to be, upon the whole, of a contented frame of mind,* though not to be too easily contented, or to be contented under evils which we can remove.

Anger.

We have been so constituted by our Almighty Creator, that whatever offends any of our feelings excites anger or resentment; and whatever pleases any of our feelings excites benevolence and kindness. If, for instance, we witness a just or honest action, our sense of justice is pleased, and this raises a kind feeling; whereas, if we witness a very unjust action, our sense of justice is sure to be offended, and we then feel angry. Anger, it may thus be seen, is a feeling intended to have a use in our nature. It is a sensation designed to counteract whatever is wrong or offensive. We should be very pitiful creatures if we did not feel indignant at any instance of cruelty or injury, or at any insult that might be offered to persons and things which we hold in respect. Though it is allowable to be angry on proper occasions, we are strongly called upon to keep our anger within the bounds of reason, and to take care that it does not prompt us to rash and vindictive actions. To encourage or nurse angry feelings against any one is generally condemned. The acts which anger prompts depend very much on the general character of an individual. The rude rustic expresses his rage in sharp and loud scolding, or in blows. The polished gentleman avoids blows and scolding, but uses smooth sarcasms, or challenges the offender to a fight with deadly weapons. Is either of these modes of expressing anger right? No. They are both alike wrong. Railing, satire, and fighting can do no good, but will certainly make things worse than before. The true way to give vent to just anger is to state your feelings on the occasion, in calm but firm language, such as may produce correction without leading to further evil. It is of importance to our comfort that we should encourage a mild and patient disposition, rather than a fretful, irritable, and revengeful one. The world is so ordered that many things offensive to us must occur every day of our lives; and if we were to fret and fume at every one of these, we should be truly miserable in ourselves, and a source of discomfort to all around us. Good-temper, or the power of bearing crosses gently and patiently, is one of the most valuable of all qualities.

To be able readily to overlook and forgive an injury, is a mark of an amiable disposition. That very liability to err which all of us are under, strongly calls on us to be ready to pardon offences in one another. While revenge aggravates the original evil, forgiveness does very much to remove it. By such means we make our enemy our friend; others, influenced by our example, are induced to be merciful, and easily reconciled: and thus good-will and peace are spread over the earth.

Self-respect.

A man who habitually acts in accordance with the dictates of his conscience learns to respect himself, and to avoid doing anything which may tend to injure that feeling. Self-respect is a feeling based upon a true knowledge of one's self. The more a man understands his own character and capabilities, and comprehends the real object of his earthly existence, the more earnestly and hopefully will he seek to discharge the various duties of life, to make the best possible use of his time and abilities, and to furnish, by his own example, a practical illustration of the advantages derivable from the adoption of a proper line of conduct. If he be ignorant, he will endeavour to acquire knowledge, either from the teaching of others or by his own efforts. The man who has learned to respect himself always obtains the reputation of being a trustworthy servant or a good employer, according to his condition in life. It could hardly be otherwise, for self-respect is inconsistent with the acquisition of low or degrading habits. The man who allows himself to become a gambler, a drunkard, or a swindler ceases to entertain a feeling of respect for himself; and when that feeling has once disappeared, the work of reclamation becomes difficult, if not hopeless. On the other hand, when a man begins to entertain a sense of the state of degradation to which he has become reduced, and determines to make an effort to recover his lost position in society, his feelings of self-respect increase with every endeavour on his part to pursue a better and nobler course of life. The man who, as a drunkard, was not ashamed to wear a tattered coat and waste his hours in the public-house, becomes, after the adoption of sober habits, reluctant to wear the badge of vice and poverty, or to fritter away his time in idle and profitless indulgence, because, in his case, they would form an insult to the feelings of self-respect which have become awakened within him.

But self-respect must not be confounded with SELF-LOVE, a passion which becomes productive of good or evil, according to the manner in which

it becomes developed. The love of self causes a person to do that which he believes will most advance his own interests. If he take a right view of what constitutes his interests, he will be induced to practise those rules which have for their object the furtherance of human well-being and happiness; and to systematically discharge the duties which he owes to himself and to others. But if, on the other hand, he takes a false and perverted view of what he believes to be his interests, if he entertains the notion that they are separable from those of the rest of the community, he becomes liable to drift into those habits of selfishness which have, from the earliest periods, been the cause of so much trouble and misery. The miser who hoards his gold in secret, the drunkard who spends upon himself the money which ought to assist in the support of his family, the political place-hunter who sacrifices principles and friends to secure the accomplishment of his ambitious desires, the gambler who squanders the heritage of his children to his passion for play, are each a type of self-love in its most objectionable guise, that of unmitigated selfishness.

This feeling sometimes takes the form of PRIDE, which is frequently mistaken for self-respect, arising as it does out of the degree of esteem in which a man holds himself. This self-estimation may have reference to the qualities of his mind, his attainments, his possessions, his strength, his personal appearance, his parentage, or descent. It may also be founded in a consciousness of virtue, and of having done one's duty in all the relations of life. It seems to arise necessarily from comparing one's self with other persons. If this be the right meaning of pride, it is very clear that it is not always a sentiment which entitles one to respect himself. A man would be thought very unwise or weak-minded who should openly declare that he valued himself, in comparison with other men, on account of his wealth, his personal appearance, or his family connection; equally unwise or weak-minded, if he should declare his opinion of himself to be, that he was superior to other men in the gift of natural intellect, in the cultivation of it, or in the practice of the different virtues. Yet, we are continually meeting with such instances of false pride, the persons guilty of this absurd failing flattering themselves that in so doing they are impressing with a sense of their importance all with whom they may come in contact. In reality, however, they elicit sentiments directly opposed to those desired by them. In all ages and in all countries this kind of pride has ever formed a theme for ridicule and satire. There are, however, other kinds of pride, which so closely approach self-respect as to be scarcely distinguishable from it; for instance, the feeling which animates a man who has done his fellow-men a real and substantial service, not from a love of popularity or a desire to promote his own interests, but from pure and conscientious motives; or the feeling with which a brave and honest man vindicates his honour or defends his rights when they are assailed. This warmth of self-respect does not proceed from the petty sentiment of vanity, or the natural instinct of self-preservation, but from the laudable desire to preserve unsullied those qualities and privileges in one's self which command our respect when we see them in others.

SOCIAL DUTIES.

These are divisible into *general* and *specific*—that is, some are incumbent upon us in reference to society at large, and at all times; we are never exempt from the obligation to discharge them; others arise out of the particular relations into which we enter with separate persons or with communities; and we are only required to perform them so long as these relations subsist. To the former class belong Truthfulness, Benevolence, Magnanimity, Civility or Courtesy; to the latter, our political duties as Subjects, Jurors, Electors, our social duties as Neighbours, Masters and Servants, &c.; and the duties that spring out of the family relationship—Husband and Wife, Parents, Children, &c. We shall consider these in the order we have indicated.

I. GENERAL SOCIAL DUTIES.

Truthfulness.

There are many reasons why men should always speak the truth. One of these reasons is, that the knowledge which any one person can have from the use of his own senses, in many things which it most materially concerns him to know, is very limited. He must therefore often depend for his knowledge on what others say to him; and when the thing spoken of is exclusively known to the party speaking, the other must rely entirely on what he says. If, therefore, it be considered how great a part of the most serious concerns in life proceed on declarations made by one person to another, we may readily conceive, that if these could not be relied on, the affairs of mankind would be greatly embarrassed, and confidence in each other would be destroyed. As this matter of speaking the truth is one which concerns all persons, so all persons agree in holding liars in contempt. Even the very lowest persons consider themselves to be disgraced when charged with the guilt of lying. They can endure charges which would subject them to public punishment, with more composure than they can endure this. A lie is always understood to be resorted to, to secure some advantage or prevent some evil to the person who resorts to it; or to occasion some disadvantage or injury to the person to whom, or of whom, the lie is told; sometimes both these purposes concur. The object in view is always an immoral one, and the means used are always regarded as disgraceful. It is at once obvious that wilful falsehood is forbidden by natural law, which is intended to regulate our social relations, and is expressly forbidden by Divine law, which condemns all acts of fraud and deceit, and commands us to do to others as we would have them to do to us. Besides the falsehoods which people designedly speak, there is a kind which springs from negligence, hastiness, or a warm imagination. Dr Samuel Johnson was of opinion that most lying arises from indifference about the truth, rather than from a wish to deceive. People are not sufficiently anxious to be correct; they say anything that comes uppermost, or what they think will please, without reflecting whether it be strictly true or not. It is a common error of tradesmen, from a desire to please, or for worse reasons, to promise to have work done at a particular time, when they are not

sure of their ability to do so, or know positively that they will be unable to do so. There is yet another species of falsehood, which consists in saying one thing but meaning another, and which ought to be at all times avoided as scrupulously as positive lying. Persons who resort to this mean practice think that, because they do not lie in the words which they use, they do not commit any actual sin or crime; but this is a mere delusion. The lie is committed by the attempt to convey a false or wrong meaning, for the purpose of misleading; and such a mode of speaking is therefore both deceitful and sinful. It is impossible to overrate the importance of truth. It is a duty which no man can safely neglect. We should not only observe it in everything relating to ourselves and our neighbours, but we should seek to ascertain it, and hold fast by it, in all things. If we study history, we should endeavour to get the books of best authority. If we cultivate science, we should make sure that we receive nothing which is not satisfactorily proved. Nothing but good testimony can prove the truth of an event; and nothing but experiment, and a careful observation of facts, can prove the truth of anything in science. We should allow no opinion to rest in our minds unless we are certain, and have taken pains to make ourselves *conscientiously certain*, that it is right, and not founded in error. Every wrong opinion, or supposition of what is false, tends to do harm in the world; while everything we know for truth, and every opinion and sentiment that we know to be rightly founded, tends to the good of mankind.

Benevolence.

Though it is intended that every person should depend chiefly on himself for what he needs or desires, yet all mankind are connected by various common ties, and therefore they should wish well to each other, and be disposed to serve and help each other, on all fitting occasions. By wishing well to one another, we are induced to look with kindness on what our fellow-creatures are doing for themselves, and to address them in a friendly manner. The good words we use cause those whom we address to feel kindly to others, and thus an agreeable state of feeling is spread abroad throughout society, and the total amount of human happiness is much increased. If, on the contrary, men were not to wish well to each other, there would be a general sulkiness amongst them, and no one would feel happy.

There are many evils in the world from which no one can be sure of escaping, however careful he may be. We may be sick or hurt; our best schemes may fail; poverty and want may overtake us. It is proper, when any suffer from these evils, that the rest should do what is in their power to console, help, and restore them. By these means the unfortunate are saved from extreme hardship, and the rest are made happier; for it is delightful to be able to lessen the sufferings of our fellow-creatures. Men are also differently endowed by nature. Some are strong in body and mind, others weak. Some are little tempted to err, others are much tempted. Some get wealth and good education from their parents, others get neither. The lot of different nations is not less unequal; some being enlightened, while others are sunk in barbarism. It is therefore incumbent upon us all, both as individuals and as nations, to take an interest in each other—the strong to help the weak, the good to correct and improve the bad, the rich to help the needy, and the enlightened to impart their knowledge to the ignorant.

Our Almighty Creator has given us the sentiment of benevolence, that we may use it for these purposes; and he has further, as we read in the Scriptures, laid upon us his direct commands to love each his neighbour, to succour the poor, to visit the widow and fatherless, and to exhort and instruct one another. In all these things we must use prudence. Where our gifts would encourage idleness, or minister to vice, it were better to withhold them. We must take care that our gifts are sure to relieve real suffering, and that they will do good, and not harm, to those who receive them. It is generally best to assist a needy person in such a way as to enable him to help himself. We must also take care that what we give can be well spared, and that our giving it will not prevent us from paying what we owe to others. If we give what is not our own, or what we should employ in paying our debts, we may be said to act as robbers rather than as givers.

Magnanimity.

Some people are said to have little minds They are always finding fault for trifles; they resent the smallest injuries, even when the injury was not meant; they are jealous of every one in the same trade or profession with themselves; they envy everybody who succeeds in anything; they keep up spite for a long time about little offences, and vent it when they get a proper opportunity, long after everybody else has forgotten that they had been offended. It is very different with great-minded persons. They do not easily take offence; they soon dismiss anger; they rejoice to see others succeeding, even though they may not be succeeding themselves. They may emulate or strive to be equal with a neighbour, but their rivalry is of a generous nature. They can allow for the motives which actuate others, and easily pardon an error which has been committed through inadvertency, even though it may have been grievously mischievous to themselves. Such persons never condescend to tricks, or stratagems, or any other low arts, for the purpose of accomplishing an end. They scorn no one, however humble, if honest; they entertain no hatreds. They are too much at ease with themselves to be liable to sentiments that aim at the depreciation or injury of others. Such is magnanimity; a rare quality in the world, but one which is never beheld without the highest admiration.

Civility.

The well-being of society would be greatly promoted if the nature and use of this Christian virtue were more generally known. We take this to be, in personal intercourse, the observance of the command, 'Do to others as you would that others should do to you.' The most rapid glance at any community shews this—that some of its members are brought into contact, in matters of business, necessarily; others meet, incidentally, who have no particular connection; others meet for social purposes, in various forms; and that

there is a large proportion who know of each other very little beyond the fact that they are of the same country, and perhaps not even that. There must be a *best rule* of deportment for all these classes; and no one will deny that, if this rule were defined and faithfully applied, there would be much more of everyday comfort and complacency in the world than there is well known to be. If we rightly understand the meaning of civility, it is the manifestation of kind feelings, and of a desire to do all things which are to be done under the influence of such feelings, in a becoming and agreeable manner.

If every person understood the true foundation of society, the common origin of all its members, their natural and necessary sympathies, their community of interests, their necessary action upon and with each other, it might be supposed that all who are reasonable would be civil. They would be so, because they would promote their own good; because they would be doing what it is proper to do to promote the good of others; and because they would know that in so doing they would conform to the design of their creation. We do not include under the term *civility* the great duties of justice, acts of munificence, important personal services. These arise out of some special relation which an individual bears to one or more other individuals. It seems to be limited to the manner in which the common or accidental intercourse of the members of society in general should be carried on. This matter may be better understood by some examples. Thus, if one comes into the presence of another, as a beggar, servant, labourer, mechanic, trader, merchant, farmer, lawyer, physician, clergyman, or public officer, or if it be a female, or child of either sex, there may be very various modes of receiving these different persons—yet certainly, by every one of the laws which we are endeavouring to illustrate, these several persons are entitled to civility. Even the beggar—perhaps one should rather say the beggar in particular—if not deformed by voluntary transgression, should be received with civility—that is, gentleness, kindness, decorum are to be observed relatively to each one. Why? Because no man can afford to be deemed insensible to the cause of reasonable humanity; nor a stranger to the decencies of life; nor ignorant of what is due from him, or to him, in any of his proper relations.

There is perhaps no kind of incivility more contemptible than that which is exercised towards those servants of the public who would be liable to the loss of their situations were they to resent—as they must naturally feel inclined to do—the insolence to which they are frequently subjected. It is no uncommon thing to hear young men giving their orders in the most authoritative and offensive manner to waiters at inns, stewards of steam-vessels, or any other class of functionaries whose services for the time may be at their command; and abusing the poor fellows who are doing their utmost to serve them for their stupidity and awkwardness, while they may all the while be performing their work in the most efficient and unexceptionable manner. And this impertinence they employ for the purpose of impressing those who may be witnesses of their behaviour with a favourable opinion of their smartness and knowledge of the world. They could not adopt a surer plan to defeat the object which they have in view; for every well-bred person will regard their conduct with disgust, and will look upon it as a sure indication of ignorance, impertinence, and want of sense. This is an error, however, which, in the great majority of instances, time and experience will correct. But we sometimes find similar conduct manifested by those who cannot plead youth and inexperience in justification of their coarseness and incivility. Such persons we are in general quite safe in setting down as individuals who wish to appear above the sphere in which they are entitled to move, and who, feeling that they have no claim to the character which they have assumed, endeavour to conceal their deficiencies from the observation of others by behaving in a rude and brutal manner to those who are prevented by their position from resenting such conduct.

There is one other consideration which operates on all men who have had much experience in the world. Men and things change, and take new and unexpected relations. Persons who have been long, and even intimately connected, suddenly or gradually sever; persons who have known little of each other, and that little uninteresting or unfavourable, are brought in contact by some unexpected turn of affairs. Sometimes one needs favours, or at least good-will, from those he never thought to be of the least importance to him. In such, and in a multitude of other circumstances, one may find the advantages of having been acquainted with the virtue of civility, which implies that one has given no unnecessary offence. There are other cases in which a person may be called on by duty to do things disagreeable to himself, and exceedingly so to others. But there cannot be any good sense in performing such duty morosely, and with inhumanity.

A refined species of civility is sometimes expressed by the term *politeness*, which is an exterior indication of good-breeding or good-manners, and may be defined as that mode of behaviour which not only gives no offence, but which affords agreeable sensations to our fellow-creatures. In our intercourse with the world, this species of civility is imperative.

As men are of different dispositions and tempers, they would assuredly fall out with each other, if each were to say to another whatever arose in his thoughts. In order to avoid giving offence, it is necessary to put a restraint upon our thoughts in company, and only say what we think will probably not be displeasing to any. In associating, men have also found it necessary to observe certain set forms of speech and conduct, of a respectful and affectionate kind, towards each other. One, in writing a letter to another, subscribes himself as his 'obedient servant,' though the individual whom he is addressing may be quite a stranger. If the writer be acquainted with the person addressed, he calls him 'dear sir,' though he may, in reality care little about him. This is not insincerity; it is simply a mode of avoiding an appearance of rudeness or bluntness, which could not fail to hurt the feelings of the receiver of the letter. No doubt many are little disposed to make a show of politeness; but it is proper, nevertheless, that it should be made, because anything else would be offensive. It is better to put a slight constraint upon our

inclinations, than by bluntness to give pain to our fellow-creatures. Politeness, in fact, has its true source in benevolence. If we love our fellow-creatures, as we ought to do, we cannot fail to be courteous to them, and to avoid giving them, by word or look, unnecessary offence. It is also of importance to observe that the real state of our feelings is liable to be much affected by the very appearances of things surrounding us and connected with us. If we live much amidst broils and jars, our feelings become harsh and irritable. If we live where only the soft words of courtesy are used, we become soft and courteous. In polite society we gradually gain the power of restraining all violent feelings, and at length become in reality the creatures which at first we only seemed to be. Like other duties, courtesy has its extremes. An over-polite or fawning manner is as disagreeable as rudeness. True politeness is an honest and manly complaisance, as far from cringing and obsequiousness on the one hand, as from insolence and indifference on the other.

II. SPECIAL SOCIAL DUTIES.

The Duty of Subjects.

Every civilised nation is governed by some species of authority, for the purpose of preserving order in society. According to a law of universal application, every independent nation is understood to have the undoubted right to model its government according to its own fancy, genius, or necessities, provided that, in the execution of its plans, it does not wantonly injure its neighbours. Directing our attention to our own country, with which we have here alone to do, we find, as soon as reason dawns upon us in youth, that we are members of a great community. We find ourselves subject to laws which were framed long before we were born, and that we must act in a manner not to please our own caprice, but according to the arrangements which have been instituted for the benefit of society at large. But if we thus discover that we are trammelled by certain legal restrictions, not very agreeable perhaps to the wildness of our untamed nature, we likewise find that we possess a great many compensating privileges. While yet opening our eyes to the light, we enter into the enjoyment of all the transcendent privileges of British subjects, and come within the powerful protection of the laws as fully as the oldest and most honoured in the land. It will be perceived that this is a boon of incalculable value. For us, armies have fought and bled; for us, in past times, hosts of martyrs and patriots have contended; for us the wisest statesmen and legislators have transacted negotiations securing civil liberty; for us the people who have gone before us have established a variety of the most excellent, the most beneficent institutions. All these things we enjoy without having been put to the smallest trouble. All that we are called on to give in return, as soon as emancipated from the inexperience and ignorance of childhood, is *obedience to the laws.*

A cheerful obedience to the laws is therefore our chief public duty. Possibly some of our laws, from having been framed for a former state of society, or in order to meet particular exigences, may not now be very judicious in their provisions; yet that forms no solid reason why we should break through them. It is always safer to obey a bad law than to oppose it by violence. Unhappily for some nations, they seem to have no clear idea of the value of obedience to the laws. When they find themselves aggrieved by oppressive state measures, they are exceedingly apt to break into tumults, and take up arms against the officers of their governments. This is a very short-sighted policy, as the history of all nations proves; for the people are always sure to suffer far more by the coercive measures adopted to restrain them, than they would have done by submitting to the evil they originally complained of.

Perfect obedience both to the letter and the spirit of the laws does not, however, imply that we should not examine whether they are in every respect answerable to the present condition of society, nor keep us from resorting to legal means to have them corrected, or altogether rescinded. The constitution points out how this is to be done. It is illegal to conspire secretly to overthrow the law. All measures calculated to improve our social or political condition must be conducted openly and honourably. The means put into our hands by the constitution for improving the law are very powerful, if wielded with discretion. The people have the appointment of the men who constitute the most influential branch of the legislature; if they do not appoint individuals who will meet their views with regard to correcting or abolishing laws, they have themselves to blame: the constitution confers upon them a liberty of choice. It, besides, gives them the right to present petitions to the legislature, either individually or in bodies, praying in respectful terms for the amendment or abolition of any law which is deemed oppressive or antiquated. The right of petition implies the right of meeting publicly to discuss the propriety of petitioning. This practice of meeting together excites the public mind to renewed efforts in the cause it undertakes. The speeches of the orators are circulated and commented upon by the newspapers all over the country. One meeting gives rise to others, men's minds are enlightened and warmed, and the public opinion acquires by degrees an amount of moral force, any resistance to which would be useless. It is not without reason, therefore, that the people of this country set so high a value on the right to assemble for the discussion of public affairs, and place it in the first rank of their constitutional prerogatives.

Besides yielding obedience to the existing laws, we are under a collateral obligation to be loyal to the sovereign who rules over us. Loyalty is hence another of our chief public duties. There is some difference of opinion with regard to the extent to which loyalty ought to be carried, but this is, practically, a simple matter. A power to protect the nation from foreign insult, and to preserve the internal peace of the country, *must be lodged somewhere.* It is found to be most convenient to lodge it in the hands of one person, under proper restrictions. In Great Britain, it has been placed in the possession of a hereditary prince or king. This person is entitled our ruler or sovereign; we are termed his subjects. Loyalty signifies a fidelity and willingness in serving the king, so that he may be

enabled both to protect the nation from outward harm, and to preserve order in society through the agency of the laws, or, failing them, through the application of force. Seeing that the sovereign is prevented by the constitution from infringing upon the rights of the subject, through the exercise of his power, it is discovered that loyalty is rewarded in the comfort we enjoy; or, to use another expression, self-interest alone, if no nobler sentiment interfere, would lead us to afford assistance to the king in the execution of his high and important trust. This assistance is demonstrated not only by personal service, if necessary, but by respect. Loyalty may be greatly enhanced by esteem for the private virtues and conduct of the sovereign. When so influenced, it is certainly both an amiable and commendable feeling, and can never, but in ill-regulated minds, degenerate into servile prostration.

Loyalty to the sovereign leads to a subordinate, but important duty. It induces us to respect inferior constituted authorities. All judges, magistrates, or other civil functionaries stand in the light of representatives of the sovereign. The king cannot be everywhere at once, and he deputes these individuals to attend to the wants of his subjects, and to keep good order in society. To shew contempt for any court of justice, or for any magistrate, is therefore equivalent to shewing contempt for the king himself, as well as for the laws, and is justly punishable. To shew our respect both for the laws and the sovereign, we must respect the decisions of judges and magistrates, and support their due execution by our personal influence. Nevertheless, it is in every one's power, when he feels himself aggrieved by these decisions, to appeal to higher authorities for redress; such being the only means allowable by the constitution in opposing the legal power of the established courts of civil and criminal jurisprudence.

The administration of the civil law, such as that which applies to inheritance, debtor and creditor, and civil rights generally, rests with a body of educated men, or lawyers, whose services may at all times be commanded. The other description of law which is made applicable to the preservation of the peace of society, any one can understand, if he have the ability to know right from wrong. We surely all know that it is illegal and criminal to steal, to rob, to murder, to break into our neighbours' houses, or to attack their persons by violence. It can require no reading of acts of parliament to understand this. Our duty in this matter is very easily defined. We must ever bear in mind that one of the principal acts of duty which the constitution enforces is the abstaining from meddling violently with the persons and property of our fellow-subjects. In this well-regulated realm, the person of every man, woman, and child is inviolable from private attack. It is a crime almost punishable with the highest penalty of the law to strike any one, either from an idea that he has injured us, or through the influence of passion and prejudice. If we consider that we have been injured, we must apply to the magisterial authorities for redress. We are only permitted to use physical force when in absolute danger of losing our lives or property by violence, there being then no time to apply to the law for protection.

Under this head we may, perhaps, with propriety, notice that love of country which it is certainly a duty to warmly cherish. A love of the country in which we were born and brought up, is one of the affections of our nature. It is felt by the natives of almost every land, however rude they may be, or however worthless the country may appear to other people. This affection is not without its use when it is kept within rational bounds. It gives the people of each country an interest in their common soil, prompting them to defend it from the attacks of other nations, to promote its general interests, and to feel kindly towards all who belong to it. But the love of country, while thus good in moderation, becomes absurd and mischievous when carried to excess, or not governed by reason. We must not allow it to blind us to our defects as a nation, or to errors calling for correction in our social policy. We must not, because we love our own country, hate or despise other countries and their inhabitants; that would be as bad as if every man were to think so highly of himself, as to believe that no other person had equal honour or virtue. While ready, also, to defend our country from unjust aggression, we must take care lest a disposition arise in us to take up arms without sufficient provocation against neighbouring countries; for war is a tremendous evil, which should never be resorted to but under the strongest necessity. While seeking to promote the interests of our country in its manufactures and commerce, we must not allow ourselves to suppose that, by injuring other countries in these matters, our own country will be benefited. Every country has, on the contrary, an interest in the prosperity of all other countries; for when a country is prosperous, it becomes able to buy from others what those others have to sell. In short, all the rules for the conduct of individuals apply equally to nations. We are to love ourselves so far as to seek, by all fair means, to advance our own interests; but we are also to love our fellow-creatures, and do them all the good in our power. So a nation may love itself so far as to seek, by all fair means, to advance its own interests; but it is also to love its neighbours, and to do them all possible good, but certainly no evil. Such conduct is good for both parties; for the more comfortable, happy, and good our neighbours are, the pleasanter and more profitable it is for us to live in the midst of them; and the more prosperous, contented, and peaceable other countries are, the better it is for the prosperity and tranquillity of our own.

Duties as Jurors.

The laws under which we live give us the invaluable privilege of trial by jury; in other words, by a body of men chosen indiscriminately, as nearly as is practicable, from the class of society in which we have moved. By such a considerate regulation there can be little risk of individuals being oppressed by the authorities, provided those who compose juries do their duty. It is therefore incumbent on citizens who are liable to serve in juries to make themselves acquainted with what is understood to be their duty when so called upon. It requires no learning to fulfil the character of a juror. It requires no more than a coolness of thinking, and a mind above being carried away by prejudices or feelings. The juror is to remember that it is the jury which is the judge in

the case, not the judges who sit on the bench. Keeping this in view, it is one of the chief qualities requisite in a jury to maintain its proper dignity and honour inviolate, nevertheless with all courtesy, and to act with firmness in the execution of its important function. Besides deliberating dispassionately on the evidence presented, it is the duty of the juror to be totally regardless of every consideration but that of justice. He is to regard the rank neither of the culprit nor of the injured party. In a court of jurisprudence, all men sink to an equality. It is also the duty of the juror, after forming his conscientious opinion, not to be coerced or flattered by counsel into a different opinion. He is invested with a solemn trust, and that trust he must preserve with scrupulous care, as consonant with the best interests of society.

Electoral Duties.

There are duties of another nature which we may be called on to perform in our character of citizens. We are invested with the high and solemn trust of electing our representatives in parliament, as well as representatives in our municipal institutions. In the execution of our duty as electors, we are bound to divest ourselves of all factious or personal considerations. We have certainly to consult our own good in making a choice of a representative, but it is only as flowing from the good of the whole community. We must hence act entirely without passion or prejudice. We should always recollect that we exercise the trust of electors for many who do not possess that privilege. A large proportion of the community consists of women and children, and persons otherwise unqualified to vote. These look to us for protection from wrong, and it is our duty to afford it to them. If we therefore act with levity and imprudence in appointing men who, from their conduct and character, are unfitted to exercise the important function of public representatives, we in more ways than one commit a crime against society, and prove ourselves unworthy of possessing the valuable prerogatives with which we have been invested by the constitution.

In our capacity as citizens we are frequently called upon to elect representatives in different municipal bodies; such as civic managers of the city in which we reside, managers of local trusts—general, political, and religious. In performing this duty, we must take care not to be borne away by private feelings; we must not give our vote simply because the candidate is an acquaintance. A consideration for *what is best for the public interest* should in every case govern us; and we should not be afraid to let these our sentiments be known, for they can give no honourable man offence. But even after we have made choice of the individual whom we intend to support, from a conscientious conviction that his election would prove beneficial to the whole community, we ought not unduly to influence the suffrages of others. They may be convinced that another candidate possesses higher qualifications for, and a superior claim to, the office; and it should never be lost sight of that their opinion is entitled to equal respect with our own. We ought not, therefore, by intimidation, or by the exercise of any undue influence which, from our position in society, we may possess over others, to coerce them into the support of an individual to whom they may be conscientiously opposed. Neither should we have recourse to those forms of bribery, either direct or indirect, which too often form such a disgraceful feature in election proceedings. We may, indeed, legitimately endeavour to convince our fellow-electors of the erroneousness of their opinion, but we have no right to ask them to act in opposition to it. Were these rules to be universally adopted, there would be an end of those disgusting exhibitions by which too many election contests are disgraced.

The elected have, in like manner, certain duties to discharge towards those electing them. For instance, our qualifications as electors perhaps render us liable to be ourselves elected. In the event, therefore, of being called forward by our fellow-citizens to fill the honourable situation of their representative, it is our duty to sacrifice perhaps our own feelings and a portion of our time in the public service, provided we conscientiously consider ourselves qualified for the task, and that our health and private circumstances permit it. The principal question we have to put to ourselves, when we are so brought forward, is: 'Have we sufficient time to spare to attend the various meetings—to sit and deliberate in the numerous committees—to have our minds frequently occupied with public affairs?' If we deceive ourselves in answering this important question, we wrong society, and give ourselves cause for much after-disquietude.

Neighbours.

Our duties as neighbours are numerous and important. Every person has a right to enjoy life, and to use all things which he has to that end; but he has not a right to any enjoyment which necessarily disturbs that of others. Peace, tranquillity, and security within one's own walls, is an essential condition of happiness. A neighbour, therefore, who so conducts himself, as to vex, harass, and disturb those who are necessarily within sight, hearing, &c. commits an offence against morality.

The moral duties of neighbourhood extend to all things which minister to the common comfort, convenience, and security. Each one of a neighbourhood is bound to make his own dwelling-place as agreeable and pleasant to those around him as he reasonably can; and also to uphold the credit of his own little community. He is therefore to join, with a liberal and manly feeling, in all the improvements which tend to please and adorn. Such things, even if they occasion some expenditure, are sources of self-satisfaction; and one comes at last to take an honourable pride in hearing his street, his village, his town or city, commended by observers. Every person, in general, is a member of some kind of society or association. Some persons belong to many. These are intended for some useful purpose. Every member of such a society has some duties to perform. He owes some proper part of his time, some proper contributions, to the common object, and has an interest in the prosperity of the design. All these institutions do some good, and some of them eminent good, in helping on the great purpose of social life, which is general improvement. Of this nature are public charities, educational institutions, libraries, agricultural

societies, and those for suppressing intemperance and immorality. No well-disposed citizen can conscientiously abstain from giving his aid and support to such objects. It is each one's duty to try to leave the world a little better than he found it. No one can say these are matters which do not concern him. Suppose every one should say so, and had said so from the beginning, society would still be made up of barbarians. Every good that is done in any community affects, directly or indirectly, every member of it.

Masters and Servants.

It is the duty of masters to cultivate the esteem and affection of those whom circumstances have placed under them. Servants have the same sort of bones, muscles, heads, and hearts, the same self-love, and the same sensibilities, as their employers. They may not be so refined, still they have rights to be maintained, and must not be tyrannised over merely because they are in an inferior condition. They have as good a right to be happy as those above them. If they behave with propriety, and do their duty, they should be spared when sick, advised and relieved when in trouble, and be made as comfortable as circumstances will permit. The commands given to them should be plain, clear, uniform, and not contradictory or capricious. They are not to be sneered at, or commanded with virulence and reproach, but mildly, and rather by request. They are also to be treated with uniform civility and kindness; but every approach to familiarity with them should be avoided, if respect on both sides is to be preserved. It is always best to let servants know what is their duty, and what is expected of them. Much mischief is sometimes created by not attending to this rule.

The duties of servants to masters are equally clear. Their entering into servitude is a contract which they engage to fulfil. They are bound to execute all reasonable and proper orders in the line of service in which they are engaged. But besides this, they would consult their interests in being generally obliging and willing to assist in any kind of exigency. A seeming wish to please an employer goes a great way to compensate for deficiencies in ability. A civil, obliging turn is indeed one of the chief virtues in a servant, and is certain to secure the affection of masters and mistresses. A strict attention to an employer's interest, regularity of habits, and perfect integrity both in speech and action, form the principal qualifications of a servant. There is usually much less actual dishonesty among servants than a regardlessness of their masters' interests and time. This is more the case with domestic than other servants.

The foregoing rules apply largely to the case of employers and employed in the various branches of manufacturing and trade industry. We hear a good deal respecting the rights of labour or of capital, but we do not hear so much respecting the duties of either. If these duties were better understood and practised, there would be fewer of those unfortunate trade-disputes, known as 'strikes' or 'lock-outs,' which have so frequently proved injurious to the social and industrial interests of this country. Employers should not be too harsh or exacting with their workmen, nor require them to labour too long at one time, nor under conditions unfavourable to health or personal safety. They should always remember that the employed are not mere machines, that they are human beings with the same feelings and passions as themselves. The employed should be equally considerate in their dealings with their employers. Many working-men affect to regard employers as the natural enemies of the employed; but this is a grievous mistake, for employers and employed are mutually dependent upon each other, and whatever injures the interests of one, injures the interests of the other likewise. The employed have no right to dictate the manner in which an employer shall carry on his business, or the terms upon which he shall engage his workmen. If they dislike the conditions of employment offered by him, they are at liberty to refuse to accept them. But they have no right to prevent other workmen from accepting them, any more than an employer has to prevent workmen from engaging themselves to a rival employer. Of course, wherever there are contracts between employers and employed, they must be faithfully observed on both sides, however unfavourable or irksome the conditions may be found by either. It is found that where working-men are of sober, steady, and industrious habits, and possess a fair amount of skill in their respective occupations, they seldom remain long out of employment; while employers who act fairly towards their work-people, rarely experience any difficulty in procuring a proper supply of the particular kinds of labour required by them.

DUTIES IN RELATION TO MARRIAGE.

Marriage is recognised as a contract of a binding nature in all civilised nations. By some it is considered, from its solemnity, to be of a sacred character; by others it is deemed only a civil bond of connection. All, however, agree in holding it to be an irrevocable contract. The laws of the land, those of nature, and the Divine law, disclose the sentiments, the feelings, and the awful sense of duty with which this undertaking should be regarded. Yet it is frequently entered into from motives highly reprehensible, and sometimes with shocking thoughtlessness. It is from such causes that we too frequently see this sacred union, which should be the true source of the highest human happiness, become that inexhaustible fountain from which both parties are daily and hourly compelled to drink, and from the same cup, the bitterest waters.

According to the present state of society, one of the influential counteracting elements to marriage is, or ought to be, a high degree of prudence. No one ought to marry who cannot foresee that he will be able to support the additional expenses of a wife and family, and at the same time fulfil his other necessary obligations. By good management, these additional charges are not great, but they amount to something, and he is worse than an infidel who does not provide against them. We are of belief that every industrious, active, and sober man will find no serious obstacle in this respect. It is from idleness, love of company, and intemperance, not from simple expenditure on family necessaries and comforts, that ruin and poverty in the married life are produced. The dread of encountering the expenses of a family, though acting as a salutary check on imprudent

marriages, is frequently productive of many gross vices, tending to the injury both of individuals and of society. Celibacy, especially when circumstances would permit marriage, is not respectable; it is considered akin to vagrancy. He who marries and settles down as a householder, meets with the approbation of the world. Why is this? it may be asked. Because in marrying we give a guarantee to society for our good behaviour. It is not to be doubted that a young, well-educated, industrious couple, who are sincerely and affectionately attached, on a sober examination and conviction of each other's worth and suitability to each other, may be happy with means far short of the fashionable standard. Presuming that such a couple are wise enough to take life for the real and substantial good that it can produce—and as a whole, it would do them great injustice to suppose that they could not find that good in a small, simple, cheerful, tranquil mansion—it would be doing the friends of such a couple the like injustice to suppose that they could not visit them, and be satisfied to see them happy through such means. According to the usages of society, it is the custom for the man to propose marriage, and for the woman to refuse or accept the offer. There ought to be a perfect freedom of the will in both parties. To impose any species of constraint on either party is most mischievous; it would be a gross violation of our most sacred privileges. Both parties, therefore, ought freely to think for themselves, however much they may seek the advice of those who are inclined to afford them counsel. Young women ought, however, to be in no haste to accept a lover. Let them know him a sufficient time to judge of his qualities of mind, temper, habits, &c. before they allow themselves to be inveigled into a marriage with him. Far better for them to remain single, than heedlessly incur the risk of being miserable during the remainder of their lives. The same observations are equally applicable to the other sex. At the same time we would observe that young women should not consider it a serious misfortune even if never married: there is nothing disreputable, while there may be much happiness, in the condition of an old maid.

Husband and Wife.

The married state finds both husband and wife intrusted with the fulfilment of numerous special duties to each other. The husband, for instance, is expected to regard his wife as his equal; to treat her with kindness, respect, and attention; never addressing her with an air of authority, as if she were, as some misguided husbands appear to regard their wives, a mere housekeeper. He should never interfere in her domestic concerns, such as hiring servants and the like. He should always keep her properly supplied with money, according to his means, for domestic expenditure. The most wasteful wives are those who find themselves the least trusted. If she have prudence and good sense, she should be consulted in all affairs involving the risk of serious injury in case of failure. Many a man has been rescued from ruin by the wise counsels of his wife; and many a foolish husband has most seriously injured himself and family by the rejection of the advice of his wife, stupidly fearing, if he followed it, he would be regarded as henpecked! A husband can surely never consult a counsellor more deeply interested in his welfare than his wife. If distressed or embarrassed in his circumstances, he should communicate his situation to her with candour, that she may bear his difficulties in mind in her expenditure. In fact, a husband should learn to trust his wife in all things, and to treat her with consideration and courtesy, both in public and private.

In like manner, the wife should learn to study the interests and feelings of her husband. She should always receive him with a cheerful countenance, leaving nothing undone to make home agreeable and attractive, and in everything reasonable complying with his wishes with cheerfulness and promptitude—even, as far as possible, anticipating them. She should never attempt to rule, or appear to rule, her husband. Such conduct degrades husbands—and wives cannot do otherwise than partake largely in the degradation of their husbands. She should avoid all altercations or arguments leading to ill-humour, especially before company; neither should she attempt to interfere in his business, unless he asks for advice or counsel. She should avoid confiding to gossips any of the failings or imperfections of her husband; and regard nothing as light or trifling that may produce even a momentary breach of domestic harmony. She should be economical without being parsimonious, and always remember, if her husband be in business, the trying vicissitudes to which trade and commerce are subject, and that a time may arrive when she may feel the want of the money imprudently spent by her. Above all, she should try to cultivate her mind, so that, should her husband be intelligent and well informed, she may join in rational conversation with him and his friends. The whole secret of domestic happiness is comprised in the pithy maxim, 'Bear and Forbear.' Should differences arise between husband and wife, the contest ought not to be, as it unfortunately too frequently is, who shall display the most *spirit*, but who shall make the first advances, which ought to be met more than half-way. There is scarcely a more prolific source of unhappiness in the married state than this *spirit*, the legitimate offspring of odious pride and destitution of feeling.

Parents and Children.

The marriage state is the foundation of one of the most sacred and important institutions in society—that of a family. A family is a little commonwealth, jointly governed by the parents, but under the more special guardianship and direction of the husband and father, who is morally and legally the *head of the house*. To the father the children naturally look for protection, subsistence, advice, example, and encouragement. The father, therefore, has a serious obligation to perform in the proper rearing of his children. He is bound to educate them according to his means, to support them till they are able to depend on themselves, and to have them taught a business, or put in some other fair way of gaining an honest livelihood. It is also incumbent upon parents to avoid all unseemly partialities towards the different members of their family. Such partial treatment has a natural tendency to engender strife and animosity among the children themselves. The pet of the parents will seldom prove the favourite of those members of the family who have been unjustly neglected; and who will therefore naturally

feel disposed to resent their ill-usage upon the usurper of their rights, as well as to murmur and complain against the injustice itself. The children, on the other hand, are bound to obey their parents, and to exert themselves to make them happy. Parents are sometimes grievously distressed in consequence of the bad behaviour of their children. Their reasonable hopes are disappointed, their best feelings are tortured. An idle, ungrateful, dissolute son is such a complicated cause of suffering, as may, if anything may, lead one to murmur at the order of things. But it rarely happens that parents who have learned to habitually discharge the duties owing to themselves and others are thus afflicted. The character of children is very much affected by home influences. If those influences be of a pure and refining character, the child's mind will become pure and refined also. Many parents content themselves with preaching the importance of the duties of life, instead of endeavouring to fulfil them; thereby leading their offspring to despise those obligations, instead of regarding them as essential to their well-being and happiness. Those parents who complain most loudly of their children neglecting their duties, are very often those persons who have been most remiss in the discharge of their duties to their offspring. A child has duties to fulfil towards its parents, but it must be first taught the nature of those duties. Every parent ought to give his children the best possible education according to the means within his reach. Some parents, especially among the poorer classes, complain that their means are insufficient to secure a proper amount of education for their children, but, in nine cases out of ten, poverty does not form the real cause. Working-men in the receipt of good wages will often spend more at the public-house in a single month than would suffice to cover the cost of their children's education during a whole year. Were parents to properly discharge their duties towards their offspring, we should have no need for factory or education acts. No amount of parental neglect, however, gives a child the right to disobey the injunctions of its parents, for, without obedience, there can be no discipline. Children who are petted and allowed to have their own way are apt to become vain, unruly, and a source of constant annoyance to all with whom they come in contact. A spoiled child invariably proves a misery to himself as well as his parents and relatives. At the same time, a parent should not be too harsh in enforcing obedience. Firmness combined with gentleness will often effect more than unflinching severity. A child who has learned to love its parents generally takes delight in fulfilling their wishes, however irksome they would otherwise appear. The desire to please its parents, to elicit their smiles of approval and gratification, forms an incentive to the proper fulfilment of the most difficult duties; and this feeling rarely becomes extinguished in after-life.

A parent should endeavour to guide the tastes of his child, to teach him habits of self-respect, and to become regarded as his best friend and counsellor. He should not interfere with his son's friendships or affections, unless bestowed upon unworthy objects, and should not allow any unworthy feeling on his part to form an obstacle to the union of his son or daughter with those to whom they may have given their affections. Some parents insist upon treating their offspring as children long after they have attained the years of manhood, thus wounding their feelings of self-respect, and degrading them in the sight of others. No parent should endeavour to interfere, unless solicited, in the management of the households of their married children. The father is the natural head of the household, and is responsible for its good conduct. On the other hand, children are bound to love and honour their parents, and to do them all the good they possibly can. Even after they have established households of their own, the duties of children towards their parents do not become weakened. They are bound to help their parents should it be necessary, in return for the care taken of them during the years of childhood by their parents. In short, they ought to seek to promote in every possible way the happiness of their parents, even as their parents did the same unto them. The same rules apply to fraternal relationships. Brothers and sisters, being brought up together, eating at the same table, playing at the same sports, and united by the love of one father and one mother, are always expected to love one another, and to assist in promoting each other's welfare, especially in after-years, when they are no longer directly under parental control.

These are the chief duties, it appears to us, that fall to be described in a treatise on Practical Morality. No doubt there are others which are highly important, especially in the class of social duties, but we think we have indicated, as far as our limits allowed, the general principles which ought to regulate us in the performance of all of these. We have not thought it necessary to touch upon the duties of recreation and amusement, though these are, in a right view of human nature, no less real and binding than others whose obligatoriness we more readily confess. Moreover, we have purposely refrained from introducing religious considerations into the subject; not by any means because we undervalue the influence of religious sanctions or motives in the discharge of any duty, however slight, but because the obligations of morality are independent of the varying forms of religious systems, and are binding even on those who do not acknowledge the validity of religious considerations. It is nevertheless clear that as nothing affects the character and life of men so powerfully as religious convictions, these must operate no less powerfully as inducements to do those things which reason and conscience declare to be binding upon us. Men are not the less but the more likely to do justly, and to love truth and mercy, because they believe that they are commanded by an Almighty Being to whom they are answerable in all things, to perform those duties which nature and society require of them. In truth, the great evidence of the reality and worth of a religion is that it inspires men with an exalted love of virtue: whenever we find a man making solemn professions of religion, zealous in regard to doctrine and worship, or the interests of a sect, but insincere in speech, uncharitable in feeling, unscrupulous in business—'that man's religion is vain.'

EDUCATION.

THE subject of Education is one which, in recent times, has attracted considerable attention. It is one which ought always to attract the attention of mankind. Human beings are continually coming into the world; and their happiness, and their capability of reaching the highest functions of man, depend on the care and skill which their predecessors devote to their upbringing. The subject of education is accordingly one the interest in which is continually renewed, and on the renewal of which rests the future of man. It is at the same time a subject demanding the utmost care and the utmost diligence on the part of the student. The object of it is man himself, the most complex by far of all animals; and he who would educate aright, must study human nature in all its phases, and be able, out of the midst of manifold forms of error, to select what is right.

It is not easy to overestimate the power of education. Let the reader summon before his mind the Briton of the earliest period. Let him distinctly represent to himself the manner in which that Briton grew and spent his life. Let him at the same time bring before his mind the ordinary cultivated Englishman of the present day. What a difference in their ideas, in their feelings, in the objects which they set before them in life! What a difference in influence, in moral strength, in aspiration! If we could set the two children beside each other, the savage little Briton and the civilised little Briton, perhaps we should find almost no difference between them. The one would, to all appearance, possess as big a brain as the other, would be as active and keen as the other, and if we were to venture on a prophecy, we should find it difficult to determine which of the two might attain to the highest intellectual and moral eminence. But the little savage, though tutored by the same sky and the same scenery, though surrounded by many circumstances calculated to expand the soul, grew up a man of a narrow range of ideas, of limited aspirations, perhaps very much the slave of his corporeal wants, and satisfied if he could supply these in abundance, and slay a few of his enemies. What has made the difference? It can be nothing but education. It may be true, indeed, that the difference is not exactly the definite result of the different education given to the particular civilised young Briton. The theory may be correct, that by some mysterious law of transmission, the good effects produced by education on one generation are handed down to the next, and thus many generations are required to produce that amount of perfection which the present cultivated Englishman can attain. Still it is by education that the difference is produced.

The first question that presents itself to us in treating of this subject is, What is education? The word has been used in various senses, and it is difficult, if not impossible, to prevent this variety of usage. In one sense, everything that acts upon the mind of a man educates him. Man possesses certain powers within him. They lie dormant until external nature, or his fellow-men, act upon him, and then these powers come into more or less active operation. In this sense, the education of a man never ceases, and it includes every possible kind of influence. But it is plain at once that many influences are not beneficial, and that, consequently, if we use the word education in this its widest sense, we include under it, not the right evolution of a man's nature, but every evolution of it. Generally speaking, however, we do not use the term education for every possible form of evolution, but only for the right evolution; and so we arrive at the definition, that education is the harmonious and equable evolution of all the powers of a man. This at once supposes that there is a right evolution, that there is an ideal of humanity after which we can aspire. Yet, when we come to ask ourselves the question, What is the ideal? we find ourselves in perplexity. For the peculiarity of human nature is, that its ideal rises in proportion to the amount of culture that it has, that, in fact, humanity has an infinite prospect before it; and that the higher the elevation to which a man attains, the wider and grander seems the prospect. In addition to this, there is the fact that man is complex. He has a great variety of duties to perform. Many qualities and powers have to be evolved. And, therefore, any general statement is comparatively useless, unless we make diligent inquiry into each particular part and function. This fact may be illustrated by a reference to the body. The best state of the body is when all its organs are fully able to discharge their functions. Each particular part has a function to discharge; and the body as a whole has its function to discharge. We train the body harmoniously and equably, when we give to all its parts a healthy activity, and take care that no one part be trained at the expense of the others, and when, through the healthy action and interaction of all its parts, the body is able to perform its function, and be the perfect servant of a noble mind. In like manner the soul is complex. There is a hierarchy of powers within it. Some must rule, some must submit. Each power, each affection, each emotion has its proper place: and when they are so developed that each is in its proper place, and working fully in perfect harmony with the rest, we have the equable and harmonious evolution of the human powers. But what this equable and harmonious evolution is, we cannot know until we have examined each part, and ascertained what is its proper function, and how it can be placed in harmony with all the rest.

There is still an addition to be made to the definition, in order to make the word mean what it is often used to signify. Education is often employed to designate the *deliberate efforts* of men to bring out the powers of other human beings. Here the educator sets before himself

some ideal or some standard, and he wishes to raise him whom he educates up to this standard. For this purpose he chooses the means which he deems suitable, and acts with deliberate aim and purpose. This is the usual sense of the word. But while using the word in this sense, we inevitably pass into the other. For no results that can be produced by the deliberate efforts of man are ever simple, but are always combined with those produced by the influence of nature or the unconscious influence of man. The two sets of influence are inextricably combined. And the man who deliberately educates has to take into consideration all the other influences that help to bring out the powers of the person whom he is educating.

We now proceed to examine more minutely the principles which are to guide us in education; and at the very threshold we come on one which is of the utmost importance. We have found that in one sense Nature educates. The first thing, then, we have always to do is, to examine the processes which take place when Nature educates.

We place a child before our observation. He is looking at a ship. What takes place? That ship produces a certain impression on him. How can we describe this impression? We may say that it is a clear impression: he sees it distinctly. Or we may say that it is an indistinct impression: he cannot see it well. Or he cannot see it at all, or very dimly, and struggles to catch a sight of it, and feels pained and disappointed. Or it is a pleasing impression: he delights to look at it. Suppose it were the sun that he was looking at. Then its dazzling light might overpower him, and through excess of light, the impression produced would be simply one of utter confusion. Here we get five kinds of impressions which objects may produce. If the stimulus is exactly proportionate to the power of the mind, we have a clear impression. If the circumstances are such as to produce a contrast between the present state of his mind and the last favourably, the impression may be a pleasant one. If the stimulus is too little, the impression is indistinct, and when the stimulus reaches zero, then there is distress and pain. The result is nearly the same when the stimulus is too powerful for the mind. Then the mind is overpowered, and can feel no impression but that of utter confusion and disappointment. Now, it is plain that the only stimuli which the educator can use are those which are proportionate, or produce a pleasing impression. And this holds as a universal maxim for all the complex processes which in the higher stages of education come into play. The mind is capable of healthy activity only on certain subjects and on a certain amount of them. Everything above or below this is injurious. But let us look at the powers in the mind itself. How does the mind apprehend or catch an impression? Now we may conceive three qualities resident in the mind in regard to this matter. The mind may seize the impression strongly. It grasps the impression with vigour. Or it may grasp it vividly. That is, for instance, in looking at a ship, the mind may, if it is vivacious, seize hold of a great number of details. It may notice not merely the general form of the hull, but many of its special features. And it may be able to catch the impression quickly or slowly. It may be able to take the impression fully within a certain time more or less in length. These are the three qualities which we can believe the mind to possess: strength, vivacity, and rapidity. And there is no reason for supposing it to possess any more. For, let us look what takes place further. The mind has formed an impression of the object. The object has passed away; but the impression has left a trace behind. When the object appears a second time, the second impression blends with the trace of the first; and when, through repeated impressions, and their union with the previous traces, the impression has gained strength, and the mind can recall the object without its actual presence, then the mind is said to recollect it. But suppose that there has been only one object of which impressions have been produced in the mind, then there is in the mind a memory for only that one object. The power of recollection depends entirely on the original strength, vivacity, or quickness of the mind in receiving impressions, on the appropriateness of the strength of the stimulus which the object exercises on the mind, and on the frequency with which strong impressions are thus produced. There is, therefore, no such faculty as memory, separate and distinct. In fact, there are no separate and distinct faculties; but there are separate and distinct operations. It is exceedingly important to remember this in education, because the generalisation into one memory, or one reason, or one will, is apt to be productive of great evil. A man has not one memory, but many memories. He remembers some things well, and other things ill. He has a good memory for certain facts, because his mind and these facts have often come powerfully into contact. He has a bad memory for others, because they have not come powerfully into contact. No doubt, if a person practises his memory in certain directions, he will be the better fitted to remember other matters to which as yet he has not applied his mind. But this will be the case only when the subjects are akin to each other. A man who has devoted himself to the acquisition of a foreign language will be better able to learn another foreign language than a person who has not, *cæteris paribus*. But the person who has stored his mind with words is not a whit the more capable of remembering numbers. The subjects here are different, and they do not aid each other. So a man may have a strong will in one direction, and a weak one in another. If he has again and again applied special means to a special end, he will be able at once to make up his mind in this matter. But he may find his will powerless in other matters to which he is a stranger, or in which he has not exerted himself aright.

These are some of the principles which we think must lie at the foundation of education. We have illustrated them mainly by a reference to the intellectual activity of man. But they apply equally to his whole nature.

And here it is important to draw a distinction which is carefully observed by German writers, but is often overlooked by us. Education is the effort to bring out all the faculties of man in a healthy way. Instruction is the mere communicating by one person of what he knows to another. Education keeps in view the entire individuality of the person, and aims at awakening all the powers of the person being educated. Instruction

takes a special subject, and gives the pupil instructed full information in regard to it. It is plain from this statement that there may be instruction which is non-educative. If in communicating the instruction the instructor does not call into full play the powers of the instructed; if he loads him with information which has been merely taken in, but not acquired, and which will necessarily soon vanish from the mind, the instructor is not educating. But, on the other hand, instruction may be made powerfully educative. It is the one direct way by which one man may act upon another; its methods can be distinctly laid out; its results may be ascertained with comparative certainty. And therefore instruction has always occupied the principal place in education; and, accordingly, we shall first treat of education exclusive of instruction, and then of instruction. In other words, we shall first discuss the right mode of training the child in regard to desires, feelings, and efforts; and then we shall proceed to the training of his intellectual powers.

EDUCATION.

We cannot, however, do this at the very commencement. The elements are in the earliest stage of the child's existence so completely blended that they cannot be distinguished; and even in the ultimate stage it is of consequence to remember that while they are distinguished mentally, they are never separated in fact. Every intellectual perception has emotion and effort bound up with it.

We begin with the infant, or rather with the two earliest stages of the child's existence. In the first till the end of the second year, he is as yet totally incapable of expressing his feelings; in the second, from the third year to the seventh, he has reached consciousness, but is still slowly emerging from the purely animal condition into wide acquaintance with objects, into active intercourse with his fellow-beings, and into a distinct and decided individuality.

The first thing that the educator has to do in regard to the earliest stage is to impress deeply on his own mind the fact that the infant is an animal, that he is living a vegetative life. For the first days of his existence, his principal employment is sleep, and for a long time sleep fills up the largest portion of his life. In the treatment of him, therefore, this is the primary fact to be remembered. If he feels joy, he feels joy as an animal. If he feels pain, he feels pain as an animal. He has yet no ideas, no desires, no emotions but what are connected with his animal nature. If, for instance, he cries, the cry arises from something connected with his animal nature, and, therefore, the educator is not to punish him for it, or be angry with him, but at once to try to discover the physical cause, and remove it. If the child desires anything, it is still the impulse of his animal nature, and it is within the range of his animal nature that we must seek an explanation of all the phenomena which he presents. In fact, he is to be treated so far as a machine. When anything goes wrong it must be put right, and no praise or blame is to be assigned to the infant.

But the infant is something more than a machine or an animal. Out of his animal nature is to arise a spiritual; and the educator's special business is to watch over this. It is one of the mistakes easily committed, but fatally dangerous, to suppose that the education of the child does not commence until the child is able to understand and speak. On the contrary, his mind comes into activity on his first entrance into the world. He sees, he feels, he strives continually. Every effort leaves its trace behind; and at the end of the second year the child is the result of his manifold efforts, and feelings, and observations. In fact, it seems to be the case that thousands and thousands of impressions must be made before the mind of any one reaches consciousness. The child sees, and sees, and sees again. Each time that he looks at the object, it produces an impression on him; but at first, the different elements of desire, feeling, effort, and perception are so intimately blended, that the child is conscious of none of them. But gradually, in the case of the sense of sight, the elements of desire, feeling, and effort become less preponderant, and then the child at length sees a distinct object, and knows that he sees it. But though thus the earliest operations of the child's mind form, for his whole character, a foundation which can never become visible, and which eludes the comprehension of man, yet they are not the less important, and are to be watched with the utmost care.

The child, as we have said, is at this stage purely an animal, but with higher capacities. These higher capacities depend upon the use which he makes of his senses. By these senses he is at present swayed; these senses are not of co-ordinate position in regard to his higher nature. At this stage the feeling of bodily comfort, arising from the activity of all the functions of his body, gives him the greatest pleasure, and has most power over him. But the object of the educator is gradually to deliver him from the bondage of this purely animal feeling, due regard being always paid to the health of the child. The senses of smell and taste and touch are also plainly inferior to the senses of hearing and sight. The lower senses are unquestionably to be carefully attended to, but it is through the other two that he bursts the bands of the animal nature and rises to the spiritual.

But all this must be done very gradually. The first point to which the educator must give his attention is the graduation of the outward stimuli to the senses of the child. The infant's organs are delicate and tender, and, therefore, at the earliest stage, the light must be subdued. He must only gradually come to bear the full light of day. So no startling sounds must be applied to his ears. Only gentle words and tones are fit for them. In the progress of time he will come to distinguish one object from another, and one sound from another, and after that, his knowledge will make rapid progress.

At the same time that the intellectual life of the child is thus forming, the emotional and practical parts of his being are also in full activity. Here the method of procedure should plainly be to give him through his lower senses all the pleasure which attention to his health will bring along with it. It is right that he should have such pleasure. It is right that he should have such pleasures throughout his life. In this, as in most cases in connection with human life, wisdom lies in the mean, not in the destruction of any of our natural

enjoyments. But at the same time these enjoyments should be limited by the educator doing nothing to create them except when he is consulting the health of the child. The habit of trying to soothe children by appeals to their sense of taste, simply intensifies their animal nature. If the child requires soothing, discover the source of the pain and remove it. And if that is impossible for a time, appeal to the child through the higher senses—the sense of hearing and the sense of sight. This appeal will generally require the educator to exert himself more, but the result will be worth the trouble.

Above all, it is essentially requisite that the child be continually in an atmosphere of smiles and love. He is very easily crushed; he is extremely weak. A frown is a terrible cruelty inflicted on him. It is more: it depresses his whole life, intellectual and moral. The educator must be patient, and must be animated by unwearying love.

We proceed to the next stage: the period from three to seven years of age. The child has by this time got hold of perceptions of the external world, and has begun to feel his personality both in contrast with it and in contrast with his fellow-beings. The work of the educator is now to make these impressions as strong as possible, and to bring out the right dispositions to his fellow-beings.

The procedure of the educator is directed by the laws of the child's mind. And it is important to insist on these, and to demand imperative attention to them at all stages. An object, as we have seen, produces an impression on the child's mind. It produces it again and again, until at length the element of sensation grows less, and the element of perception becomes stronger and stronger, and at last it perceives the object. This is the first stage. The child now perceives one object, and then another, and then another, and notices that there are points of resemblance in all. This is the next stage. At this point, language becomes possible, and he calls the different objects by one name. But he then proceeds upon a more difficult task. He takes each object and compares it with the others, and finds resemblances and differences. He gets at the individuals through the differences, and by means of resemblances he reaches wider and wider groups. And then he gradually comes to know the exact points in which the resemblance exists, and the exact nature of the difference, and in his mind he can separate these points or qualities from the objects in which they reside. We have reached a stage much farther on than the child of seven can attain; but we wish to carry the subject out to its limit. And then through a knowledge of these qualities or activities unities may be found pervading nature. Here we have come to the scientific stage, or the highest of all, where law is seen to pervade everything. Now, it is important to notice that this is the invariable order of nature which we have now described. The human being must deal first with the concrete; and only through the concrete can he come legitimately to the abstract. This applies to the whole education of the child. If the child is to be taught numbers, he must first see them in the concrete. He must have before him one, two, three, four objects. So with the moral lessons he may now receive. He cannot understand moral precepts presented abstractly, but he can observe what actions of his own are approved by his fellow-beings, and especially by his educator, and what are disapproved. He can listen to narratives of the doings of other human beings, and draw his own as yet unconscious, or at least inexpressible inferences. This may seem a slow process, but it is the only right one. And it is here that the educator can be of so great use to the person whom he is educating. Objects appear in nature in such variety of combinations, that to a child the confusion is inextricable. The actions of men are also of every possible character. But the educator can make his selection from the objects and the actions. He can so arrange the objects brought before the child that day by day the impressions will become stronger; and as he can submit objects in the particular order in which the child will be most inclined to perceive the resemblances, he can gradually lead him to form groups. And he can do the same with actions. He can relate to him such as are entirely suitable to his years; and the child listening to them with interest, and talking of them afterwards, will grow in his knowledge of human nature.

What the educator has mainly to do is to produce strong impressions; for out of the strength of the impressions arise memory and the power of reasoning. There must be constant repetition, but never wearisomeness. As soon as a subject lacks interest, it lacks educative power.

At this period, the child's imagination is peculiarly predominant. He sees nothing very accurately. He sees everything in masses. To be added to this is the fact, that he has now got a consciousness of himself to some extent, and he proceeds to invest everything with the same life, the same feelings and activities, of which he himself is conscious. This state of his mind must form an essential consideration in the attempt to educate him. Taken along with its feeble condition, it leads to the conclusion that, of all things, the child's play is the most important means of educating. He is willing to play, and he exercises all his powers in play. Put him by the sands of the sea-shore, and he will occupy himself the whole day long, and occupy himself very profitably. Or place him anywhere in the country, and he will find objects to interest him continually. But the educator can also use artificial means to amuse and educate him. Now is the time to teach children to distinguish colours, to notice different sounds, to observe the forms of objects, to be tender towards animals, and kind to all his fellow-beings. The *Kindergarten* system of Froebel is based on this idea. In the way of play, a great deal can be done by a wise educator to form the mind; and the Kindergarten system attempts to lay out systematically what can be thus effected. It is, of course, carefully to be remembered that, though the educator has the system in his mind, the child is not to be constrained by any system. He is to have full free exercise of all his powers, and is not to be at any time compelled to exercise his mind. As it is to be all play, compulsion is out of the question.

His moral treatment at this stage differs somewhat from that adopted in the previous stage. In the previous stage, the child was unconscious, and entirely free from blame. At this stage, the child has reached consciousness, and may deserve blame. He, accordingly, must feel that he is

governed by a strong will. He must be taught to have faith in his educator. He must learn obedience. But the educator must take care to act justly. His business is much more to put the child right than to punish him for doing wrong. There should be as few prohibitory enactments as possible; and the positive commands should be limited in number, and such that the child can understand and fulfil them without any serious difficulty. And the educator must be cautious in determining whether the child has done wrong. For instance, we have seen that the power of imagination is great. The power of expression is, on the other hand, small. It is, therefore, not to be expected that the child will state facts exactly as they are. He does not see them as they are, and he could not express his impressions exactly, even if he had seen them. Moreover, it is a well-known fact, that many children cannot well distinguish what they have seen in dreams and what they have seen in reality. And it is easy to see that they must sometimes confound their day-dreams with the realities of life. All these considerations should make the educator hesitate before he accuse a child of lying. In very many cases the supposed lie is a mere effort of imagination, mistaken for reality, or a failure to express exactly what the child knows.

We have lingered long enough, however, on this stage, and we must proceed now to the more general question of the formation of character by the educator.

In character there are three main constituent elements. It is essential that the person should have noble ends in view, that he should know what are the best means to accomplish these ends, and that he should have a strong desire to accomplish them. This statement of the case shews that enlightenment is absolutely necessary to a high morality. The person must know for what purposes life is given, and this implies insight into the complex constitution of man. For at every moment man has to be active. Some portions of his nature must be carrying on their functions. Occasionally it may be only his vegetative powers; often it is his whole intellectual and emotional nature. There are, as we have seen, gradations in these powers. The spiritual is superior to the animal. But the animal powers demand a due share of attention; and with the healthy exercise of any of the powers of man comes pleasure. Accordingly, a man who wishes to carry out the full exercise of his functions, has to value the activity of each function, and to put it in its proper place. And as these activities have often for their material the outward circumstances by which the man is surrounded, he must be able to take an accurate estimate of these circumstances, of his own powers in relation to them, and of the appropriate times for acting on them. This leads us to the second feature of character—the proper employment of means. If the person did not believe that the means were within reach, and that his aim could be accomplished, he would not will to act. A belief in the means is therefore an essential constituent of all volition and all action. But right action consists in the adoption of the right means; and, therefore, the man who is to have a noble character must observe carefully what are the best means to be employed in every special occasion. But he must also have a desire for the accomplishment of these noble ends. This desire is the mainspring of his actions, the power that impels to them; and it is in this department that the educator has to exert himself. For the desires are peculiar in their method of growth. A child does an action, which, by calling into play his faculties, gives him pleasure. After the action is over, he begins another and another. But a time comes when he recollects the first with its feeling of pleasure, and he wishes to do it again. Accordingly, he does it again with renewed pleasure, possibly with intensified pleasure. And if this action is thus renewed again and again with pleasure, the pleasure-representations in the mind unite with and strengthen each other. At length, the person thus affected likes to do the action, and if the same process go on, he may become passionately fond of doing it. If he adds to this pleasure-sensation the consciousness that the action is higher and worthier than some other actions, he will prefer to do the higher, when all the other actions are possible to him. And ultimately, he may deliberately choose the higher, knowing it to be higher, although he will have to keep under subjection, at considerable pain, some of the lower desires which are craving attention from him. But it is plain that this state can be reached only after a lapse of many years. The child passes through various stages of morality, as he must pass through various stages of enlightenment; and the educator has to remember that actions which at a later stage would justly create alarm, are at an earlier stage of no great importance, except as symptoms of what is going on in the mind of the child. As we have already seen, the first stage of the child's morality is accomplished when he has learned to prefer the gratification of his higher senses to the gratification of the lower. No sooner does he attain a conscious life, than by a necessity of the case he is very much absorbed in his own concerns. His attention is directed to himself. But this state of mind must be displaced by his affection for father and mother, brother and sister; and this affection must shew itself in actions of self-denial for their comfort and pleasure. His nature, however, must not rest contented here. His affections must expand, and gradually extend to all his fellow-countrymen, and finally to all his fellow-men.

Now, for the production of all this, the first and most powerful instrument is the educator's own life. It is action that produces action; it is love that produces love. The mother's smiles and tenderness breathe sweetness into the very soul of the child, and subsequently, the teacher's justice, energy, devotedness, and desires sway the young mind with a power which words, however eloquent or well chosen, can never equal. The education of the child into desires is thus, to the child at least, an unconscious education. And the educator himself must also often remain unconscious of it. The most unguarded of his acts, those which come from the depth of his nature uncalled for and unbidden, are the actions which have the most powerful influence.

At the same time, the guardian can do a great deal to put the child in the right course. There are unfortunately endless deviations from the

right, into which the child's mind may wander; and the educator can always be on the outlook. Much interference is always injurious. The educator must never interfere except when his assistance is required; and he learns, by careful examination of the child's mind, how often he ought not to interfere, and when his interference is advantageous.

Let us look at the various activities of the human being, that we may note his healthy action, and some of the unhealthy deviations from it. The actions of a human being have principally to do with himself as a physical and as a spiritual being, with the rest of his fellow-men, and with God.

In regard to his body, the end which the child is to aim at and desire is health. He must learn to wish in regard to it that it be sound and vigorous, and this means in the end that he must wish to have all the powers of his body in such a state that they will at once obey the commands of the soul. This implies that the educator shall take care not to make the body a mere minister of pleasure, not to pamper it in any way, and not to deem it of paramount importance. There are two aberrations from this which specially deserve attention. When the body is in a healthy state—that is, when every part is discharging its function properly, we derive pleasure from this full discharge of its functions. But this pleasure is as it were mild and equably diffused, like the pressure of the air upon us, and we do not perceive it until it is disturbed by some part of the body failing to do its function. That part draws attention to itself by the pain which it occasions, and we know how comfortable we were in our previous condition by comparing it with our present painful condition. But sometimes, and especially in early years, the performance of their functions by the vegetative powers gives a strong pleasure. If this pleasure-sensation is repeated again and again without any counterbalancing pleasure from the higher functions, such as those of the higher senses, then the person becomes fond of this purely vegetative life. He has the full enjoyment of eating and drinking, but his pleasures do not extend beyond this. He becomes thoroughly lazy and unwilling to exert himself. This laziness must be combated. The child must receive enough of nourishment, but care must be taken not to give him too much. All piquant and stimulating food must be kept out of his way; and the educator must quietly but persistently appeal to his higher senses, taking care never to weary him in such attempts. Perhaps there is no mistake more common than attributing laziness to the wrong cause. In nine cases out of ten it is due to the state of the body. It has to be removed by physical means. There are some cases which present a similarity to laziness, but where the likeness is delusive. There are some children who have great power of carrying out their own special activities. They are not inclined to do what their educators wish them to do. They seem to shirk it. But in reality these young people are not shirking toil; they are already so occupied with the work which they have found for themselves, that they are unwilling to interrupt it for anything else. The educator has no reason to fear or to interfere in such cases. He has simply to watch carefully.

The other aberration is an exaggerated estimate of bodily health apart from the idea of the subjection of the body to the soul. This is very apt to arise in sickly children. The one thing that the parents desire for sickly children is health. The child sees that every effort is made to procure this. Every such observation impresses on the child's mind that the one great good in life is health. It is perhaps impossible to prevent this idea growing in his mind; but if illness continues through youth and manhood, a strong effort must be made to strengthen the spiritual nature, so that the person may resist the overpowering influence of this idea, and seek consolation and strength elsewhere than in mere bodily health. If, on the other hand, health is restored at an early stage, the parents must shew themselves indifferent to little ailments, they must alter their mode of looking at health; and with health the child will soon throw off the exaggerated ideas which his feebleness had produced within him.

In regard to his spiritual nature, the educator has first of all to awaken and intensify his desire for knowledge. This is specially the work of instruction. If instruction is properly given, the inevitable result will be a passionate desire for truth; an eager longing to penetrate further into the mysteries of nature and of man. Of course the educator will take care to aim at producing interest only within the range which is possible for the particular stage at which the child is. It is only by doing thoroughly the work of the previous stage that proper preparation is made for the next.

At an early stage great care must be taken to prevent the child being absorbed in himself and his own concerns. Up to this point he has been helpless. His parents have done everything for him. He has justly expected them to help him. But he must be gradually weaned from this condition of expecting help. The educator must now give him his appropriate place. The child must feel that he is young and ignorant. He must feel that he is bound to be of service. He must learn to pay respect to old age. He must learn reverence. His friends must take little notice of his pursuits. He ought to have sympathy; but his importance must not be exaggerated. He has to live amidst multitudes of human beings, each with a fair right to recognition; and the child must be gradually brought to yield this recognition. This he will do in due time if his mind is not filled with false ideas of his own importance.

There is a whole section of inclinations which arise from comparisons with others. These have to be watched with the utmost care. They are sure to arise. But it is advisable that they should be of as short duration as possible, and should take place as rarely as possible. They can never be expected to be exactly accurate. Every one has a strong tendency to magnify himself and depreciate others. And if these comparisons are instituted by others, the results may be very bad. An educator praises one child for having learned his lessons well, and places in comparison with him another who has not done so well. What does this other feel? He feels a sense of degradation in the presence of the first. His feeling of pain is thus associated with the first, and the result may be that the second will hate the first, and will be envious of him. The educator is thus

originating one of the worst passions of the soul, and creating estrangement between two human beings who were made to love each other. This habit of comparison must be checked; and the child must compare what he has done with what he might have done, and could have done. He must learn that certain powers are given him, and that he is expected to exercise these powers as well as he can, and nothing more is to be expected from him. If he has small abilities and is diligent, he deserves as much credit as the cleverest, if comparisons are to be made; but these comparisons are so often partial by the very nature of the case, that they must act injuriously on the young minds. And of all vices against which the educator has to be on his guard, surely none deserves his attention more than envy and jealousy.

In regard to the actions towards others of the person being educated, the educator has to bring about love as the guiding impulse. For this purpose, the first condition is, that the child be treated with affection; but it must not be selfish affection. We shew our love to our fellow-men by bringing their powers into activity, or removing the obstacles which prevent their full activity. And so we must shew our affection for those whom we educate, not by pampering their lower passions, or puffing up their vanity, but by keeping all their faculties in healthy activity. The child thus drinks in affection, faith, and hope from the educator. It is needless to say that it is in the family circle that this education can best be given. The family is composed of old and young, male and female: the demands made by the old are different from those made by the young; the influence of the female is different from that of the male. All help to the evolution of man's nature. The child learns to respect those who are older than himself, and acts helpfully towards them when it is necessary. He learns also obedience. Towards his fellows he stands on a different footing. His influence on them, and their influence on him, is great: they are near to each other; they reveal their feelings to each other without any disguise. It is therefore advisable that the younger child should have beside him an older child, whose education has gone on harmoniously and well. The children should be taught to help each other, to assist each other in their plays or their lessons; and the eye of the instructor should be ready to see any outbursts of evil passion, that he may at once employ the right remedy.

If the family life has been morally sound, the further development of the child will be comparatively easy: but there will still be necessity for vigilance. The child passes out of his family circle into the wider circle which he meets at school. In the midst of companions gathered from many homes, his life expands, and he learns more of human nature. These experiences form the foundation by which the knowledge which he gains from history will be interpreted. This knowledge will widen the interest of the pupil, and gradually his sympathies may be so drawn out, that his interest will extend to mankind.

To produce this result effectively, it is necessary that the educator speak fairly and justly of his fellow-men. Even if we suppose that the family life is morally sound, the pupil will soon come into contact with wickedness. He will be deceived, or treated harshly, or deprived of his property by some of his fellows in the course of time. All such acts have a depressing influence on the child's nature, and the results may be dangerous. To counteract their effect, the pleasure-sensations derived from the kindly action of his fellow-beings must be made so numerous and so decided, that the pain-sensations derived from conduct of an opposite nature will produce but a slight impression on the mind, and will pass away. This is done when the child's affections are so brought out in the family circle that they have attained a considerable amount of strength before he encounters the cold world. In fact it is true generally that the educator need never think of hardening the mind of his pupil by making him encounter evils. Evils will come in time enough, and the best preservative against their effects is to have the mind filled with good. But when evils do come, the educator must not exaggerate them: he must set them forth in their true proportions. And he must be especially cautious in attributing motives to other men. There are always two or three ways of looking at the same action. The educator, if he is wise, will try to find out what is good, and prefer to exhibit that to anything else. Prejudices which otherwise might have desolated the pupil's life, will find no root in him, and he will learn to see what is good in his fellow-men. He will take a hopeful view of human affairs.

Notwithstanding the best efforts of the educator, there will be aberrations, and the educator must attempt the cure. The first point in dealing with these aberrations is to remember that the only way to expel the bad is to put in the good. The educator must take counsel with himself as to what is the best method of introducing and fostering the good, the opposite of which appears in his pupils. But occasionally he must have recourse to punishments. These should be used as seldom as possible; and in the use of them, it would be well for him always to think how nature punishes. We see it best in the body. A particular part of the body has gone wrong; it refuses to do its proper function. What takes place? Nature struggles to give it back the power, and in the struggle pain ensues. Pain is the indicator that something is wrong, and can be remedied. But when the unhealthy state still goes on, and the remedy is not applied or fails, then the part loses its powers altogether. This last part of nature's functions we have no right to claim for ourselves. It is our duty to try the cure to the very last. But in punishing, our sole object should be to draw attention to the evil, while we are applying the remedy. Thus, for instance, a man steals a pound. What is the remedy suggested by nature? That he should work out the pound's worth, and all the costs attendant on his being made to do so. So, when a child cannot agree with his neighbour, solitary confinement for a time is the punishment appropriate for him. If he neglects to do a piece of work out of a desire for play, he must not be allowed to play until he has done the piece of work and a little more. In every case it is advisable that there should be some connection visible to the child between the fault and the punishment. At the same time, the educator is not to mistake the punishment for the remedy. An appropriate punishment is an appeal to the child's intelligence, and is so far a remedy. But the remedy must go

to the very soul of the child, and therefore it can consist not of one act, but of a number of acts intended and fitted to alter the state of the child's feelings and desires.

Finally, there is the child's attitude towards God. Religion arises mainly from two feelings—the sense of dependence and weakness, and the belief in a Being of superior intelligence and power, who can do for man what he is utterly incapable of doing for himself. The sense of dependence is the groundwork of the whole. Man realises how limited are his faculties, how frail the tenure of his life, how inexorable the powers of nature, in the midst of which he is placed; and he longs to repose his soul on some one that is unchangeable, that is unlimited, that is eternal. But this is not enough. He must believe that this Being is interested in him, that He loves him, that He cares for him. And then, through this faith, he gathers strength to support his weakness. There are thus two special duties to do in regard to religion. The educator has to produce a deep sense of man's weakness, and he has to exhibit the character of God as full of mercy and love. The child's nature is adapted for these lessons. At the earliest stage he is absolutely helpless and ignorant. He therefore clings to his father as his protector and helper. The father is the God to the child. And it is out of the father's conduct to the child that the child's idea of God should arise. Afterwards, in the course of life, there are many occasions on which the weakness and dependence of man are brought home to the mind. These should be used. Deaths in the family, distresses and calamities of every kind, extraordinary appearances on earth or in heaven, awaken the mind to the mystery of existence. Subsequently every act of the life may do this. Then the child must be taught the nature of God, the kindness, the tender mercy, the unbounded love. No book is so fitted to teach this as the New Testament. But care must be taken not to use the book for any other purpose than awakening and sustaining the religious feelings. It is not to be used as a lesson-book. It is not to be a mere means of training the memory. The effect of every lesson ought to be an increase of love to God and man. The educator must measure the success of his lessons by this one test—how far the child's heart has been opened up to love God and man. This test, of course, cannot be employed always, or even often. The child must not be taught to watch his own feelings or dissect them. But the educator can weigh well with himself how far the lesson which he has given is by its method and manner calculated to produce love.

We have said very little of the formation of the feelings. A feeling takes place when the mind becomes conscious of the difference between one state and another. The feelings are therefore entirely dependent on the representations that have been made in the mind, whether of perceptions, desires, or volitions. But they are of great importance as indications of the moral state. Only, children are very apt to be unfairly judged. A child's father dies, but the child feels little or no sorrow. Why? Simply because the child does not realise the difference of his position. He expects his father to come back; or after he finds that he does not come back, he sees that all things go on much the same as before. Or at any rate the child's consciousness of the past is so weak that it does not offer itself as a contrast to the present. There are many other feelings for which there are no foundations as yet laid in the child's mind, and which therefore he ought not to be expected to have, such as anxiety for the future, continued distress for a mistake, continued joy over a success. He lives, in the earliest stages, in a continuous present; and all his feelings must be estimated according to this fact.

There is one class of feelings, however, which deserves notice in connection with the moral training: we mean the sense of the beautiful. The feeling of pleasure which we derive from the beautiful arises from our perception of the beautiful. We have just been looking at an ordinary object. Immediately afterwards we see a beautiful one. The difference between the two strikes the mind, and as it were elevates it. And this elevation is accompanied with a feeling of pleasure. Now, here it is plain that we must first learn to perceive the beautiful. But there is but one way to accomplish this. It is by looking at it. The soul of man is made for the perception of the beautiful. It is requisite only that the proper conditions be fulfilled, and then the soul of man will see what is beautiful. But a training is required here as in other things. The child's mind cannot form a perception of a wide landscape so as to make a unity out of it, and therefore he cannot feel the beauty of the landscape. He has to rise by degrees to a sense of that which is most beautiful. But the beautiful and the moral are nearly allied. And therefore it is of consequence, that at the earliest stage he be habituated to see what is beautiful, that everything around him be neat and tidy. At a later stage he should learn all those arts which help the development of the sense of the beautiful, such as caligraphy, drawing, and painting. His educator must lay before him beautiful landscapes and beautiful works of art, and through sympathy, and by carefully looking at them, the pupil will rise to a perception of what is beautiful.

In these remarks on education we could only give an indication of the many topics which have to be discussed in connection with it. Some of these subjects are of peculiar difficulty, and justice could not be done to them without a minute and full treatment of them, and an accurate exposition of the psychological laws which regulate them. In fact, the discussion of details is often of the greatest importance, but it is at the same time true that all such discussion will be fruitless, unless the educator grasp the principles with his own mind, and work them according to the best of his wisdom.

INSTRUCTION.

The object of instruction is to act on the intellectual powers. The instructor aims at developing these in full perfection. The means is the information which he conveys. But it must not be supposed that instruction is mere giving of information. On the contrary, the whole success of instruction consists in enabling the person instructed to procure the information for himself, and to procure it in such a way as to bring all his faculties into play. This instruction must proceed according to the laws of the evolution of mind.

It begins with the training of the senses. Its foundations are laid in the accumulated stores of perceptions which are made through the higher senses. It then combines these perceptions, in order to obtain greater unities. And finally, it surveys these groups, and tries to find bonds of unity between them. These three stages deserve particular notice. At the first, the child simply observes. At the second, the boy is engaged in uniting his various observations under common terms, so that he can remember and know them without remembering every one of the instances. And finally, the young man takes a survey of all that he has gained, at the same time extending his knowledge. This is the stage of system or of science. During these periods, the mind itself is in different attitudes. In the first, though it is not absolutely passive, yet we may say that it is passive ; it receives the impressions. In the second, it is reproductive ; it is constantly comparing what it has already acquired with what it is acquiring, and can reproduce it. In the third, it is productive ; it seeks to create ; it has already accumulated large materials ; it is taking a survey of all ; and in this state it naturally seeks to enlarge the domain of truth, or at least to seek it for itself. These stages are unchangeable in their order. There must be, first, the sensational ; then the period of the formation of abstract notions ; and finally, the period of scientific thought.

From these principles arise the following rules, which the instructor must always keep in mind in imparting instruction, if it is to be educative.

He must carefully note the stage at which his pupil's mind is, and suit his instruction to this stage.

He must give the concrete before he gives the abstract : he must give many instances before he gives the rule : he must leave the pupil as far as is possible to discover the rule.

He must begin with the known, and from it pass to the unknown. The instructor has no other basis of operation than what is already in the mind. And if he, therefore, wishes to give knowledge which will remain, that knowledge must be attached to knowledge that is in the mind.

The instructor has also carefully to consider the nature of the child's mind in giving the instruction, and from this consideration arise the following prescriptions. The instructor must make his instruction so bear upon the mind as to bring its powers into full activity. In other words, every lesson must be interesting : for interest is simply the pleasure which attends the full play of the pupil's mind. Whenever the instructor ceases to be interesting, he ceases to be educatively instructive. At the same time, interest must not be confounded with mere pleasure. It is possible by certain means to excite the pleasurable emotions of young people in a high degree, and yet give them very little instruction. The pleasure of interest is an equable, widely diffused, and almost unconscious feeling, with no reaction. The pleasure of stimulus may be intense, with a strong reaction. The one deepens and strengthens the knowledge. The other helps to render the acquisition of knowledge rapid : but the knowledge is often slight and apt to be forgotten. Then again, the child's mind is not strong, and therefore his powers must not be greatly taxed. Every lesson must be of short duration, and its duration is to be determined by the power which the child has to keep up interest in the lesson.

We pass from these considerations in regard to the nature of the person instructed to the materials which the instructor is to use. Here, again, we find that they are three—Nature, Man, God ; but these three do not stand apart. Man is continually acting on nature, and nature is acting on man. And God is visible in all. Yet they can be separated in thought, and even in practice. We can discuss one without meddling with the intellectual aspects of the others.

Nature we take first : The phenomena of nature present themselves indefinitely combined. But thought separates them, and we get the sciences of Natural History, Natural Philosophy, and Chemistry. These again, are subject to many divisions. Natural History, for instance, contains Mineralogy, Botany, and Zoology ; and Geology is really a part of the same science. So Natural Philosophy contains within it Astronomy, the doctrine of Heat, Electricity, and all that relates to the movement of bodies.

It is plain that the child is not to learn these subjects. It is important here to notice an ambiguity that prevails in regard to the meaning of science-teaching. A science arises when it is perceived that certain events in a particular class of things invariably follow certain other events—that, in one word, laws prevail in that particular class of things. It has so happened that laws most clearly established have been discovered in regard to matter or the phenomena of nature. No sane man really doubts that there is a regular and uniform sequence of events in external nature. Hence those departments of knowledge which deal with nature are called sciences. It is now more and more acknowledged that the same regularity and certainty prevail in mind, in all that relates to man ; but none of those departments of knowledge which deal with human affairs has yet had so many clearly ascertained laws discovered in them as to impress the public mind strongly that they are sciences. We have a science of the mind of man—Psychology. We have a science of language, a science of history, a science of society ; but none of these sciences has advanced far. Accordingly, with a large class the word science means a knowledge of nature, or external nature. And science-teaching is taken to mean the giving instruction in the phenomena of nature, whether of inanimate nature, or of plants and animals, or of motion or chemical change. In this sense, science can be taught at an early stage. The child ought to be accustomed to observe nature. But the word science implies that laws have been discovered ; and science-teaching might mean the impartation of knowledge in regard to the laws of nature. In this sense, science-teaching cannot be given to children. A law is a wide generalisation. Its comprehension implies a comparatively mature state of mind. And the word science in this sense is applicable as much to the phenomena of mind as of matter. This kind of instruction, therefore, in which the science of the subject—that is, the apprehension of its laws—is brought before the mind of the pupil, is, as we have seen, the last stage of instruction. At the earliest stage, and for a considerable time, natural objects must be brought before the mind in the

concrete—that is, the child must see, feel, and smell the object—and it is best that he should do so in its ordinary connection. He should examine the flowers as they grow in the field; he should observe the habits of birds as they build their nests or flutter about the trees. The great purpose of these lessons is to give the child an interest in all nature, animate and inanimate, so that he may have real pleasure in watching every passing occurrence. There need be no attempt at systematising, though the instructor may wisely have a method of his own to strengthen the impression and deepen the interest. Only this one principle must be kept strictly in mind, that the object itself contains far more instruction in it than any representation of it. Representations of some kind or another may be in some cases absolutely necessary; but the instructor should always exert himself to get real objects, if he possibly can; and a real object of minor importance is more valuable for instruction at an early stage, than a representation of an object of greater importance. It was this principle that gave rise to what were called object-lessons. The very object was presented to the pupil, and his interest excited in regard to it. These object-lessons were of great educative value when properly given. They certainly may be given improperly. The most common mistake is to give the word or the information before the child has fully observed the object and its properties. It is a law of all teaching, but especially of teaching in this department, that the word should never be given until the child has fully observed and been impressed by the object, so as to desire to give it a name.

A child might continue to receive these object-lessons till nine or ten. The instructor might then select some special science in which to give instruction. But the instruction must not be given scientifically. On the whole, the most appropriate science to take is botany, for the boy is naturally fond of flowers, and has ample opportunities of collecting them; or it may be zoology, for he is also fond of animals, and can come into personal knowledge of a considerable number. The aim of the instructor is now to enable the pupil to observe more accurately than ordinary observers do. He takes any plant, and directs attention to each particular part of the plant. He compares plant with plant in all their various parts; and here again, too great care cannot be taken not to give the name before the object is fully and accurately observed. Of all departments of instruction there is none which is more apt to become a mere accumulation of knotty names, than science badly taught. The instructor must continually aim at producing in the pupil the power of accurate observation and comparison, and at awakening interest. At a later stage come the sciences of natural philosophy and chemistry, and as the pupil is now further advanced, he is to be treated somewhat differently. He is not yet fit to be taught scientifically, but he may now be prepared for the scientific treatment of a subject. He cannot take a connected view of a whole subject; but he can deal successfully with single phenomena, or single classes of phenomena. In fact, he can master special instances of scientific reasoning, and it is in this he is to be trained. Hence the infinite importance of his experimenting. He should not be a mere onlooker; but the instructor, knowing the history of discoveries, should set the pupil at the stage at which mankind was before the discovery was made—a stage at which, in all probability, the pupil already is. He should then, by suggesting problems, lead him to experiment. It is often of as great importance in such lessons that the pupil should fail as that he should be successful, though the problem should never be rendered too difficult for him. His failures should be explained to him, or rather he should be asked to discover the reasons of his failure, if they are within his reach. And then he should be led to try other experiments until he succeeds, such hints being given to him as to prevent his feeling that he is utterly baffled. It is not enough that he should see experiments. Nor is there any need of system in the treatment of the science, though the instructor should always have a method calculated to strengthen the impressions and deepen the interest. The last and final stage is the scientific exposition of the science. The instructor may now proceed on a different plan altogether from that pursued in the other stages, if the pupil has been properly instructed. Formerly, the instructor always began with the concrete; he multiplied instances upon instances, without telling to what they led; and he gave these instances in such numbers, and so well arranged, as to guide his pupil into some dim, perhaps, even clear perception that there was a law. Now, the instructor may start from the law, explain the various phenomena that exhibit it, and shew that all the phenomena are connected together by an irrefragable bond.

The study of nature is of great value in itself. The search for the laws that regulate nature calls into full activity the highest faculties of man. The phenomena are adapted to draw out all his powers; and therefore the study of nature is one of the highest privileges of man. It is also advantageous in relation to the body of man, as the body, being physical, is subject to all the laws of physical matter, and external physical matter contains vast stores of comfort and benefit for his use.

But the study of man is the main object of his life. The comprehension of his own nature and the nature of his fellow-men is demanded for the performance of almost every act in life; and it is, therefore, right that the nature of man should be the principal object of instruction. The main aim is to get a thorough knowledge of himself and his functions. In the first place, he has to know himself as a physical being. The study of human physiology is one which claims and demands his utmost attention. As he has also a mind, he has to do his best to comprehend the laws of mind. And as he is to be a man of the nineteenth century, living in a particular country, he has to consider what special work his country has to do, what is its special position among the countries of the earth, and how it has reached this position. In one word, the main aim of his instruction is to know himself thoroughly, and to know thoroughly those with whom he comes into special contact. The sciences of most importance to him are physiology, psychology, and sociology, and he is bound to have an accurate knowledge of the laws and institutions of his country. But it is plain from what has been said already that none of these subjects is suitable to a young mind.

The three sciences mentioned are among the most difficult of the sciences, and require strong mental powers. And it is impossible to form a true estimate of the laws and institutions of a country without knowing its history, and without having studied the history and institutions of the other principal nations of the earth. The instruction of the child and the youth must therefore be a preparation for these higher studies, and these higher studies should invariably end and complete the work of instruction.

What, then, is the preparation which can be made for these higher studies?

For the study of human physiology and the laws of health, the study of nature, as already described, is the best preparation. The mode of procedure is the same in both.

For the other subjects a foundation must be laid in a wide knowledge of concrete human nature. Human nature must be known first in its simplest forms; and gradually the lessons must include the most complex institutions in which human nature exhibits itself. Now it is possible that all these lessons, gradually rising in difficulty, could be given in one language. Certainly there is no introductory book equal to *Robinson Crusoe;* for Defoe has in a masterly realistic manner described the efforts of man to form a civilised life for himself in the midst of the most simple circumstances. It is for this reason that *Robinson Crusoe* has become a text-book in so many European nations. At the same time, it has to be remembered, that the work is a fiction, and however cleverly Defoe has been able to divest himself of the notions of his age, he still expresses in his writing, in spite of himself, the feelings and thoughts of a man of his time—that is, of an advanced period of civilisation. The plan proposed to meet the difficulties of the case is, to occupy the pupil at the different stages of his career with the literatures of the different periods of history. This assumes that civilisation has been developed, that at first we find man in an exceedingly simple state, with simple institutions; but in the progress of time, man's thoughts, actions, associations, and institutions become more complex. And certainly, though it would be rash to assert that civilisation has gone on in anything like a straight line, there can be no doubt that there has been progress. The thinking, the manners, the institutions of the Homeric period are much less complex than those of the age of Pericles, when states had long existed, political difficulties had been encountered, and various forms of government had been tried. Still more complex is the system of Roman government, extending as it did over a very large portion of the earth, and demanding practical faculties and powers of combination, which Greek statesmanship did not exhibit, and could not reach. Still more complicated were the states which arose out of the destruction of the Roman empire; and when we come to modern times, the complexity becomes enormous, and the difficulty of understanding what measures are beneficial for nations is proportionally greater. Accordingly, the ideal plan proposed for the thorough education of a man of the nineteenth century, in whose case the time and other cost could be afforded (see p. 574), would be something like this: Up to ten or eleven he derives his experience of humanity from the family circle, and the few companions that are around him. At eleven, he begins the study of Homer. Homer has almost no abstract ideas. He has almost no reflection. He sees with singularly clear eye. He sees accurately. He has an interest in all external objects. He rejoices in the play of the higher senses. And he has given the most perfect expression to all that he has seen and heard. At the same time, he possesses a rich imagination, and abounds in those rare legends which have delighted all generations of men. From Homer, the boy passes to the study of Herodotus, with whom history commences. He is brought into contact with more of the realities of life, but still in a simple manner. The mere delight in a story itself, whether it is true or false, has begun to pass away, and the boy wishes to have facts; and Herodotus has exactly the same feeling. From Herodotus, the boy may pass to the *Memorabilia* of Xenophon, the tragedians, and then to Plato. There are some parts of the philosophy of Plato which he may find it difficult to follow; but the difficulty almost never arises from the nature of the ideas in themselves, but from some circumstances connected with them. From Greek literature he passes to Latin literature; and he finds in the historians and the orators an introduction to a wider political sphere. The practical life of the Romans attracts his attention and fills his mind; and he can find the philosophical maxims on which this practical life is based, exhibited in the perfection of style in the philosophical works of Cicero. From Cicero he would naturally pass to the Middle Ages; but from this most educationists, both speculative and practical, have shrunk. In the case of the Greek and Latin writers, we have minds of the highest order expressing in the most graceful and perspicuous language the best and wisest thoughts of their age. But when we come to the Middle Ages, we cannot select writers who are remarkable for their elegance of style. We cannot affirm that certain men are men who have given us humanity clearly reflected in their writings. In addition to this, there is the circumstance that the writers of the Middle Ages exhibit and give expression to a mode of religious life and thought which may be thought capable of perverting the minds of those who study them, whereas no one is afraid of children becoming converts to the Greek or Roman religions. After passing from the Middle Ages, the young man then devotes himself to the history of his own country and its literature. But in order to get a clear view of the position of his own country, he studies the history and literature of two or three of the foremost continental nations.

Of course, all this study implies the mastery of foreign languages. But this is a positive advantage for the real culture of the mind. For in the first place, the languages of the writers help the student to enter into their exact mode of thought. And secondly, each nation puts different groups of things under single names—that is, forms different notions; and in the effort to know exactly what the writer in a different language means, it is necessary to compare the notion formed by the different people with the notion formed by one's own people. This renders both notions much clearer. And it especially makes clearer one's

own notions. This is the most important work that can be done for a boy. As we have seen, all accurate reasoning depends upon accurate notions. But there is no tendency to which we are more liable than to form our notions hastily; and to form them hastily is generally to form them inaccurately. Any study that can make us linger over them, and realise their contents in a clear and definite manner, is of inestimable value; and foreign languages perform this service. And they perform this service the more effectually, the wider the difference is between the foreign language and our own.

But all this real educative work implies on the part of the pupil the acquisition of some arts or crafts.

The first of these is the art of speaking. It is remarkable how little attention is paid to this subject; yet it is one of the most important. Language is the means of communication between man and man; and a great deal of the mischief and misunderstanding that arise among men is to be attributed to the incapability of many to express accurately and clearly what they intend to say. Children should be taught to say accurately what they have to say, and this practice should continue up to the latest stage of education. It is not enough that the pupil should be taught to compose accurately; speech and written composition are quite different accomplishments. At the same time there is a danger to be guarded against in this training. The power to express accurately depends on the power to think accurately. This, therefore, implies that when the person has not reached accurate and definite thought, he is not in a position to express himself clearly on the subject. The time during which a young man is working out a new subject is one in which he cannot give full expression to his thoughts. And after one has given expression to his thoughts, especially if that expression is given deliberately in writing, it is difficult for him to begin thinking over the subject again. The expression implies that the matter has been so far settled, and only a decided effort on the part of the person can again open up the question as one for further examination and consideration. The injunction of Pythagoras, that his followers should be silent for a certain period, contained a great deal of wisdom in it. The follower was not to make up his mind rashly, not to commit himself to a definite expression of thought, but was to continue thinking. When a man has a few definite thoughts, he may well express them clearly; and, hence it happens that many people are fluent enough though they have no great ability, and many people destroy their power of thinking by talking too much, or speaking publicly too soon and too often, or by writing too much and too soon.

The next art is the art of reading. In reading, there are three points to be carefully noted. First, there is the actual thing in external nature, or it may be only in the imagination; but still, for our purposes, it is the reality. Then there is the spoken word which is the expression of it. And then there is the written word which is the symbol to the eye of the spoken word. It is quite apparent that all reading is useless which does not bring the reader into close connection with the reality; and, therefore, it is of prime importance that the instructor should see to it that every word uttered by the pupil is distinctly understood. At the earliest stages these words should denote for the most part external objects, or the ordinary feelings of man. In the case of the external objects the instructor should bring the actual thing before the senses of the pupil, and he should do this as often as is necessary. He should also try to make the child understand what the feeling is; though it is plain that the child cannot understand unless he has first felt the feeling.

In the spoken language, the word is the unity. The word is composed of elements; and before the child begins to read, he might have considerable practice in analysing the sounds. This is a mere matter of ear. And the subsequent learning of the letters might be greatly facilitated, if before he began to read, he could distinguish the elements which go to make up the one word.

In learning to read, two ways are admissible. The instructor may take an object, speak the name of it, and shew the printed symbol to the child. The child thus learns the words at once. After he has gained a knowledge of a considerable number of words in this way, he may proceed to analyse the words, and so learn the letters. This method has many advantages, and has been carried out with great success. But it requires energy and patience on the part of the instructor.

The other method is to exhibit to the child a letter, and then utter the sound which it generally represents. This plan does not contain in it so much interest as the other; but with some children it may be more effective.

The *names* of the letters are on no account to be taught to children at an early stage. These names are utterly confusing. The child imagines that the name gives the sound, and the confusion is all the greater, that there is some connection between the name and the sound. Great mischief is done by giving the names, and a very unnecessary obstacle is thrown in the way of the child's progress. Thus the word 'usurp,' if spelled according to the names of the letters, gives us 'you-ess-you-are-pea.' The child can see no connection between these five words, as they really are, and the one word which he has to pronounce.

In teaching to read, the instructor should always remember that in the mere attainment of the art of reading there is little educative power. But the art of reading may itself become a powerful instrument in education; and therefore the instructor will so arrange the matter that is read, as to help in the development of the child's powers. He will choose such subjects as are appropriate to the child's stage, with no abstract terms, and no moral precepts. He will give goodness and love and beauty in concrete, and interesting examples and stories.

Closely allied to reading is spelling. At first this process must be carried on by the mouth; but as soon as the pupil is able, he must learn spelling by the pen. Spelling is more a matter of eye than of ear. And accordingly, a child who has been taught to spell words accurately by mouth, will find himself at a loss when he comes to write the words. He must practise the writing of them before he can do it accurately. And here, as in morality, the child should be asked to do only what there is every reason to expect that he

will do accurately. His eye should on no account be accustomed to see misspellings. He should copy the words of his book until he knows them perfectly, and then be asked to copy them without the book. But he should never have set before him words inaccurately spelled to be spelled correctly. At a later stage, when he is quite sure of the spelling, such a task may be assigned him without risk.

In connection with reading or instruction in language, we have to take up grammar. We are now no longer engaged in a somewhat mechanical art, but with a process which is in the highest degree educative. But it must be taken at the right time, and in the right way. By grammar are meant two quite distinct things—the art of speaking and writing a language correctly, and the explanation of the functions of the various parts of a sentence. In the first sense, grammar should be taught from the commencement—that is, the child should be corrected when he goes wrong; and when he has been considerably practised in easy sentences, a few practical rules can be given him, to direct him in his formation of sentences. It is advisable that the instructor should not use a text-book of grammar in these exercises. Continual practice is the most successful agent in the process; rules are of comparatively slight efficacy. Grammar, in the other sense of the word, should be taught at a much later stage: it is an abstract science, involving some peculiar difficulties in English. In fact, the subject of English grammar is only now beginning to receive a proper mode of treatment. Previously it was based on an examination of the classical languages, and terms borrowed from these were applied unappropriately to English. But now the special phenomena of the English language are attracting attention, and the result will be a very great change in our English grammars.

Another of the arts necessary to the culture of man is that of ciphering. This properly forms part of the study of nature; but it is so continually used by man in his intercourse with his fellow-men, that we may appropriately treat of it here. This is an art based upon abstraction. And it is the first to introduce the child into abstractions. It is therefore the duty of the instructor to be patient with his pupils in this matter. Stupidity in numbers may be only apparent stupidity. In all probability the child has not formed a sufficient number of concrete perceptions to be able to realise the abstract. The instructor must therefore begin and go on with the concrete for a considerable time. The child must reckon, not with mere figures, but with actual things. He should for a considerable time add and subtract with actual objects. And the instructor will continue this method with advantage for some time after the child seems to have an accurate hold of the numbers. Then, when he is able to advance to the abstract, the instructor should continually bring him back to numbers in real life, giving him such problems as occur in the ordinary dealings of man with man.

There is not much educative power in this art. It is based on one idea, that one added to one makes two, or that one taken from two leaves one. The instructor should in all cases seize hold of the principle on which each rule is based, and he should not merely give the rule, but should shew by concrete examples, or fully worked-out processes, that the rule is based on reality. This exhibition helps considerably to educate the mind; indeed, the educative power of arithmetic arises from the circumstance that it gives the pupil an idea of order, of inevitable and absolutely certain results. It also may, like reading, be made to exercise a moral influence. If questions are put, taken from real life, as to how much money is spent a week on tobacco, or wine, or other such articles—if light is thus thrown on the mode in which money is actually spent—if the problems are taken from the statistics of one's country, the pupil may realise many facts which it is of importance for him to know.

Closely connected with arithmetic, and allied in nature, is the science of mathematics. This, again, is a purely abstract science, and many pupils meet with great difficulties at the commencement, and some form a strong prejudice against the science, because they have entered on it without having made as many concrete perceptions as were necessary for holding the abstract firmly in the mind. Accordingly, the teacher must have recourse continually to the concrete forms until the mind of the pupil gathers strength, and then mathematics forms an admirable exercise in abstract reasoning. It is a discipline to which every mind should be subjected. It gives, in a fuller and more satisfactory manner than arithmetic, an idea of an order that is irreversible, of a reasoning which is sure to arrive at unquestionable conclusions. It is also an essential instrument in the investigation of nature, and in its most advanced stages it calls into play the highest faculties of man, gives him the most intense pleasure, and opens up many of the secrets of the universe.

There are some subjects of study which are a mingling of the activities of nature with the activities of man. One such subject calls for special notice; it is geography. Man is bound to know about the land in which he lives, and he should make himself acquainted alike with its natural features, and the changes which have been made on it by man. Here the child should start from his own home. The apparatus which is used in teaching geography is symbolic, and is sure to mislead the child if he does not begin with reality, and is not continually referred to reality. The first lessons in geography should be in the open air. The river near the town; the hills in the neighbourhood; the town itself, and all that forms the features of the land within the reach of the child's actual knowledge, must first occupy his attention. He should learn to make a map of these, and no name should be given him until he has first seen the very thing, or something like the thing, in reality. Of course he cannot see everything which is named in geography; but he can see so many things, that every other named can be conceived by him from what he has seen. After the child has been occupied with the features of his home, he can then advance to the geography of his country; and when he has done this, he may then begin afresh, and study geography more systematically, going over the regions of the earth. In all cases the instructor should engage the interest of the child. In commencing the study of a country with him, he should summon up before him all the circumstances which would induce himself to visit the country, and acting as

the guide to the child, he should lead him on as if on a voyage of discovery. Here the teacher must hold firmly to the principle, always to pass from the known to the unknown; and the interest is excited and increased by relating the remarkable incidents in the history of the place, and tracing the character of the place, so far as it can be done, to its physical features.

When the pupil advances in his studies, he has then to learn foreign languages. Various methods have been proposed for facilitating the learning of these languages. Some strongly approve of the conversational method, the teacher using as much as possible the foreign language, and expecting the child to imitate. Some have advocated interlinear translations which the pupil carefully studies, forming by degrees a grammar of the language for himself. Others have argued that, as the sentence is the unity in language, the pupil should always have a sentence before him, and should not be asked to learn words by themselves, for these have not their full meaning except when they are in sentences. There is a certain amount of truth in all these proposals, and it is also true that one method may be good for one purpose, and another good for another. We must ask ourselves for what purpose it is intended the language should be learned. If the language is to be spoken, then conversation is the method; if it is to be read, then books must be read. And experience shews that people may be able to speak well and yet not read a foreign language, and *vice versâ*. In the case of the ancient languages, the main object is to read the books written in them, and to gain through the books the human culture that they can supply. It is the words and forms used in literature, and not the words and forms of conversation, which are to be acquired. The pupil must therefore know the grammar well; but while learning the grammar, he should be reading short sentences. The sentence is the only proper illustration of the rule, and, as far as possible, the pupil should be made to discover the rule from the examples. Comparative philology is of great help in teaching the grammar, and in imparting to it educative power. Thus the word *amabitur* signifies 'he will be loved.' Such a form is a pure mystery to a child, and leaves his mind unexcited. But when the pupil learns that the *r* means himself, that *t* means he, that *bi* implies futurity, and that the stem *ama* means love, he sees that the Latins thought differently from himself, that the word really means 'he will get himself loved,' and that amidst the difference there is much that is in harmony with his own way of thinking. In teaching any ancient language, the instructor must keep continually before him the main aim of his work, the culture of the mind. In all cases where the notions of the ancients do not coincide with the notions of the moderns, he will take care to mark the difference. But it is when the pupil has made some progress that the instructor's task demands special care. When he reads an ancient writer with his pupil, he must first observe whether the pupil thoroughly understands the constructions of the passage, then whether he has caught the thought of the ancient writer, then whether he understands all the allusions in it, and then whether he sees the drift of the particular passage in connection with the whole work.

To give firmness to the pupil's knowledge of the language, translation from English into the ancient language is of great service. But it is not of use for any other purpose. It is absurd to expect that any young person can write in any ancient language with elegance and grace. Let him do his best, and his mode of thought will still be modern. The very greatest scholars have only had moderate success in this accomplishment, and the best of them threw aside the idea that they could write as ancient Latin writers did, and in their use of Latin modernised it, and adapted it boldly to ideas unknown to the ancients. Still less is it to be expected that young persons are to write Greek and Latin verses like the ancients. Such exercises are apt to deaden the sense of the difference which exists between them and the ancient verses, and they are an enormous waste of time.

In our sketch of ideal education, we placed Greek before Latin. This unquestionably is the natural order. Some able scholars and educationists have urged that a change should be made in our present system in this respect. Their arguments seem to us conclusive. But they go on the supposition that the matter is always to have greater prominence than the form. They think that it is utterly unimportant for a pupil to remember all the minutiæ of a foreign language so as to write it accurately, and that it is enough if a pupil has such a knowledge of it that he can grasp the meaning.

At the time that the pupil is reading the books in ancient languages, he should be gradually forming an idea of the ancient life; he should know well the history of the ancient people, and he should study their institutions. And, as far as possible, real objects of antiquity, photographs of places, casts of bas-reliefs, and similar works of art, should be used to help him to realise antiquity.

During the whole period of instruction, express provision should be made for the health of the pupil. It would be out of place here to go into the various systems of gymnastics that have been proposed; but some kind of definite exercise should be prescribed. And wherever circumstances permit, the pupil should be induced to take part in the ordinary games of boys, and to learn to ride and swim. He should also be taught music, vocal and instrumental. It is an art that is healthful in itself, that refines the mind, that fills up a disengaged hour, and that gives pleasure to others. When taught scientifically, it has also considerable educative power, calling into exercise much energy of soul.

Such is a general outline of what the education of a child might be. But this education can rarely be fully carried out. Very rarely is the effort made to carry it out. And difficulties present themselves to the full realisation. These difficulties we see when we deal with the organisation requisite to carry out the instruction.

The first difficulty is, that there are only comparatively few children who are privileged to receive a course of instruction extending from their earliest years to the age of twenty-two or twenty-three. With most, the period of instruction must cease about the thirteenth or fourteenth year, and, unfortunately, very many do not devote even so short a period as this. Those who receive this limited instruction are also pressed by an

external care. The instruction of which we have given an outline is an instruction intended to bring out man's powers to perfection, as far as that can be done. But the child of the poorer classes must not merely be trained to manhood, but he must be trained to earn his daily bread. And the problem thus becomes: Given only a limited period for instruction, and given the certainty that the child must work with his hands for his livelihood, what is the best training to be given him?

Now, we may regard it as a settled matter that the school is not the proper place for training him for a trade. All investigations shew that the trade is best learned by apprenticeship. In certain countries where it has been thought good for the people to establish new industries, as in Belgium, schools teaching these industries may be established with beneficial effect. But these are special cases. At the same time, as the child is to work on matter for his livelihood, it is plain that such a knowledge of the phenomena of matter as he can acquire ought to be imparted to him, that he may be able to act in his trade not only by rule but with intelligence. But the special aim of instructing him is to make him preserve his manhood in the midst of his trade. His trade has a narrowing influence. It subjects him to the continual recurrence of the same sort of activity, and the same ideas. But it is intended that he should be more than a tradesman—that he should be a citizen and a man. Accordingly, it is the business of the common school to give all the instruction possible within the period, in order that he may realise his responsibility as a citizen of an empire and as a man. He is therefore to be taught reading, writing, singing, and ciphering. He is to know the geography and history of his own country, and to have some general ideas of the history and progress of mankind. Above all, the school should furnish him with a strong moral discipline, producing in him habits of punctuality and neatness, and instilling into him love to his fellow-men and to God. As his instruction stops at a period when he is not fit to grapple with abstract ideas, it must be carried on concretely: by concrete examples, by living illustrations, by actual occurrences. But his instruction should not end here. There should be schools of improvement in the evening, where he could resume and carry on the studies which he had commenced in the day-school. The proper organisation of such schools is one of the questions of the day. A great deal could be done in these improvement schools to give the working-man instruction in the history of his country and of the other nations of the earth, in making him acquainted with the masterpieces of literature of all ages, and in enabling him to see the working of the laws of political economy and sociology. It would be easy to sketch out a course which would considerably make up for the necessity under which he lies of giving up his instruction at an early age, and working for his bread. But there is great difficulty in getting the right men to undertake the work of instruction. And if the instruction in such subjects is not given by men who are masters of them, and know how to teach, it may not only do no good, but may be productive of much harm.

Supposing that the child can have his instruction prolonged to sixteen or seventeen, but not much longer, how are we to treat such cases? Here again the instruction cannot be complete for want of time. And we must endeavour to make the most of the necessities of the case. We ask ourselves what does the pupil intend to be? and how far can the school help him? The answer here is somewhat different from the answer given in the last case. The pupil is to act on matter for his livelihood, but his action is to be less mechanical and more spiritual. His success in his trade will depend on the dexterity with which he can apply his knowledge of nature to the actual wants of mankind. The school can give him considerable insight into nature and into the applications of scientific knowledge. Accordingly, he will make the natural sciences in their applications and mathematics special objects of study. But as the citizenship and the manhood are above the trade, he will study the language and literature of his own country. He will try to extend his knowledge of human nature, taking Latin to enable him to have clearer notions, and adding some one or two modern languages, that he may know the relations of the states of Europe to each other. Schools intended for this class are in existence on the continent, and we are beginning to attempt them. The pupil may continue his instruction after he has left the school by studying more thoroughly all the sciences and their applications to human life; or by selecting one or two, and devoting special attention to them. For this purpose technical colleges have been instituted abroad, and the Scottish universities to a considerable extent discharge the same function.

For those who are able to pursue their culture without having regard to the means of earning their livelihood, and for those whose professions demand nearly a purely human culture, there are schools whose main business is the study of Latin and Greek. These schools, by a perversion that occurs continually in human nature, are apt to forget the main aim of their existence, and to raise the means into an end. It is not because Latin and Greek are the final aim of these schools that these languages are taught. Latin and Greek are reckoned the best instruments of culture only for a special period, the period from eleven to nineteen, and they are so reckoned because they bring into full play the faculties of the youth, and they give him literatures exactly adapted to his years—that is, they afford him the best opportunities of studying human nature in a profitable manner. But these studies should never be carried on exclusively. They are a preparation, as we have seen, for the study of our own greatest writers, of what is best and most profound in English literature. They lead up to a deeper comprehension of our own social arrangements. And they lay the best foundation for philosophical studies. They ought, therefore, to be accompanied by a knowledge of English literature and history appropriate to the stage of the student. They ought to be tempered with a due mixture of these studies, the natural sciences, and mathematics, which impress the mind most strongly with invariable order. In fact, here, as in every other case, education must not be one-sided, but equable and harmonious.

The student then passes to the university. It

seems to us that his special work here should be the study of physiology and the laws of health, of psychology, of the laws and history of his country, and of its literature. He should combine with this such studies as may throw light on these subjects; and he should add to this some special department of investigation in which he may try his own powers. This last may be a special branch of science, such as theology or medicine, which he has chosen for his profession. But now certainly is the time for him to search into truth. In his school career he has been amassing knowledge gained by others in the past. If he has been instructed in the right way, he has been doing more than amassing—he has been gaining it for himself. But still he has been exercising his powers under direction, and on materials procured by others. Now he tries to penetrate into obscure regions, that he may fetch forth truth for himself; and in such an exercise as this, he necessarily brings into activity the highest energies of his intellectual powers, and so performs the highest functions of mind.

It is needless to say that this sketch is to some extent ideal. Neither schools nor universities at present existing, accomplish what is here said to be their work. But still, they more or less aim at accomplishing them. Their failure, so far as they do fail, has for the most part to be explained historically. We have divided the schools into common schools, commercial schools, classical schools, technical colleges, and universities.

The difficulties in regard to common schools have been that portions of the communities have wished the working-classes to remain in ignorance; that the working-classes have often been extremely indifferent to education; that they are unwilling to be taxed for education; and that some people are afraid of the interference of government. Wherever the work has been best accomplished, as in Germany, it has been by the state undertaking to organise schools.

The commercial schools have not been remarkably successful anywhere. The most vigorous attempts have been made in Germany and Switzerland; but in these countries, especially in Germany, merchants shew a preference for those who have been educated in the *gymnasien* or classical schools. These schools, however, cannot be said to have failed from causes that necessarily attach to them. The classical schools had preoccupied their ground. Thus commercial or *realschulen*, as they are called, had to force their way into recognition. They were to a certain extent neglected by government; they were not supplied with such good teachers as the gymnasien possessed. But a better future seems before them. At least, there is hope, that both in Germany and this country, a greater effort will be made to equip such schools properly.

The classical schools and the universities are hampered by traditions. Most of them have existed for long periods. Ancient modes and usages have become sacred and stereotyped. These institutions are naturally conservative. And such innovations as are attempted are often made with half-hearted energy, and therefore fail. For instance, there is nothing on which educationists are more clear than that science should be taught in these classical schools. But it is easy to teach science in such a way as to make it utterly repulsive and non-educative. It is difficult to teach it so as to bring out the powers of mind which it can bring out. And accordingly, for one teacher that can teach science well, and make the subject a success, you can get ten who cannot teach it, and will therefore make it a failure.

The universities which have come nearest to attaining the ideal are the German universities. Some of them are of quite recent origin. They are the products of nineteenth-century thought; and though they are far from perfect, they stimulate investigation into truth powerfully.

Again, however, all that Germany has succeeded in doing, it has done by the state. The Germans believe that education is a matter which concerns the entire community, and that therefore the state, as the representative of the community, should see to it that the means of educating all the citizens should be provided. They think that it is the business of the state not merely to look after the instruction of the working-classes, but to superintend and organise the entire instruction of the country; so that the poorest child, if he has ability, may rise to the highest honours of the state, and so that the highest education may be given as perfectly as possible. It is the interest of an entire community that each individual in it should be educated to the utmost. The benefits which an individual receives from a good education can never be confined to himself. They must flow over to the whole state. To bring out all the powers of a human being, is to bring out the highest amount of good that is in him, or in other words, to make him in the highest degree beneficial to his fellow-men. And such a work is one that it is the bounden duty of every individual and every state to accomplish in the most perfect manner possible.

We have said nothing of the education of girls. To a large extent the education of boys and girls ought to be the same. Whatever draws out, elevates, and refines a boy, will draw out, elevate, and refine a girl. But unquestionably the work of the woman is not generally the same as that of the man. To her, in a special manner, is intrusted the education of all children. It is therefore her special duty to make herself well acquainted with the laws which regulate the evolution of the human mind, and her instructors should prepare her for this scientific study, as boys are prepared for psychology. It is, moreover, characteristic of her that she exercises a wider sway by her affections than by her reasoning. It should therefore be the special aim of her instructors to bring out to the fullest the æsthetic side of her nature, leading her through all the most beautiful works of the ancients to the most lovely creations of modern poets; giving her, indeed, full opportunity to exercise her reasoning powers; but at the same time, and as the predominant aim, strengthening, deepening, and elevating her sense of the beautiful in the external world, and in the actions of man. Above all, her education should be such as to give her true sympathy with all that is noblest in man.

ENGLISH GRAMMAR.

THE following outline of English Grammar is intended for grown-up persons who have already that knowledge of their own language that results from hearing it and speaking it, reading it and writing it, but who now wish for the first time to make it a special subject of attention and examination. Many also learn grammar at an age when it can be little else than blind rote; and for such it might be profitable, and not without interest in itself, to take a concise view of the principles of the subject, such as is here presented, after arriving at the age of maturity. The method will therefore be somewhat different from that usually followed in elementary grammars for teaching children, in which the definitions and rules are laid down dogmatically. We shall endeavour to proceed as much as possible in the way of investigation, leading the student to feel as if he were discovering the principles and rules for himself—our chief function being to point out to him the shortest road to the discovery. It is in this way that the study of grammar becomes a valuable instrument of intellectual discipline—a kind of concrete logic.

There are many persons with a strong faculty for language and with natural good taste, who, by mere observation and practice, and without any study of grammar by itself, acquire the power of speaking and writing with propriety, and even elegance. And so there are some whose bodily movements are easy and graceful without any teaching; but this does not hinder it from being a fact that the great majority of men and women are vastly improved by gymnastic training. Similarly the study of grammar is essential for most men, if they would be able to speak and write with anything like correctness, or even to interpret aright the language of others.

The subject-matter of grammar is Speech or Language. The consideration of the laws of language in general belongs to General or Universal Grammar (see LANGUAGE). But any individual language—English, for example—besides these general laws, has peculiarities—a genius, as it were, of its own; and, therefore, its grammar embraces both kinds of laws.

SPEECH OR LANGUAGE.

Speech is thought expressed in words. Merely to utter such expressions as 'table'—'a whole day'—'verily,' is not to speak, because there is nothing said or affirmed—no thought or judgment expressed. But when I use the words, 'This table is made of oak,' I express a thought which is passing through my mind, and which calls for belief or disbelief on the part of other minds. No word, or set of words, then, can be considered speech unless they express a thought.

In studying botany, the attention is not directed at first to the vegetation of a whole field or garden, nor yet to a single leaf; but as much is taken as will represent the whole—namely, an individual plant, the unit of vegetation. What in language will correspond to this? In other words, what is the unit of speech? It is not a word; for we have seen that words do not necessarily make speech. Before we have speech, something must be said—a thought must be expressed. A whole or unit in speech, then, is as much as expresses a thought, or makes an assertion. An expressed thought or assertion is called, in Logic, a *proposition;* the form of words in which it is expressed, is what grammarians call a *sentence.* The sentence, then, is the unit or integer of language, and forms the natural starting-point in this study.

THE SENTENCE.

A distinguished grammarian thus defines the nature of a sentence: Man thinks when he judges that a person or a thing *does* (or does *not do*) something, and this judgment expressed in words is a sentence; as, 'The servant obeys,' 'Gold does not rust,' 'The lark is a singing bird,' 'The knife is sharp.' In every case, it may be made out that *doing* something is implied; thus: 'The knife is *sharp*,' is equivalent to, 'The knife *cuts*;' 'The lark is a singing bird,' to, 'The lark sings;' 'Sugar is sweet,' to, 'Sugar affects the palate in a certain way.'

When we think, then, we join in our minds the idea of an activity to the idea of a person or thing, and when we utter this thought, we affirm or assert that the *activity* belongs to the person or thing. This is called *predicating* the activity of the thing.

Parts of a Sentence.—In analysing sentences, it is best to begin with short ones; for however short, they must contain the essential parts, and it is these we are just now in quest of. Take, for instance, (1) 'Ink is black;' (2) 'A fish swims;' (3) 'All men are mortal.' We find in (1), first of all, the idea of a thing, and then the affirmation regarding it, that it 'is black.' There are therefore *two* chief ideas presented to the mind—'ink,' and 'being black;' in (2) also, we have 'a fish,' and 'swimming;' in (3), 'all men,' and 'being mortal.' And so, however short or long the sentence may be, if it is only a single sentence—that is, if it only contain one assertion—we always find *two chief ideas*, dividing the sentence into two parts. In fact, if the essence of a sentence is to say something, there must be a *something* that is spoken about, and a *something* that is said of it. The something that is spoken about is called, in Logic, the *subject* of the sentence; the something that is said about it is called the *predicate.* Single sentences of the plainer kind of structure can be

readily written as bisected into subject and predicate, thus :

SUBJECT.	PREDICATE.
Seasons	—return.
A small leak	—will sink a great ship.
The sense of death	—is most in apprehension.
To dig	—is better than to beg.
Those who have the greatest gifts, and are of the greatest usefulness,	—are the most humble.

When the structure is inverted or involved, it is necessary to change the order, that the division may be seen. Thus, the sentences : 'Short was his triumph,' 'Where necessity ends, curiosity begins,' 'It is a universal law of nature, that disuse diminishes the capabilities of things'—may be written :

His triumph	—was short.
Curiosity	—begins where necessity ends.
That disuse diminishes the capabilities of things,	—is a universal law of nature.

In all these cases, the words on the left hand, be they one or many, are all taken up in naming or defining the subject ; those on the right, in naming or defining the predicate.

But many sentences cannot be thus divided simply into two parts ; as, for instance, 'The sun gives light by day, and the moon by night.' This is, in fact, two distinct sentences combined, each of which has its own subject and predicate, thus : 'The sun—gives light by day,' and 'The moon—gives light by night.' It is thus still true that every single sentence is divisible into two parts. But to return in the meantime to the analysis of the simple sentence.

In looking at the predicates of the sentences dissected above, it will be observed that in many of them the little word *is* (or *are*, *was*, *were*, &c. which are all parts of the same verb, *to be*) occurs, and seems to perform the office of *binding* the predicate to the subject ; it is hence called the *copula*. This little word appears indeed to be the very essence of the sentence in which it occurs—that which makes it a sentence ; and even in sentences that seem to be without it, it is found to be present in a concealed form. Thus : 'The sun—shines,' is equivalent to, 'The sun—*is* shining ;' 'The sun—shone,' to, 'The sun—*was* shining ;' 'He—will come,' to, 'He—*is* about to come.' *Is* can also be used as a predicate by itself ; as in 'God—*is*,' which is equivalent to 'God—*is* existing.'

In such sentences as, 'John will come,' 'I can swim,' the copula lies in the words 'will' and 'can,' which belong to the class called auxiliary verbs. (See page 586.)

This further analysis gives us another part to the sentence. The subject remains as it was ; but the predicate is now resolved into (1) the thing predicated, and (2) the act of predicating it, which act is performed by the copula. This division of the sentence into three parts—subject, copula, predicate—is rather a logical division than a grammatical. In grammar, as the copula is often inseparable in form, it is generally included in the term predicate.

Such a sentence as, 'The sun shines,' presents the barest form that a complete sentence can have ; and may be called a *skeleton sentence*. It contains merely the essential parts—the subject, predicate, and copula (involved in 'shines')—the absence of any one of which would make it cease to be a sentence ; these, therefore, are called the *principal* elements of the sentence. The enlargement or *development* of a sentence takes place by means of adjuncts, or *secondary* elements, tacked on to the principal elements. The Predicate, for instance, becomes enlarged beyond the skeleton form, when the nature of the action is such that the sense is not complete unless some object is named on which the action is exerted ; as, 'The gardener—pruned (a tree).' Here 'a tree' is the *object* of the action, and forms the *complement* of the predicate. Again, the Subject of the sentence is enlarged by having *attributes* attached to it—that is, a word or words joined to it expressing some quality or circumstance belonging to it ; and the same may take place with the subject. Thus : 'A *skilful* gardener—pruned a *tall* tree ;' or still more enlarged, '*Our new* gardener *in the fustian jacket*—pruned *the young pear*-tree, *on the south wall of the garden*.' A further extension takes place by joining words to the principal element of the predicate, expressive of attributes or circumstances of the action ; as, 'Our new gardener—*thoroughly* pruned the young pear-tree ;' or yet more extended '—*thoroughly* pruned the young pear-tree *yesterday with his knife*.' The words expressing the attributes of the subject and of the object are in like manner capable of extension ; as, 'An *exceedingly* skilful gardener—pruned a *very* tall tree.' And so we may go on, attaching one secondary element to another, at one, two, or more degrees of removal from the principal, until we have expressed all the meaning that we wish to convey.

It is important to observe the effect of these secondary adjuncts on the sense of the expressions. The name *gardener* involves all the meaning—that is, the same number of attributes—that is involved in the name *man*, together with something more ; a certain knowledge, namely, of plants, and handicraft in cultivating them. When, instead of *gardener*, we use the expression *skilful gardener*, we add to the previous meaning the further attribute, that the person possesses more of this knowledge and handicraft than many gardeners do. The consequence is, that the enlarged expression no longer suits so many individuals as the simple name did ; for all unskilful gardeners are now excluded. The enlarged name calls up an enlarged idea ; but the class to which it is applicable is *limited* or narrowed. In such an expression as, '*Our new* gardener *in the fustian jacket*,' the effect of the adjuncts is to limit the application to a single individual.

Instead of, 'Our new gardener *in the fustian jacket* pruned the young pear-tree, *on the south wall of the garden*,' we might write, without at all changing the sense, 'Our new gardener, *that wears the fustian jacket*, pruned the young pear-tree, *that grows on the garden-wall on which the sun shines, when he is south*.' Here some of the adjuncts of the principal elements of the sentence have undergone a *transformation*, and have become sentences of a sort themselves. In logic, the expressions, 'The gardener in the fustian jacket,' and 'The gardener that wears the fustian jacket,' are identical ; they equally serve to name or define the subject of the sentence. But in grammar, as the clause, 'that wears a fustian jacket,' contains an affirmative word or finite verb (see page 585), it is considered as a sentence.

Yet, there being no direct intention of informing us that the gardener wears a fustian jacket, and that fact being only stated incidentally, as a way of distinguishing what particular gardener is intended, such a clause is called a secondary or *subordinate* sentence, subservient to the purpose of the principal sentence, which lies in the affirmation 'pruned' (a certain tree). In the same way the three clauses, 'that grows on the garden wall;' 'on which the sun shines;' and, 'when he is south,' are all subordinate sentences; and as the second depends upon the first, and the third upon the second, they present three different degrees of subordination. A principal sentence and one or more subordinate sentences thus involved in it, constitute a *complex* sentence. But the further examination of complex and compound sentences will be more profitably pursued at a later stage. The object of this preliminary analysis is to prepare the way for what is usually treated first—the composition, namely, and classification of single words. It is more easy to understand the principles on which the classification of words depends, after getting a clear view of the purposes they have to serve in composing sentences.

Language, as we have seen, is made up of sentences. Now a sentence is made up of a succession of separate sounds, or words. These words, again, are capable of being dissected into parts or *syllables;* and the syllables into still more simple sounds, represented in writing and printing by *letters*, which are the ultimate elements of speech or language. A complete view, then, of the subject, would embrace

1. The elementary sounds or letters, and how they are put together to form words—a branch of grammar called Orthography.

2. The study of individual words—the different *kinds* or classes into which they may be all put; the changes or *inflections* they undergo; and their growth and structure, or *derivation*. This is called Etymology.

3. The way in which words are joined together so as to form proper sentences—Syntax.

The Orthography of the English language is the least satisfactory thing about it. There is in general so imperfect a correspondence between the sound of a word, as pronounced, and the sounds of the several letters that are written to represent it, that the spelling of each individual word has, in a manner, to be learned by itself. By no possible rules can the learner be taught, when he sees these groups of letters *n-o-w*, *p-l-o-u-g-h*, *e-n-o-u-g-h*, to make out the sounds or spoken words that these groups actually represent; or, conversely, when he hears the words spoken, to find out what letters they are to be represented by. This circumstance presents great difficulty to foreigners in the acquisition of English; in other respects, English grammar is perhaps the simplest and most rational in the world. Our space forbids us to enter on the boundless and unsatisfactory field of orthography. Leaving the learner to his own observation in reading, and to practice in writing, for acquiring a knowledge of spelling—or referring him for such rules as the subject admits of to the treatise on Grammar in the Educational Course—we proceed to the next branch of the subject.

ETYMOLOGY.

Etymology treats of three things—1. The Classification of words; 2. The Inflection of words; and 3. The Derivation of words.

1. CLASSIFICATION.

There is nothing in the outward form of words that would enable us to divide them into classes. It is in the *offices* that the several words perform in a sentence, that we are to look for their differences and resemblances. In the first place, there is the subject of the sentence to name; and in many sentences, there is something to name that stands as the object of the action expressed by the verb, or in other relations; as in 'The *gardener* pruned the young pear-*tree* in the *garden*.' Words that thus *name* the persons or things to be brought before the mind in a sentence, form the important class of words called *Nouns* (Lat. *nomen*, a name).

Nouns.

Nouns, or names, may be divided into classes in a variety of ways, according to the grounds we take for our division.

A division usually made by grammarians is into *Proper* Nouns, and *Common* Nouns. A proper noun is usually defined to be 'the name of any individual person or thing;' as, London, Cæsar, Victoria, Smith; while a common noun is one that is applicable to an indefinite number of persons or things forming a class; as, city, emperor, queen, man. But this definition of proper names fails to indicate their essential character. Such names as those cited are not confined to single individuals. There are several Londons, a great many Cæsars and Victorias, and Smiths innumerable. To limit the names to individuals, we must add other words, as London-on-Thames; Julius Cæsar; Queen Victoria; John Smith of No. 7 Fourth Street, New York. Wherein, then, lies the essence of a proper name? In order to answer this question, we must advert to one of the most important distinctions in language. What is it that constitutes the *meaning* of a word? In the sentence, for instance, 'The rich are thought happy,' what does the word 'rich' mean? It is a name* or designation of an indefinite number of men and women—Crœsus, Rothschild, Baroness Coutts. Is this, then, its meaning? and to know the *full* meaning, must I know all the individuals of whom it is true? Clearly not. The meaning of a word is not to be sought in the things or objects it is applied to—in what it *denotes*, as the logician expresses it.

But while the word 'rich' denotes or names Crœsus and others, it also *implies* something about them—namely, that they possess a certain *attribute* or quality—richness, or riches. It is in this that its meaning lies. In the language of logic, the word 'rich' is said to *denote* the persons to whom it is applicable, and to *connote* the attribute of richness.

To take another example: The word 'man' is

*The full name for an adjective is an Adjective Noun, and nouns or names, in the narrower sense, are distinguished from adjective nouns by the term Substantive Nouns, or simply Substantives.

a name of, or denotes all the objects known individually as James, John, Adam, Brutus, Noah, &c. It at the same time implies their possessing certain attributes—namely, (1) a certain corporeal form, known as the human form ; (2) animal life ; (3) rationality. All this, at least, is included in the meaning or connotation of the word 'man.'

If, now, we consider any noun of the class called Common, we shall find that while it denotes, or names, or points out a certain object, or class of objects, it also conveys or implies some qualities or facts concerning it or them. In other words, all such nouns have a meaning, or are *connotative*. Not so with Proper nouns. If any one, pointing to a man passing by, says : 'That is John Styles ;' what does he tell us about him? any attribute or quality? No ; only the fact that such is his name. The name conveys no meaning —it is *non-connotative*. And this is the secret of what constitutes a proper name ; it is affixed to one object, not to convey any fact about it, but merely to enable you to speak about it. Proper names are often given at first on account of the object possessing certain attributes ; but once given, they do not continue to connote these attributes.

The proper contrast, then, to a Proper noun is not a Common noun—meaning by that a name common to a class of objects. Proper nouns, being essentially meaningless designations, can be rightly contrasted only with nouns having a meaning. A better division, therefore, would be into Proper nouns and Significant nouns. If we wish to avoid the possible ambiguity that lies in the word 'signify,' as commonly employed, we might use the terms Non-connotative (Proper) and Connotative.

By far the greater number of significant nouns are General or Class Names ; that is, they can be applied to any individual of a class of objects, implying that all these individuals have certain attributes in common—as, *quadruped*, *book*. The quadruped spoken of may perhaps be a *horse*, and here we have another class name, applicable to the same object, but of less generality than 'quadruped.' *Animal*, again, is more general than quadruped, being applicable to a far wider class. But it is important to observe, that, as the number of objects that the terms are applied to, or denote, increases, the number of attributes they imply, in other words, the amount of their meaning, diminishes. To call an object an 'animal,' merely implies that it is organised and is alive (with that kind of life called animal life) ; to call it a 'quadruped,' implies all this and a number of attributes in addition ; and to call it a 'horse,' implies a still further addition.

It is to this class of words that the term Common Nouns is properly applicable ; and the contrast to them is not Proper Nouns, but Singular Nouns.

Collective Names are such as *regiment*, *fleet*, *senate*, *shoal*. They form a subdivision of Class Names or Common Nouns ; for *regiment* is applicable to all collections of men organised in a particular way.

Names of Materials are such as *iron*, *water*, *sugar*, *wheat*. These two classes appear in many cases to merge into each other. In both, the objects named consist of an aggregation. But in collective names, the parts forming the collection are thought of as individual objects ; as the *soldiers* of a regiment, the *fishes* composing a shoal. Substances, again, like iron, gold, water, are not made up of *definite* individual parts (at least to our senses) ; and in such as wheat, sand, the name of the individual visible part (*grain of wheat*, *grain of sand*), is derived from the name of the mass, shewing that the idea of the individual is swallowed up in that of the mass.

A convenient term for names of materials or substances is that used by German grammarians —Stuff-nouns. Sometimes the same word is used as a stuff-noun and also as a class-noun. Thus : 'The cow eats *grass*' (stuff-noun) ; 'The botanist studies the *grasses*, and has found a new *grass*' (class-noun) ; 'They had *fish* (stuff-noun) for dinner, and consumed four large *fishes*' (class-noun).

Names of materials are not, like collective nouns, a subdivision of common nouns ; they belong to the contrasted class of singular nouns ; and, when the substance is simple or invariable in composition, cannot be used in the plural ; as, *gold*, *water*, *beef*.

Abstract Nouns.—In the expression 'hard steel,' or 'the steel is *hard*,' the word *hard* implies a certain quality or attribute as belonging to the steel. This quality has no existence apart from steel or some other substance ; but I can withdraw (*abstract*) my thoughts from the steel in other respects, and think of this quality as if it had an independent existence. The name of this imaginary existence or abstraction is *hardness*. All words expressive of the qualities, actions, or states of objects, have abstract nouns corresponding to them ; as *brave—bravery ; strike—stroke ; well—health*. In opposition to abstract nouns, all others are *concrete* nouns—that is, the attributes implied in them are considered as embodied in (Lat. *concrete*, growing together) the actual existences named.

Words like *hard*, joined to nouns to express some quality, belong to the class called

Adjectives.

We have seen, in examining the nature of a Sentence, that when a quality is thus added to a name, one prominent effect is to limit the application of the name, and make it distinguish more accurately what particular object or class of objects is meant. For this reason, every word that is joined to a noun, and limits the class of objects denoted by it, is ranked among adjectives, though it may not express a quality, strictly so called ; thus, *my*, *this*, *the*, *some*, are adjectives, no less than *good*, *white*, *large*. Adjectives may be divided into five classes :

1. Adjectives of Quality ; as, the *reverend* gentleman ; a *fertile* field. The great body of adjectives belong to this class.

2. Proper Adjectives, or adjectives derived from proper names ; as, the *Socratic* method ; a *Roman* camp ; *English* melodies.

3. Adjectives of Quantity (including both mass or bulk, and number).

Quantity in mass or bulk is denoted by such words as *much*, *little*, *some*, *any*.

Adjectives denoting quantity in number are of several kinds ; as,

(*a.*) Definite Numeral Adjectives : Ex., *eight* days (*cardinal* number) ; the *eighth* day (*ordinal*

number). *A* or *an*, *another*, *none*, and *both* belong to this class.

(*b.*) Indefinite Numeral Adjectives: Ex., *many* days; *any* books; *all* men. Does *no* (as in '*no* horses') belong to the definite or indefinite class?

(*c.*) Distributive Numeral Adjectives: Ex., *each* man; *neither* way.

4. Demonstrative Adjectives, which point out some particular object or objects. They are: *the*, *this*, *that* (*these*, *those*), *yon*, *yonder*.

5. Possessive Adjectives. Ex., *my*, *thy*, *his*, *her*, *their*, *my own*, &c. In point of origin, these words are considered as possessive cases of the personal pronouns. (See page 585.)

A, or *an*, and *the* are usually classed apart, under the name of *Articles*. But the history of *a*, or *an*, shews that it is nothing else than the numeral *one* (in Anglo-Saxon, *an*; Scotch, *ane*) used *unemphatically*; that is, not to denote *one* as opposed to *two* or *three*, or any definite number, but merely that an individual of a class is meant. Words in frequent unemphatic use are specially liable to drop some of their letters; so that *an* (*one*) or *ane* readily became *a*, whenever ease of pronunciation was promoted by the change. Similarly, *the* is an unemphatic and mutilated *that*; and the one may generally be substituted for the other without essentially changing the meaning; as, '*The* book we were speaking of,' or, '*That* book we were speaking of.'

It is a peculiarity of the English language to use nouns, in a great many cases, as adjectives. Thus, 'a *gold* crown;' 'the *cotton* districts;' 'the *Berlin* decrees.' Sometimes several nouns are joined one to another to form a kind of compound adjective. Ex., 'The *Health of Towns* Bill.' On the other hand, adjectives are sometimes used as nouns: Ex., '*The rich* (that is, rich persons) are thought happy.' 'We naturally love *the beautiful* wherever we see it.' Here, 'the beautiful,' is equal to 'beauty,' or more accurately perhaps to 'whatever is beautiful.'

Verbs.

The end of speaking is to assert or affirm something with a view to being believed or disbelieved; and we have seen (page 578) that the word that performs this function—that of *predicating*—is the very soul of the sentence. Hence this class of words have received the name of Verbs or Words (Lat. *verbum*) par excellence.

Verbs affirm either some action or some state; as, 'John *reads*;' 'The sun *shines*;' 'The book *lies* on the table.' When the nature of the action requires an object to complete the sense, the verb is called *Transitive*, because the action *passes over* (Lat. *transit*) to an object; as, 'the child strikes *the dog*.' Some verbs complete the conception of the action in themselves, and require no complement; as, 'The child *sleeps*,' 'The bird *flies*.' These are called *Intransitive*. A distinction is attempted to be made between intransitive verbs expressing action (as *flies*, *moves*), and verbs expressing merely a state (as *sleeps*, *lies*), the latter being called *neuter* verbs. But it is often impossible to draw the line where activity ends and neutrality begins. Even in such a verb as *sleeps*, it is implied that the sleeper shews certain outward manifestations that make an impression, or act, on the beholder.

Nor can any exact or permanent division be made of verbs into transitive and intransitive. We can say whether a given verb in a particular sentence is used transitively or intransitively; but not that it is absolutely, and in itself, transitive or intransitive. It would be difficult perhaps to find a verb that cannot be shewn to be both the one and the other. 'The child *sees* the candle,' is unquestionably an instance of a transitive verb; in, 'The new-born child *sees*, but the puppy is blind,' the same verb is unquestionably intransitive.

There are two classes of transitive and intransitive verbs, related to each other in the following way:

INTRANSITIVE.	TRANSITIVE.
He sits.	He sets (causes to sit).
" lies.	" lays (" lie).
" falls.	" fells (" fall).
" rises.	" raises (" rise).
" sucks.	" soaks (" suck).
" drinks.	" drenches (" drink).
" dives.	" dips (" dive).

Those in the second column are called *causative* verbs. In the ancient forms of our language, there were many more such causative verbs, formed from root-verbs by a change, generally of the vowel. In Hebrew, every verb is capable of assuming the causative form. Modern English does not stand much on forms, but employs almost any verb in a causative sense without change of any kind. Thus: 'The horse *walked*'—'the groom *walked* the horse;' 'The wood *floated*'—'raftsmen *floated* the wood down the stream.'

Passive Form, or Voice, of Verbs.—Instead of 'Cæsar *defeated* Pompey,' we may say, 'Pompey *was defeated* by Cæsar.' In the former, the verb is in the *active voice*; in the latter, in the *passive voice*. In using the passive voice, the thing or person acted upon is made the subject of the sentence, and has the chief attention directed thereto; with the active voice, the doer and his action are more prominent. Of course, it is only transitive verbs that can thus have a passive voice.

One class of intransitive verbs become transitive by the addition of one of the class of words called prepositions; as, *speak—speak to; fall—fall upon*. Some verbs already transitive take prepositions simply to modify the sense; as, *set—set up*, *break—break down*. In such cases, the verb and preposition are to be considered as forming one compound verb, and might be written with a hyphen—speak-to, break-down. With the addition of a preposition, what was an intransitive verb becomes capable of being used in the passive voice. Thus, 'The king spoke to the duke about it'—'the duke was spoken to about it by the king.' 'Robbers fell upon him'—'he was fallen upon by robbers.'

Not, however, in all cases. For, 'The Thames runs into the sea,' we could not say, 'The sea is run into by the Thames.' And yet, with this same verb, we can say, 'The mail-train was run into by the express.' The distinction seems to be, that when we think of the object as sensibly affected by the action, and wish to call the chief attention to the effect so produced, the object may become the subject, and the verb be passive.

Pronouns.

'*I* am sick.' '*Thou* knowest the truth.' 'John was here, but *he* went away again.' 'Peter

struck the boy, *who* had done him no harm.' '*What* do *you* want?' The words in italics in these sentences are called *Pronouns*, because they stand *for* (Lat. *pro*) nouns, or names of persons and things; and they are generally said to be used to prevent the too frequent repetition of the nouns. Yet the pronoun and the noun are not exact equivalents for each other. No noun can be an exact substitute for *I*, *thou*, or *who*. Pronouns are symbols, names, or highly generalised marks, applied to objects to signify, not any inherent attribute, but merely *their relations to the act of speaking*. They might therefore be called *relational names*. *I*, for instance, is a name applicable to all subjects that can be conceived as speaking. In such a sentence as '*I* am sick,' in which the state, 'sick,' is affirmed about some one, the exact force of *I* may be thus expressed: The person of whom 'sick' is affirmed, is one with the person making the affirmation. Who the individual person is, the pronoun *I* gives no indication; it is implied that this is known from some other source. Those present learn it by hearing whence the sound comes; in a book, it is gathered from the context.

In like manner, *thou* is a generalised name for all persons spoken to. What it means or *connotes* is—with reference to the example above given—that the person affirmed to know the truth, and the person to whom the affirmation is addressed, are one and the same.

If the clause, '*he* went away again,' stood by itself, what person is denoted by *he* would be still more vague than in the case of *I* and *thou*. *He* merely implies that a person, neither the speaker nor the spoken to, but one known in some way, is the subject of the assertion. Who it is, is determined, in the example, by *John*, with which *he* stands in close relation.

Who designates some person already named, referring us back to that name (the *antecedent*) for determining the individual.

Pronouns may be divided as follows:

1. *Personal Pronouns.*—The several objects concerned in a speech or sentence stand in one or other of the three relations of speaker (First Person), object spoken to (Second Person), object spoken about (Third Person). Pronouns expressive of these relations are called Personal Pronouns. They are (in the nominative case, see p. 585), 1st person, *I*, *we*; 2d, *thou*, *ye* or *you*; 3d, *he*, *she*, *it*, *they*.

In phrases like, '*One* cannot be sure of that,' *one* is an indefinite pronoun, designating any person whatever. It is distinct from the numeral adjective *one*, being derived from the French *on*, which is a corruption of *homme*, man.

When we say, 'Give me *this*, and keep *that*,' *this* and *that* may be considered as demonstrative adjectives, with some noun understood — this (thing). But in the expression, 'He mistook his own room for *that* of the stranger,' *that* appears to be as much a pronoun as *one*.

2. *Relative Pronouns*, besides standing for nouns, have the power of conjunctions. They join sentences and clauses, by relating, or referring back directly to something just named. The relatives in English are three—*who*, *which*, and *that*. For the distinctions in their use, see page 591.

What is used for *that which*, thus embracing both relative and antecedent. In phrases like, 'such a storm *as* now burst on them,' *as* is used with the force of a relative pronoun. Perhaps the full expression would be, 'such a storm as (the storm that) burst.'

3. *Interrogative Pronouns* are those used in asking questions; they are *who*, *which*, and *what*.

These are the *simple* pronouns. But a variety of compounds are formed by joining these simple pronouns with other words. Thus, *self* (in the plural *selves*) is joined to the personal pronouns to render them more emphatic; as, *myself*, *herself*, *himself*, *one's-self*, *ourselves*. *Self* was originally an adjective, meaning same, but afterwards came to be regarded as a noun. The formation of the compounds is anomalous. Other compounds are—*whoever*, *whatever*, *any one*, *no one*, &c.

Adverbs.

As adjectives are joined to nouns, so adverbs are joined to adjectives, verbs, and other adverbs, to limit or modify their signification.

Adverbs may be divided into five classes:

1. Adverbs of Time: Ever, lately, often, secondly, before, once, next.

2. Of Place: Here, where, without, above, away, hither, forward.

3. Of Degree or Measure: Very, little, so, too, merely, generally, exceedingly, almost.

4. Of Manner or Quality: How, so, thus, as, shortly, gratis, wisely, excellently.

5. Expressive of degrees of certainty or uncertainty: Perhaps, possibly, yes, indeed, undoubtedly, no, by no means.

Adverbs of manner or quality are formed from adjectives by adding *ly*; as, *light*, *lightly*.

Adverbs express in one word what, without them, must have required two or three words. Thus, *here* = *in this place*; *hence* = *from this place*; *now* = *at this time*; *wisely* = *like a wise* (person). Combinations of words, then, like 'in this place,' 'in this manner' (= *thus*), may be called adverbial phrases, and we may class with them many expressions serving a similar purpose in sentences, although they may not have any one adverb equivalent to them; as, 'in every possible way,' 'where in the world,' 'here and there.'

Prepositions.

'The river runs *to* the sea. The glass stands *on* the table. The dog lies *under* the table. He runs *round* me. She runs *from* me. The house *by* the wood. The house *in* the wood.'

These little words in italics, called prepositions, express certain relations between ideas—between the idea of an action and the idea of a thing, or between the idea of one thing and the idea of another thing. In all the instances just given, the relation is of one kind—that of place or direction. And this was the original signification of all prepositions. They gradually, however, came to express other relations. Thus: 'That depends *on* you. Subjects are *under* the sovereign.'

The transition from the palpable, physical relation to the more abstruse mental relation is, in most cases, obvious. A preposition is distinguished from an adverb by its always requiring an object (a noun or pronoun) after it. In the sentence, 'He runs *about*,' *about* is an adverb describing the mode of running; in, 'He runs

about the house,' it is a preposition referring the direction of the running to a particular object.

Many relations are expressed by *prepositional phrases;* as, *instead of, with regard to, apart from.* The preposition *beside* is evidently an abbreviation of such a phrase—*by the side of.*

Conjunctions.

Conjunctions serve the purpose of connecting sentences, parts of sentences, and single words; as, 'Day ends, *and* night begins. William *and* John learn Latin. Charles *and* James carried the basket between them.' In the first sentence, *and* connects two separate affirmations into one compound sentence. The same is true in the second—the separate affirmations being 'William learns Latin,' and 'John learns Latin.' In the third sentence, *and* connects only the two words, 'Charles' and 'James,' as it cannot be affirmed of either of them alone that he 'carried the basket.'

It is not easy either to distinguish conjunctions from adverbs, or to classify them satisfactorily; and yet, in order to the right comprehension of the relations between the parts of sentences, it is essential that the nature of conjunctions be well considered. In fact, all conjunctions are adverbs, and owe their conjunctive power to their signification as adverbs. In a few—*and, but, or, if, nor*—the original adverbial signification is almost lost sight of, so that we attend only to their conjunctive effect. All the rest might be called Adverbial Conjunctions or Conjunctive Adverbs. Ex., 'He is industrious; *therefore* he is happy'—that is, 'he is happy *for that.*' This adverb, or adverbial phrase, expressive of the cause of the happiness, by referring us back for its meaning to the former assertion, has the effect of connecting the two in the mind. Again, 'The messenger arrived *while* he was speaking.' Here *while* is equivalent to, *at the time at which* (he was speaking). As an adverbial phrase, this simply indicates the time of the act of 'arriving;' but as it also expresses that the speaking was going on at the same time, it thus conjoins the two assertions.

The most important distinction among conjunctions will be seen in the following pairs of sentences:

The sun went down, *and* the moon rose.
The moon rose, *as* the sun went down.

He is passionate, *but* he is kind.
He is kind, *though* he is passionate.

He is in earnest, *therefore* he will succeed.
He will succeed, *because* he is in earnest.

The first (compound) sentence of each pair contains two simple sentences or assertions, linked together, yet each standing on an independent footing; the two are joined on terms of equality, and are therefore said to be *co-ordinate*, and the conjunction is called a Co-ordinative Conjunction. In the second sentence of each pair, the last clause, though a grammatical sentence, contains no logical proposition, no assertion made for its own sake, but merely states a fact as a modifying circumstance with regard to the assertion contained in the first clause. The sentence of the second clause is therefore *subordinate* to that of the first, and the conjunction that marks the relation, a Subordinative Conjunction. The chief Co-ordinative Conjunctions are:

1. And, also, likewise, not only—but, partly—partly, first—then, further.

All these are used to tack on sentences whose sense accords with, or adds to, the effect of what goes before. Hence they might be called *cumulative* conjunctions. The following (2) mark various degrees of opposition in the sense or effect of the sentences, and might be called *adversative* conjunctions. These terms seem preferable to *conjunctive* and *disjunctive*, often used.

2. (*a.*) Not—but, else, otherwise (Exclusive).
   (*b.*) Either—or, neither—nor (Alternative).
   (*c.*) But, only, yet, still, at the same time, nevertheless.

3. Therefore, wherefore, for, thus, consequently, hence, accordingly, so, so that. (Cause and effect.)

All other conjunctions may be classed as Subordinative, such being their usual function. Those in most common use are:

Although, as, as well as, so—as, as—as, because, if, lest, since, than, that, in order that, though, unless, whether, when, before, after, while.

Interjections.

Interjections are exclamations expressive not so much of a thought as of an emotion. They are therefore hardly parts of speech, and never form part of a sentence. Ex., Ah! alas! hurrah! fie! pooh!

To *parse* a sentence is to tell what '*part* of speech' every word is—that is, whether it is noun, pronoun, adjective, verb, adverb, preposition, conjunction, or interjection. This the learner should practise, till he readily recognise the class of any word that presents itself. Any book will furnish exercises for this purpose.

It frequently happens that the same word belongs to several parts of speech, according to the connection in which it stands. Ex., *Still*, as the name of an apparatus, is a noun; in, '*Still* waters run deep,' it is an adjective; in, 'Mothers *still* their babes,' a verb; in, 'He is *still* here,' an adverb; and in, 'He was beset with dangers, *still* his presence of mind never forsook him,' it is a conjunction.

II. INFLECTION.

In order to express the relations between the parts of a sentence, sometimes separate words are employed, and sometimes changes are made on the principal words themselves.

Ex., 'Mary's descendants sat, and sit, on Elizabeth's throne.' Here the name 'Mary' has been changed into 'Mary's,' to express the relation of possession between it and 'descendants;' *s* has been added to 'descendant' to make it refer to more than one; 'sat' differs from 'sit,' not to express a different kind of action, but a different relation to the present moment. It is changes of this nature that are called Inflections.

Inflections occur in all the parts of speech except three—Prepositions, Conjunctions, and Interjections. They are most extensive in Verbs, Nouns, and Pronouns, less so in Adjectives, and still less in Adverbs. The inflection of a noun or pronoun is called Declension; of a verb, Conjugation; the only inflection of adjectives and adverbs in English is that for Comparison.

INFLECTION OF NOUNS.

Nouns are inflected to indicate—1. Their Number; 2. Their Case; 3. Their Gender.

Number.

The noun *book*, for instance, is applicable to an indefinite number of objects individually. If it is wished to speak of several of these objects at one time, this is indicated by adding an *s* to the simple form of the name. *Books* is then called the Plural Number, and *book* the Singular Number.

To add *s* to the singular is *now* the nearly universal rule of the English language; but it was not always so. In the oldest form of our tongue, called Anglo-Saxon, only one class of nouns formed the plural in *s;* some took *a*, others *u*, and a large class took *n*. We see a relic of this ancient plural in *n*, in *oxen*, *children*, *brethren*, and in old English, several more occur—as *hosen* (in the Bible), *eyne* (for *eyen*), *shoon*, some of which still survive in Lowland Scotch.

A few words of Teutonic origin form the plural by changing the vowel sound. They are *man, men; woman, women; foot, feet; goose, geese; louse, lice; tooth, teeth; mouse, mice. Kine* or *kyne* (for *kyen*), the old plural of *cow*, combines the two changes. In Scotch, *kye* (without the *n*) is used. These vowel changes were not originally made to express the plural; the words had once a plural ending, the effect of which was to change the radical vowel, and when the ending or affix was lost, the change of vowel remained, and now serves as a mark of the plural.

When the singular ends in a sibilant or hissing sound (s, sh, ch, x), *e* is added before the *s* of the plural—as, *gas, gases; church, churches*, &c. This is no arbitrary irregularity—it is a necessity for the pronunciation. Some nouns ending in *o* also insert *e* before *s;* but this seems a mere caprice of English orthography.

Nouns in *y*, preceded by a consonant, change the *y* into *ies* to form the plural—as *duty, duties.* But those having a vowel before *y*—as *boy, valley*, are regular—*boys, valleys.*

The following words—*loaf, half, wife, life, calf, leaf, sheaf, knife, shelf, self, wolf*—change *f* or *fe* into *ves;* as *wife, wives. Staff*, also, in its usual sense, has *staves;* but in a military sense, *staffs. Beeves* is the plural of *beef*, in its original sense of *ox.*

Words borrowed from other languages, and not yet naturalised, often retain their original plurals. Ex., *Focus, foci; genus, genera; beau, beaux; cherub, cherubim.*

Some nouns, from their very nature, cannot take a plural. It is only general or common nouns that can. A proper name in the plural is a kind of contradiction. When we say, 'One of the Browns,' Brown has ceased to be a true proper name; it has here a meaning—'belonging to the family called Brown.' In 'There are no Ciceros in our age,' *Ciceros* is equivalent to *great orators.*

Names of materials, in the strict sense, can have no plural. There can be a plural only where there are individual things to count. Since we cannot say, 'a gold,' 'a butter,' we cannot say 'golds,' 'butters.' With regard to substances of varying quality, the use of the plural is becoming common, in mercantile language, to signify the several varieties; as, *teas, wines.*

Some nouns are used only in the plural; as, *tongs, scissors, news, mathematics, riches.* For words like *tongs*, the reason lies in the nature of the object; in other cases, it is to be sought in the history of the word.

Is the plural necessary? Could we make ourselves understood without changing the words? In the case of some words, we do; as, *deer, sheep, swine.* Several words omit the *s* when used with a number, although they take it in other positions; as, *head, pound, horse, brace, stone, dozen.*

Case

is an inflection indicating the relation of one thing to another thing. Some languages have a variety of cases indicating different relations (see LANGUAGE, II. p. 29). In English, nouns suffer only one change of this kind, which is called the Possessive Case; as, 'Mary's descendants.' The same relation may be expressed by the preposition *of:* 'The descendants of Mary.' The change consists in adding an apostrophe (') and an *s* to the singular noun. To form the possessive plural, an apostrophe only is added to the plural noun; as, 'Their fathers' memory.' The *s* is here omitted for the sake of euphony or easy pronunciation; and, therefore, when the plural does not end in *s*, the *s* of the possessive is retained; as, *men, men's minds.* The *s* is omitted even in the singular when too many hissing sounds would come together—as *Socrates' wife, for Jesus' sake.*

Gender.

Names of animals of the male kind are said to be of the *masculine* gender; those of the female kind, of the *feminine* gender; all others, of the *neuter* gender.

Few, if any, nouns in English can be said to undergo inflection to mark distinction of sex. The words themselves are different; as, *boy, girl; king, queen; husband, wife; cock, hen.* This is a question of the meaning of words, and not of grammar.

Almost the only grammatical use made of the distinction of sex in English is to determine what pronoun—whether *he*, *she*, or *it*—shall be used for any noun; and as we attend only to real or natural gender, this is a very simple matter. But in other languages it is far otherwise. In French, for instance, there are only two genders; so that every object, be it animate or inanimate, is either a *he* or a *she;* nor has any intelligible principle presided in determining this conventional gender. In German, again, there are three genders, but applied in the most capricious way. At table, for example, you must speak of your spoon as *he*, of your knife as *it*, and of your fork as *she.*

In a few nouns, mostly of foreign origin, the feminine name is formed from the masculine, in a regular way; as, *poet, poetess; mayor, mayoress; actor, actress; abbot, abbess*, &c. This belongs to Derivation, perhaps, as much as to Inflection.

INFLECTION OF PRONOUNS.

Pronouns are more fully inflected than nouns. Besides a possessive case, they have a distinct form called the *objective* case, used when they stand as the objects after a verb or preposition; as, *I* saw *him; he* saw *me*, and spoke to *me.* A pronoun has thus three cases, the form used when it is the subject or nominative to the verb, being called the *nominative* case.

The Personal Pronouns are thus declined:

SINGULAR NUMBER.

	NOMINATIVE.	POSSESSIVE.	OBJECTIVE.
1st *Person*,	I	Mine	Me
2d "	Thou	Thine	Thee
3d "	He, she, it	His, hers, its	Him, her, it.

PLURAL NUMBER.

	NOMINATIVE.	POSSESSIVE.	OBJECTIVE.
1st *Person*,	We	Ours	Us
2d "	Ye *or* you	Yours	You
3d "	They	Theirs	Them.

My, thy, his, her, its, our, your, their, may be considered as other forms of the possessive cases of the pronouns. They differ from mine, thine, &c., in being always followed by nouns, and are therefore more of the nature of adjectives. Ex., 'This hat is *mine*;' but 'this is *my* hat.'

The Relative and Interrogative Pronouns, *who* and *which*, are alike in both numbers, and are thus declined:

	Who.	*Which.*
Nominative.	Who	Which
Possessive.	Whose	Whose
Objective.	Whom.	Which.

What, *that*, and *as* are indeclinable.

The indefinite pronoun *one*, derived from the French *on*, has the possessive case *one's*, but no plural. The other pronoun *one* (derived from the numeral) has the complete declension of a noun. *This* and *that* take the plurals *these*, *those*, both as pronouns and as demonstrative adjectives.

INFLECTION OF ADJECTIVES.

In many languages adjectives are inflected to mark the gender of the nouns they are joined to; in modern English (in old English or Anglo-Saxon it was different), no difference is made on this account.

The only inflection of the adjective that is of real use, is that which marks the *degree* in which the quality is attributed to the object, as compared with other objects. There are three degrees of quality. The *Positive* indicates the quality generally without comparison; the *Comparative*, a higher degree of the quality than is attributed to certain other things; and the *Superlative*, the highest degree that is attributed to any of the things under consideration. The positive is the adjective in its simple form, and the comparative and superlative end in *er* and *est* respectively; as, *hard*, *harder*, *hardest*; *wise*, *wiser*, *wisest*; *happy*, *happier*, *happiest*; *red*, *redder*, *reddest*. Before adding *er* or *est* to an adjective in *y* preceded by a consonant, the *y* is changed into *i*; and a single consonant, with a single vowel before it, is doubled.

Instead of happi*er*, happi*est*, we can use *more* happy, *most* happy. In this there is no inflection; it is logical comparison, not grammatical. The logical mode of comparison is preferred in every case where the grammatical mode would produce a word difficult or harsh in the pronunciation. This is generally the case in English when the simple adjective is of more than one syllable; but it is not always so. It is the laws of euphony—which mean, the ear and organs of speech consulting their own convenience—that determine this point, as they do much else in language.

Some adjectives are irregular in their comparison; as—Good, better, best; bad, ill, or evil, worse, worst; little, less, least; much or many, more, most; far, farther or further, farthest or furthest, &c. A few have no positive; as, Under, undermost. And others have no comparative; as, Top, topmost.

In general, it is only adjectives of quality that admit of comparison; and even adjectives of quality cannot be compared when the quality does not admit of degrees; as, a *circular* space, a *gold* ring, a *universal* wish.

The indefinite numeral adjectives, *other*, *another*, when used alone, like pronouns, are inflected for number and case. Ex., For *another's* good; for the sake of *others*.

INFLECTION OF ADVERBS.

Adverbs are compared exactly like adjectives. As adjectives like *circular*, *wooden*, cannot be compared, so neither can adverbs like *yesterday*, *there*, *never*; and both for the same reason—the nature of the idea forbids it. But where there can be degree in the meaning, an adverb is compared; as, *soon*, *sooner*, *soonest*; *often*, *oftener*, *oftenest*; *pleasantly*, *more pleasantly*, *most pleasantly*.

A few adverbs coincide in their comparison with irregular adjectives—Well, better, best; badly or ill, worse, worst; much, more, most, &c.

INFLECTION OF VERBS.

In a sentence, various relations of the action, such as, when it happened, whether it is positively affirmed or merely supposed, &c., require to be indicated; and this is done to a greater or less extent by means of inflections or changes on the verb. Five such relations are generally enumerated, technically called Voice, Mood, Tense, Person, Number.

Voice.—The distinction between the Active and the Passive Voice is explained page 581.

Mood is the manner in which the action is presented. If simply asserted, it is the Indicative Mood—*he wrote*. When put as a supposition or condition, it is the Conditional Mood—*if he wrote*. The Potential Mood expresses the power of doing the action—*he can write*; and the Imperative Mood commands the doing of it—*write*. The form, *to write*, called the Infinitive Mood, expresses the action without limitation of any kind. As it makes no affirmation, it is, strictly speaking, not a verb, but a kind of abstract noun, and is used as such in the sentence; we say equally '*to work* is pleasant,' or '*work* is pleasant.' The two participles, the one expressing the action as in progress (*writing*), the other as completed (*written*), may be classed with the infinitive, as not affirming anything. In opposition to the infinitive and the participles, the other parts of the verb are called Finite.

Tense.—The tense of a verb indicates the time of the action—as, *he writes* (present), *he wrote* (past), *he had written* (pluperfect), *he will write* (future).

Person.—The speaker, the spoken-to, and the spoken-about, or the 1st, 2d, and 3d persons, have often each a distinct form of the verb; as, *I write*, *thou writest*, *he writes*.

Number is indicated in the difference between 'John writ*es*,' and 'they writ*e*.'

Few of these relations of the sense, it will be observed, are expressed by changes on the verb

itself; they are mostly dependent on little words prefixed—*if*, *can*, *had*, &c. In some languages, Latin and Greek, e.g., they had each an appropriate form of the verb, and were all, therefore, real inflections. Compared with these languages, or indeed with any language, the modern English verb has few inflections. We shall confine ourselves to exhibiting those moods, tenses, &c. that are marked by different forms.

To bring together all the forms of a verb is to *conjugate* it. All verbs do not take the same kind of change. *I love* becomes in the past tense *I loved*, and in the passive voice, *I am loved;* while *he shakes* becomes *he shook*, and *he was shaken*. Verbs that, like *love*, take *d* (or *ed*—sometimes *t*) in their past tense and past participle, form one class or conjugation; and those resembling *shake* in their changes form another. The former class is by far the most numerous; but the latter includes the most commonly used and oldest verbs in the language. The mode of change seen in *shake*, *shook*, *shaken*, is believed to be more ancient than the other, and is therefore called the Old Conjugation, and sometimes, the Strong Conjugation, the other being the New or Weak. The verbs belonging to the old conjugation are all of Teutonic origin, and are primitive or root verbs; while derivative verbs belong to the other class. We give an example of each conjugation:

NEW OR WEAK CONJUGATION.

To Love.

Present Tense.	*Past Tense.*	*Perfect Participle.*
Love.	Loved.	Loved.

PRESENT TENSE.

SINGULAR.	PLURAL.
1st Person, I love	*1st Person*, We love
2d " Thou lovest	*2d* " Ye *or* you love
3d " He loves.	*3d* " They love.

PAST TENSE.

SINGULAR.	PLURAL.
1. I loved	1. We loved
2. Thou lovedst	2. Ye *or* you loved
3. He loved.	3. They loved.

Imperative, Love. *Infinitive*, To love.

PARTICIPLES.

Imperfect, Loving. *Perfect*, Loved.

OLD OR STRONG CONJUGATION.

To Write.

Present Tense.	*Past Tense.*	*Perfect Participle.*
Write.	Wrote.	Written.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I write	1. We write
2. Thou writest	2. Ye *or* you write
3. He writes.	3. They write.

PAST TENSE.

SINGULAR.	PLURAL.
1. I wrote	1. We wrote
2. Thou wrotest	2. Ye *or* you wrote
3. He wrote.	3. They wrote.

Imperative, Write. *Infinitive*, To write.

PARTICIPLES.

Imperfect, Writing. *Perfect*, Written.

There is a class of verbs joined to other verbs to assist in expressing those relations that are not marked by inflections. As they are of frequent occurrence, and present several irregularities, we exhibit their conjugation. When used with other verbs, they are called *Auxiliary* Verbs; but most of them are also used by themselves as principal verbs.

To Be.

Present Tense.	*Past Tense.*	*Perfect Participle.*
Am.	Was.	Been.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I am	1. We are
2. Thou art	2. Ye *or* you are
3. He is.	3. They are.

PAST TENSE.

SINGULAR.	PLURAL.
1. I was	1. We were
2. Thou wast	2. Ye *or* you were
3. He was.	3. They were.

Imperative, Be. *Infinitive*, To be.

PARTICIPLES.

Imperfect, Being. *Perfect*, Been.

The verb *To Be* has a peculiar inflection, to express contingency or conditionality; it is the only real Conditional Mood in English, and is in the past tense.

CONDITIONAL MOOD OF THE VERB To Be.

SINGULAR.	PLURAL.
1. If I were	1. If we were
2. If thou wert	2. If ye were
3. If he were.	3. If they were.

The Present Conditional, If I be, if thou be, if he be, is often an elliptical form for, If I shall be, &c. So is, If he love, and the like.

By joining the perfect participle of a verb to the verb *to be* throughout, we form the Passive Voice; as, He *is* loved, we *were* loved, *to be* loved, *being* loved.

By similarly joining the imperfect participle, there arises another form of the active voice, called the *Progressive* form; as, I *am* writing, he *was* writing, &c. This is peculiar to the English language.

To Do.

Present Tense.	*Past Tense.*	*Perfect Participle.*
Do.	Did.	Done.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I do	1. We do
2. Thou doest *or* dost	2. Ye do
3. He does *or* doeth.	3. They do.

PAST TENSE.

SINGULAR.	PLURAL.
1. I did	1. We did
2. Thou didst	2. Ye did
3. He did.	3. They did.

Imperative, Do. *Infinitive*, To do.

PARTICIPLES.

Imperfect, Doing. *Perfect*, Done.

Do makes the *Emphatic* form of the verb; as, I *do* love, he *did* love. It is also used in asking questions—the *Interrogative* form; thus we seldom say, Write you? but, *Do* you write? In denying also—the Negative form; as, You *do* not write.

Do has a use peculiar to itself; it can be put as a substitute for any other verb. Ex., 'He speaks as well as you *do* (= speak).' 'He spoke better than you could have *done* (= spoken).' When we compare this substitution with what takes place in the expression, 'He took the good hat and left me the bad *one* (= hat);' as *one* is called a pro-noun, we might call *do* a *pro-verb*.

To Have.

Present Tense.	*Past Tense.*	*Perfect Participle.*
Have.	Had.	Had.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I have	1. We have
2. Thou hast	2. Ye have
3. He has.	3. They have.

PAST TENSE.

SINGULAR.	PLURAL.
1. I had	1. We had
2. Thou hadst	2. Ye had
3. He had.	3. They had.

Imperative, Have. *Infinitive*, To have.

PARTICIPLES.

Imperfect, Having. *Perfect*, Had.

Followed by the perfect participle of another verb, *have* forms two past tenses—I *have* loved (perfect tense), I *had* loved (pluperfect). Now, as the participle *loved* merely expresses completed action, without reference to time, and as I *have* means 'I possess' (at this moment), how comes the union of the two to express past time? It is by a sort of inference. 'I have written a letter,' means, 'I have now the finished action or work;' and therefore the doing of it must have been in the past.

Shall.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I shall	1. We shall
2. Thou shalt	2. Ye shall
3. He shall.	3. They shall.

PAST TENSE.

SINGULAR.	PLURAL.
1. I should	1. We should
2. Thou shouldst	2. Ye should
3. He should.	3. They should.

Will.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I will	1. We will
2. Thou wilt	2. Ye will
3. He will.	3. They will.

PAST TENSE.

SINGULAR.	PLURAL.
1. I would	1. We would
2. Thou wouldst	2. Ye would
3. He would.	3. They would.

'*I will* come,' means, 'I have the present wish or intention to come,' and therefore my coming is a thing that may be expected—is in the future. The radical meaning of *shall* is obligation, debt. 'He *shall* suffer,' means literally, 'He *owes* to suffer;' which is equivalent to, 'He is about to suffer.' Thus, *shall* and *will* are used to express the future tense.

Should and *would* are used as auxiliaries of the Conditional Mood. Ex., If that *should* happen, all *would* be lost.

May.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I may	1. We may
2. Thou mayst	2. Ye may
3. He may.	3. They may.

PAST TENSE.

SINGULAR.	PLURAL.
1. I might	1. We might
2. Thou mightst	2. Ye might
3. He might.	3. They might.

Can.

PRESENT TENSE.

SINGULAR.	PLURAL.
1. I can	1. We can
2. Thou canst	2. Ye can
3. He can.	3. They can.

PAST TENSE.

SINGULAR.	PLURAL.
1. I could	1. We could
2. Thou couldst	2. Ye could
3. He could.	3. They could.

May expresses permission; *can*, power. Combined with other verbs, they make the Potential Mood. Ex., 'I *can* write; he *might* have written.'

Must implies necessity. It is invariable for person or tense. Ex., 'Thou *must* learn; he *must* (now) learn; he was told that he *must* (then) learn.'

Irregularities in Conjugation.

Weak Conjugation.—The essential parts to know of an English verb are, its past tense and its perfect participle. Verbs of the weak conjugation are pretty uniform in taking *d* or *ed*; as, *love, loved; look, looked.* Many, however, take *t*; as, *dip, dipt.* In fact, with such final letters as *k, p, s*, it is necessarily the *sound* of *t* that is added, whatever the spelling may be; so that many writers are coming to use *t* where others use *d—lookt, pluckt, stept.* In this conjugation, the participle is always the same as the past tense.

In several verbs the vowel is shortened or otherwise changed, and sometimes also the consonant modified, before the *d* or *t* is added; as, *feel, felt; lose, lost; flee, fled; tell, told; seek, sought; teach, taught.*

Along with these might be classed verbs like *meet, met; lead, led; bend, bent; send, sent; cut, cut; set, set; let, let.* To account for their present form, we must go back to the oldest form of English, the Anglo-Saxon. In that language the past tense was formed by adding, not *ed*, but *de* (or *te*, if the preceding consonant was a sharp letter, as *t*). Thus: *læde* (I lead), *ledde* (I led); *mete* (I meet), *mette* (I met). As the Anglo-Saxon passed into modern English, the final *e* ceased to be pronounced, and with it the additional *d* or *t* disappeared as useless. *Made* is a contraction of the Anglo-Saxon *macode*, and *had* of *hæfde. Could* ought to have been *coud;* the *l* was inserted from a mistaken resemblance of the word to *should* and *would.*

Strong Conjugation.—With regard to verbs of the strong conjugation, no rule can be given as to the change of vowel by which the past tense is formed. It was made at first, no doubt, according to felt laws of euphony; and even yet a certain method may be discerned in their madness. Thus:

1. Rise, rose; smite, smote; ride, rode; drive, drove, &c.

2. Cleave, clove; steal, stole; speak, spoke; tear, tore, &c.

3. Swim, swam or swum; sing, sang or sung; ring, rang or rung, &c.

As to the perfect participles of strong verbs, it ended originally always in *en.* In modern English, this syllable is often dropt—not always. Ex., See, saw, seen; rise, rose, risen; sing, sang, sung (for sungen); drink, drank, drunken or drunk.

Some have the past weak, and the participle strong—mow, mowed, mown.

In weak verbs, the participle is always the same as the past; and from being habituated to this, many do not distinguish these two parts in strong verbs, when they actually differ. We often see such blunders as, 'The letter was *wrote*' (for written), 'The wine was *drank*' (for drunk).

With regard to these two conjugations, it may be remarked, that strong verbs are all of Teutonic origin; no verb derived from French or Latin is inflected in that form. They are, moreover, all primitive verbs; the derivative verbs formed from them are always weak. Ex., *Fall, fell, fallen—fell, felled, felled. Lie, lay, lain—lay, laid* (layed), *laid.* There is also a tendency in strong verbs to become weak. About fifty verbs that were strong in Anglo-Saxon are now weak. The provincial dialects often retain the old forms after they have disappeared from standard English. Ex., *Leap* has still in Scotch *lap* (past), *luppen* (part.). Some verbs have at present both the old and the new forms, usage being divided between them. There is little doubt, however, which will in the end

prevail; *crew*, for example, as past tense of *crow*, will disappear before *crowed*.

Defective Verbs.—Quoth is used only in the 3d person sing. past tense, and followed by *he* or *she*. *Go* has now no past tense, although in old writers we find *yode* (for *goed*). Instead of *goed*, we substitute *went*, the old past tense of the verb *wend*.

The following are a few of the more important irregular verbs belonging to both conjugations:

PRESENT.	PAST.	PERFECT PARTICIPLE.
Bear	bore, *bare*	borne, born
Beat	beat	beaten, beat
Begin	began, begun	begun
Bid	bade, bid	bid, *bidden*
Bite	bit	bitten, bit
Blow	blew	blown
Break	broke, *brake*	broken, *broke*
Cast	cast	cast
Choose	chose	chosen, *chose*
Cleave (split)	cleft, clave, *clove*	cleft, *cloven*
Cleave (stick)	cleaved, *clave*	cleaved
Clothe	clothed, *clad*	clothed, *clad*
Come	came	come
Dare	durst, dared	dared
Drink	drank, drunk	drunk, *drunken*
Eat	ate, *eat*	eaten, *eat*
Flee (from danger)	fled	fled
Fly (as a bird)	flew	flown
Grave	graved	graved, *graven*
Grow	grew	grown
Hang	hung	hung
Know	knew	known
Lay (trans.)	laid	laid
Lie (intrans.)	lay	lain, *lien*
Light	lighted, lit	lighted, lit
Lose	lost	lost
Mow	mowed	mowed, mown
Read	read	read
Rid	rid	rid
Ride	rode, *rid*	ridden, *rode*
Ring	rang, rung	rung
Rive	rived	riven, *rived*
Sit	sat, sate	sat, *sitten*
Slay	slew	slain.

Dare, to challenge; *lie*, to tell a falsehood; *hang*, applied to a criminal, are regular verbs, like *love*. *Born* is used in the passive voice with regard to offspring; thus, the child was *born*, but the burden was *borne*. The forms in italics are becoming antiquated; *cloven*, *drunken*, and some other old participles are still used as adjectives.

III. DERIVATION OF WORDS.

This division of the subject may be considered under two heads: 1. The history of the sources from which the store of English words has been derived; and 2. The Modes in which words spring from, or are formed out of, other words. To make this branch of the study at all instructive, it would require to be treated in greater detail than our space permits. The chief points will be found indicated in the number on LANGUAGE; and to those who wish to pursue the subject (and without some considerable study of it, no one can be said to know English), we must be content to recommend *Historical Outlines of English Accidence*, by R. Morris.

SYNTAX.

Syntax (Gr. *taxis*, arrangement; *syn*, together) is the putting together of words for the expressing of thoughts. In order to be able to do this properly, we must first study carefully the structure of sentences—their anatomy and physiology, as it were. For they are in a certain sense organic, like animal bodies and plants; and not amorphous chance masses, like a piece of rock; or capricious artificial structures, like a cairn of stones, or the building a child rears with bricks. When sentences differ from one another, it is according to fixed laws and within certain limits. When we have a thorough comprehension of those laws and limits, the rules of syntax flow from them as necessary consequences; or rather, rules of syntax become in all ordinary circumstances unnecessary. It is only in those cases in which the forms of grammar and those of logic come into conflict, that we need to think of rules.

We have already, for the purposes of etymology (page 577), entered, to some extent, into the nature of sentences; and recommending the reader to reperuse the portion referred to, we here resume the subject at that point, and shall consider a little more in detail

I. THE SIMPLE SENTENCE.

A simple sentence has only one subject and one finite verb. The simple sentence, reduced to its essentials, is of this form: 'The sun shines.' The full-bodied sentences usually met with, may be considered as having been developed out of this embryo state by a combination of processes, which it is instructive to trace.

1. The primary elements (subject and predicate) have one or more secondary elements or adjuncts tacked on to them; as in 'The (skilful) gardener (thoroughly) pruned (the tree).' This sentence may be considered as exhibiting the typical forms of the elements of a sentence, both primary and secondary; the subject and object being expressed by nouns (or pronouns), the attribute of the subject (and of the object, if it has one) by an adjective, and the adjunct of the predicate by an adverb.

2. Each of these types is capable of taking another form; as in the following examples:

Transformations and expansions of

(*a.*) *The Subject.*—For '*work* is fatiguing,' we can say, '*to work* is fatiguing,' or, '*working* is fatiguing;' where for a noun there is substituted the infinitive of a verb, or its participle. When the action of the verb requires an object or objects, the name of the subject becomes expanded into a phrase of greater or less length; as, '*To hear a good orator* is rare.'

(*b.*) *The Object.*—The transformations of the object are the same as those of the subject. Ex., 'John likes *work;* John likes *to work;* John likes *working*. Every one likes *to hear good speaking*.'

(*c.*) *The Adjective or Attribute of the Noun.*—Instead of the noun having an adjective limiting it, as, 'A *valiant* man,' it may have another noun joined to it either by a preposition, or by the possessive case, as, 'A man of *valour*,' 'a temptation *to crime*,' 'the *hero's* death;' or the other noun may be without any connective; as, 'Havelock, *the hero*, is dead.'

(*d.*) *The Predicate.*—Instead of a single verb, as in 'the sun *shines*,' the predicate may take the expanded forms of, 'the sun *is bright*,' 'the sun *was darkened*,' 'Nero *was a tyrant*,' 'his mother *was in good health*.' The completion of the idea of the action, too, often requires an object, as already mentioned; and not only one object, but sometimes two. Ex., 'They elected *him* (*captain*),' 'he taught *me* (*grammar*),' 'the master accuses *John* (*of idleness*).'

(*e.*) *The Adverb or Adjunct of the Predicate.*—Instead of a simple adverb, as in, 'Time flies *rapidly*,' we may have an adverbial phrase; as, 'Time flies *with great rapidity*.' An adverbial phrase expresses any circumstance of time, place, manner, cause, instrument, &c. connected with the action. Ex., 'It happened *long ago*.' 'The city was taken *by stratagem*.' 'He died *of fever*.'

II. COMPLEX SENTENCES—SUBORDINATE SENTENCES.

The distinction between subordinate sentences and principal sentences has been already explained (page 578). Subordinate sentences arise out of transformations of the elements of the simple sentence; but transformations different from those we have just been considering. None of the phrases given in illustration of the expansion of the simple sentence contained a finite verb; it is the introduction of a finite verb that converts a phrase into a sentence. Subordinate sentences may be classed, according to the part of speech out of which they are supposed to spring, as Noun-sentences, Adjective-sentences, and Adverbial sentences.

1. *Noun-sentences.*—A noun, or phrase equivalent to a noun, in any relation in a sentence, may be converted into a sentence of itself. Ex., '*The existence of God* is denied by none' = '*That God exists*, is denied by none.' 'I wish *the happiness of all men*' = 'I wish *that all men should be happy*.' 'He went on speaking to *who would listen to him*' = He went on speaking to *all listeners*.'

2. *Adjective-sentences.*—Ex., '*Selfish* men never win our esteem' = 'Men *who are selfish* never win our esteem.' Whenever a sentence limits or defines a noun or pronoun, it is of the nature of an adjective, though there may be no adjective in the language equivalent to it. Ex., 'I remember the place *that he occupied*.' We may here imagine such an adjective as, *the-by-him-occupied* (place).

3. *Adverbial Sentences.*—Ex., 'He went away *after sunrise*' = 'He went away *after the sun had risen*.' There is frequently no exactly equivalent phrase for the adverbial sentence; but it always answers to some question put by an interrogative adverb. Ex., 'The sea is as deep, *as the mountains are high*' (expresses *how* deep). Adverbial sentences form the greater part of subordinate sentences; and they may be divided into as many classes as adverbs.

But the expansion of the sentence does not stop here. The nouns, adjectives, and adverbs that enter into a subordinate sentence, may, one or all of them, be transformed in their turn into sentences, which will thus be subordinate in a still higher degree—servants of a servant. Ex. (1.) Europe rejoiced *that Greece was delivered from that oppressive power*. (2.) Europe rejoiced *that Greece was delivered from the power that had oppressed her*.

Here the adjective *oppressive* in (1) has in (2) been converted into a sentence which is directly dependent, not on the principal sentence, but on the subordinate, and is therefore subordinate in the second degree. If, after the manner of algebraists, we symbolise the principal sentence by A, and the sentence immediately dependent on it by a, the structure of these complex sentences might be visibly represented thus: (1) $A + a$; (2) $A + a + a_2$.

Subordination is seldom carried beyond the second or third degree, as it becomes perplexing, especially when the subordinate clauses are inclosed the one within the other. In *The House that Jack built*, it is carried to the ludicrous: 'This is the dog (A), that worried the cat (a), that killed the rat (a_2), that ate the malt (a_3), &c.'

III. COMPOUND SENTENCES

consist of two or more co-ordinate sentences (see page 578) united. In 'The sun went down, and the moon rose,' the two sentences are merely put in juxtaposition—strung together rather than compounded. But, when the separate sentences have a common part, as in '*The sun gives* light,' and '*The sun gives* heat;' by stating the common part only once, a real combination takes place—'The sun gives light and heat.' The following has been compounded out of four co-ordinate sentences: 'Frogs and seals live on land and in water' = 'Frogs live on land,' 'Frogs live in water,' 'Seals, &c.' Often the common part is a secondary sentence. Ex., 'The evil *that men do* lives after them; the good (*that men do*) is oft interred with their bones.' Thus the same sentence is often compound, as containing two or more co-ordinate sentences, and at the same time complex, as containing one or more subordinate sentences in addition; and to discriminate all these, and point out their relations, is to give the syntactical analysis of the sentence.

To resolve a compound sentence into the simple or complex sentences of which it is composed, often enables us to detect a fault in its construction. Ex., 'Because he had committed a crime, he was shut up in prison, and let out again only yesterday.' As it stands, the sentence is resolvable into these two: 'Because he had committed a crime, he was shut up in prison;' and, 'Because he had committed a crime, he was let out again only yesterday.' It should be, 'Because he had committed a crime, he was shut up in prison; and *he was* let out again only yesterday;' or—'and it was only yesterday that he was let out again.'

A sentence is not always made subordinate, when in strict logic it ought to be. Ex., 'The weather was good, and I went out.' Here the assertions are grammatically co-ordinate. And yet it is clear that the purpose of the sentence as a whole is to inform us of the going out, and the weather is only glanced at as the reason. Hence, to make the grammar and the logic perfectly accord, it should be, 'As the weather was good, I went out.' In such a case as this, the absence of subordination does no harm; it rather gives an ease and simplicity to the style, and the mind readily makes the subordination for itself. But sometimes the want of attention to it leads to confusion. Compare these two sentences: (1.) 'That he was born and died, *were* the only *facts* on record concerning him.' (2.) 'That he had begun life in obscure poverty, and was now an important man in the state, *was a subject* of just pride.' Why the difference? Why is it not, *were subjects*, as many, we suspect, would be inclined to make it? The first may be resolved into, 'That he was born, was a fact, &c.,' and 'That he died, was a fact, &c.;'

therefore two separate facts, requiring a plural verb. But can we say, 'That he had begun life in obscure poverty, was a subject of just pride?' No, neither the beginning nor the end of his career was, in itself, a subject of just pride; but the fact of the relation between the two. As they stand, the two facts are put on a level, the sentences being co-ordinate with each other, though both subordinate to the principal sentence, *was*. But strictly the one should be subordinate to the other: 'That he was now an important man in the state, though he had begun life in poverty, was, &c.;' or, 'That from a poor obscure lad he had become, &c. was, &c.'

After the anatomy of sentences, the other parts of syntax fall under the heads of (1) Concord and Government, and (2) Order of words, or Collocation.

RULES OF CONCORD AND GOVERNMENT.

These teach us how to employ the inflections and other distinctions learned in Etymology; and also how to arrange related words with regard to one another.

CONCORD.

Words agree when they take corresponding variations. Thus, in the conjugation of the verb, it is seen that with a singular subject, *he* (or *she*, *it*, *John*), the verb has one form, *writes*, and with a plural subject, *they* (or *men*, *scholars*), a different form, *write;* and so with regard to person. What we learn in Etymology as to the different persons and numbers of the verb, expresses the law of the English language on this point, as established by the use and wont of those who are allowed to be good speakers and writers; and if we would speak and write correct English, we must comply with the law. This seems to be what grammarians mean—though they have not expressed it very happily—when they lay down the rule, 'A verb must agree with its nominative (subject) in number and person.' The rule is seldom transgressed in short easy sentences, except by the altogether ignorant and uncultivated; and even by them it is transgressed only in particular forms of speech; as, 'Says I.' Most of the errors that occur under this head arise either (1) from there being several names in the sentence, and the speaker mistaking which is the subject of the verb —errors of inadvertence; or (2) from its being doubtful whether the subject is to be considered singular or plural.

Errors of mistaking the Subject.—Ex., 'His reputation was great, and somewhat more durable than *that* of similar poets *have* been' (Hallam). The grammatical subject is *that*, used as a pronoun for *the reputation;* the verb should therefore have been sing.—*has*. The error arose from thinking of the plural noun *poets* as the subject. The following, from Gibbon, is correct: 'The momentary *junction* of several tribes *produces* an army;' but, the plural word *tribes* coming immediately before the verb, although it is not the nominative to it, an inadvertent writer might very readily have written *produce*.

Errors from the Number of the Subject being doubtful.—1. This often occurs with Collective nouns. Collective nouns, though singular in form, often take plural verbs, because the idea is plural; but as they do not do so always, it is often puzzling to determine which it ought to be. The rules given by grammarians throw no light on the subject. They tell us that when the collective name suggests the idea of number prominently, the verb should be plural; and when the idea of unity is prominent in it, the verb should be singular. But unfortunately the same noun requires a singular verb at one time and a plural verb at another. Ex., 'The British *nation has* not sprung up in a generation.' 'The British *nation are* of that opinion to a man.' The usual rule altogether fails to point out the ground of this difference; and for this reason, that it bids us look in the wrong direction. The light that is to guide us, comes, not from the noun, but from what is said about it. In the second of the two sentences, the predicate is true, and is meant to be affirmed of, the individual persons composing the British nation; therefore the verb is plural. In the first, the predicate—the not springing up in a generation—is not applicable to the individual persons, but to the organised body of which they are only atoms; hence the verb is singular.

This way of looking at the subject removes all doubt and difficulty from by far the greater number of instances. Take, in the first place, the following: 'The army *is* composed of infantry and cavalry. The army *was* disorganised. That body of men *contains* several convicts. The nation *is* powerful. The meeting *was* large.' In none of these instances is the thing affirmed applicable to the individuals composing the body, but only to the body itself as a whole; and in all such cases the verb *must* be singular. To make it plural would destroy or alter the sense. To say, for instance, 'The meeting *were* large,' would mean that the men composing it were large men. Not unlike this is a blunder made by Hume: 'Stephen's party *were* entirely broken up'—not on the wheel, let us hope!

With regard to cases in which the thing affirmed is true of the individuals composing the collection, the rule is not so simple. In the great majority of instances, logic overrules grammar, and makes a plural verb more natural than a singular. Ex., 'My people *do* not consider. Mankind *pride themselves* on the advantages they enjoy.'

The only exceptions to this rule are of the nature of the following: 'The whole nation *mourns* the loss. Society *has* an instinctive dread of innovation.' The words *nation*, *society*, differ from *mankind* and *people*, in indicating an organic unity, having a kind of life and feeling and functions as a whole. The individuals composing the nation, then, are represented as mourning, not each for himself, but as a nation. It is only in speaking of such collective action that the singular verb can be used; but even then the plural would not be positively wrong. Nay, with several nouns of this nature, the plural is by far the more common. Ex., 'The committee *resolve*. The board *are* of opinion.'

A large number of collective nouns indicate mere aggregates or numbers destitute of all unity; and assertions made as to the individuals composing them are always made with a plural verb. Ex., 'The *peasantry go* barefooted. The *one half* of men *do* not know how the other *half live*. A number found *their* (not *its*) way into the country.'

It may then be laid down as a rule, that when

the assertion to be made is true of the individuals, the plural should be used; in most instances the plural alone is right, in few or none is it altogether wrong.

2. Singular nouns (or pronouns) coupled by *and* naturally require the verb and pronoun to be in the plural; as, 'John and William *are* learning *their* lessons.' One might think that no doubt could ever arise in such constructions; yet, if we follow the rule blindly, according to the letter, and not the spirit, we might go wrong even in this simple case. The following sentences are correct, and yet, if we looked only at the grammatical form of the subjects, the verbs should be plural: 'The wheel and axle *is* one of the mechanical powers. Bread and butter *is* my usual breakfast. Hanging and beheading *is* in that country the punishment of treason.' The grounds of these exceptions are evident.

Instead of *and*, the preposition *with* is sometimes used to connect the parts of a collective subject, and then it is a disputed point whether the verb should be singular or plural. Ex., 'The captain with his men *were* taken prisoners.' The sense requires the plural; but, grammatically, there is only a singular subject, *captain*, for *men* is the objective after *with*; so that by rule it should be, '*was* taken prisoner.' It is better to avoid all such constructions, and say simply: 'The captain *and* his men,' &c.; or, if the captain must be kept prominent, 'The captain was made prisoner, along with his men.'

Singular nouns connected by *or*, take the verb in the singular; as, 'Either John or James *has* the watch in *his* pocket.' The reason is obvious; it is one or the other, but only *one*, that *has* it. A singular verb is also generally used when *neither—nor* is the connective. Ex., 'Neither John nor James *has* the watch.' Some, indeed, maintain that it ought to be *have*, since the 'not-having' is affirmed of both. To this it may be answered that, though affirmed of both, the affirmation is made of each separately—'Neither (*has*) John nor *has* James.' This is an effect of all the *distributive* adjectives, *each*, *every*, *either*, *neither*. Ex., 'Every physician, and every clergyman, *is* by education a gentleman.'

Thus the number of the verb is, with a little consideration, not so difficult a matter to determine. But what shall we say about the pronoun in cases like the following: 'Either the boy or the girl has left *his* (?), *her* (?) gloves. Any person can do it for *himself* (?), *herself* (?).' There seems to be only one way of escape from this difficulty—to use the plural pronoun *their*, *themselves*, in which the distinction of gender is not marked. Whenever strict grammar and sense conflict, it is the former that must give way. Examples of this solution of the difficulty might be collected in any number from the best writers. Take the following: 'Let *each* esteem other better than *themselves*' (Bible). '*Every person's* happiness depends, in part, upon the respect *they* (for *he or she*) meet with in the world' (Paley). '*Everybody* began to have *their* vexation' (Miss Austen).

Concord of Pronouns.

The agreement of personal pronouns with the nouns to which they refer, has been noticed along with the concord of verbs. Great care is requisite to make the reference of the pronoun clear and unmistakable.

The right use of relative pronouns is an important point in language. *Who* is employed when the reference is to persons, and *which* when it is to inferior animals or things. *That* is applied both to persons and things; and it is usually said that *that* may be used as a substitute for *who* and *which*. But this statement requires considerable modification, as may be made to appear thus:

Who and *which* occur having two very different senses or effects. (1.) In the following examples they introduce adjective-sentences, in order to limit or define nouns. Ex., 'I met the man *whom we saw yesterday*. The old house *which stood at the corner of the street* has been burnt down.' (2.) In other cases they introduce sentences that are either principal, or, if subordinate, of the kind called adverbial; and then the relative itself is always resolvable into a conjunction of some kind and a personal pronoun. Ex., 'I met the gardener this morning, *who* told me that there had been rain during the night.' There are here two co-ordinate sentences, and *who* = *and he*. 'Why should we consult Charles, *who* (= *for he*) knows nothing of the matter. He struck the poor dog, *which* (= *although it*) had never done him harm. He by no means wants sense, *which* (= *but that*) only serves to aggravate his folly.'

Now, in no case where the relative is thus resolvable, could *that* be substituted for *who* or *which*; it would alter the sense entirely. It is only when the purpose of the relative clause is to define the thing meant, that *that* is ever applied; and for this purpose its use is in general preferable to that of *who* or *which*. 'The city *that* is called Rome, was founded by Romulus,' is an easier, more natural mode of expression than, 'The city *which* is,' &c. Introduced by *that*, the relative clause coalesces better with the noun, and its adjective effect is better felt, than with the heavier, less compact connectives.

When the relative introduces a defining clause, and is in the objective case, it is often omitted. Thus, it is more idiomatic English to say, 'I have found the book you want,' than—'the book *that* you want.'

GOVERNMENT.

One word is said to govern another when it seems to cause it to take on a particular form or inflection, as when a pronoun coming after a preposition takes the objective form—with *me* (not *I*).

The Possessive Case.—A noun takes the possessive form when another noun follows it in the relation of its property; as, 'The *king's* crown.' The possessive relation is often more conveniently expressed by *of*; as, 'The crown *of* the most powerful king on earth.' If the name of the owner be a compound name, the last of the component parts only receives the sign of the possessive: thus, 'The Queen of Great Britain's prerogative;' also when there are two separate names, as, 'Robertson and Reid's office.' The possessive case sometimes stands alone, the governing word being understood. Ex., 'He is at his *father's* (house). Have you seen St Paul's (Church)?'

The Objective Case.—Transitive verbs and prepositions take the objective case after them. It is only when a pronoun is the object that there is

any change on the word governed. Errors are never made on this point when the pronoun immediately follows the verb or preposition. No one thinks of saying: 'I saw *he*,' or, 'The man spoke to *we*.' It is only when the object is at some distance from the governing word, so that the objective relation is obscured, that a wrong case is apt to be used. Ex., '*He* that promises too much, do not trust;' for, '*Him* that,' &c. If the sentence were arranged differently, beginning, 'Do not trust *him*,' &c., the error would never occur. It is especially in the use of *who* and *whom* that errors of case are apt to be made. Ex., 'Do you know *who* you speak to?' for—'*whom* you speak to.'

Care requires to be taken not to use the objective case when the pronoun is the subject of a verb. Ex., 'Who did that? *Me*.' By supplying the ellipsis, we see that the nominative should be used—*I* (did it). There is such a strong propensity in all, learned and unlearned, to use *me*, *him*, *them*, &c. in answer to questions and in such phrases as, 'It is *me*, it was *her*,' &c. that there are not wanting those that defend the practice as right, and according to the instinctive genius of the English language. They hold that there are two forms of the nominative case, one to be used when a verb immediately follows, and another when the pronoun has to stand alone. The analogy of the French language is in favour of this view; for while '*I* am here,' is '*Je* suis ici,' the answer to 'Who is there?' is '*Moi*' (me); and 'C'est *moi*' (it is *me*), is the legitimate phrase, never 'C'est *je*' (it is *I*). But as yet this opinion, however much countenanced by usage, is considered a heresy by orthodox grammarians; and, accordingly, such expressions as, 'It was *her*, I am taller than *him*,' are to be avoided as errors.

It is the dread of falling into this error that drives many into the very opposite of using the nominative case after a verb or preposition, in such expressions as: 'Between you and *I*.'

Apposition.—When one noun (or pronoun) is joined to another to explain it, the two are said to be in *apposition;* and then they must be both in the same case. Ex., *London*, the *capital*, is the greatest city in the world. They hanged the *leader* of the gang, *him* that had so long defied the law. The *leader* of the gang was hanged, *he* that had so long defied the law.'

The verb To Be.—The verb *to be* has the same case after it that it has before it. Ex., '*Alfred* was *king*.' Here *Alfred* is nominative to *was*, and as *was* merely declares that *king* is another name for the same person, *king* agrees with *Alfred* in case. '*It* was *he*.' *He* is here in the nominative, because *it* is the nominative to *was*; in, 'I took *it* to be *him*,' *him* is objective, because *it* is the object to the verb *took*.

ORDER OF WORDS.

1. The subject precedes the verb.

Exceptions.—(*a.*) When a question is asked. Ex., '*Art thou* mad?'

(*b.*) With the imperative mood. Ex., '*Come ye*.'

(*c.*) In the conditional mood, when the conjunction is suppressed. Ex., '*Had I* known that,' instead of, '*If I had* known that.'

(*d.*) When the sentence or clause is introduced by *there*, *here*, *where*. Ex., 'There *stood a church* at the corner of the street. Here *are your gloves*.' Also in such parenthetical phrases as, *said he*, *replied James*.

2. The transitive verb precedes its object.

Excep.—When the objective is the relative. Ex., 'This is the letter *that* he *wrote*.'

3. The adjective immediately precedes the noun.

Excep.—When the adjective has any words joined with it. Ex., 'A question *too important to be neglected*.'

4. The adverb is placed before the adjective it qualifies; with an intransitive verb it is placed after. Ex., 'A *very good* man. She *dances well*.' When the verb has an object, the adverb usually follows it; as, 'The ball wounded *him severely*.' But no general rule can be given regarding the adverb, except to take care that it be so placed as to affect the word it ought to affect. More errors in this respect are committed with the adverb *only*, than with any other. According to the position of *only*, the very same words may be made to express several very different meanings.

Ex., (1.) He *only* lived for their sakes.
(2.) He lived *only* for their sakes.
(3.) He lived for their sakes *only*.
(4.) He lived for their sakes *alone*.

These sentences imply respectively—

(1.) He *lived* for their sakes, but did not *work*, did not *die*, &c. for their sakes.

(2.) He lived for their sakes, and not for any other reason.

(3.) He lived for their sakes, and not for any more worthy reason.

(4.) He lived for their sakes, and not for the sake of any other persons.

The rules given above apply only to the order observed in plain, unimpassioned prose. In poetry, and for rhetorical effect, the usual order is largely departed from.

Such are a few of the principles of the widest application in syntax. Our space forbids us to enter into the details required in a complete treatise. The object throughout has been to put the reader in the way of observing and investigating for himself, rather than to attempt a complete view of any part of the subject. The right understanding of the structure of sentences—the ability to see at a glance the relation of the several parts to one another—goes far to render detailed rules unnecessary. In clearing up, for instance, the mystery of how to use commas, semicolons, &c. it is worth any number of formal directions.

Under the head of Syntax it is usual to give a number of rules about the choice of words and phrases. On this vast field we cannot enter. It involves the knowledge of the correct meaning of all the words, and idiomatic combinations of words, in the language; and belongs rather to Lexicography than to Grammar. This knowledge is acquired only by extensive experience—by reading good authors and hearing good speakers.

ARITHMETIC—ALGEBRA.

IN the present and succeeding sheets, an attempt is made to convey to those who may not have had the benefit of a regular course of instruction in the subject, some knowledge of Mathematical science, both as regards measurement by numbers (ARITHMETIC) and measurement of dimensions (GEOMETRY). The sketch we offer of each is necessarily brief and imperfect; but our end will be gained if we afford that amount of information on the subject which is generally possessed by persons of moderately well-cultivated intellect.

A recognition of the value of *numbers* is coeval with the dawn of mental cultivation in every community; but considerable progress must be made before methods of reckoning are reduced to a regular system, and a notation adopted to express large or complex quantities. An inability to reckon beyond a few numbers is always a proof of mental obscurity; and in this state various savage nations have been discovered by travellers. Some are found to be able to count as far as five, the digits of the hand most likely familiarising them with that number; but any further quantity is either said to consist of so many fives, or is expressed by the more convenient phrase, 'a great many.' Among the North American Indians, any great number which the mind is incapable of distinctly recognising and naming, is figuratively described by comparing it to the leaves of the forest; and in the same manner the untutored negro of Africa would define any quantity of vast amount by pointing to a handful of sand of the desert.

On the first advance of any early people towards civilisation, it would be found impossible to give a separate name to each separate number which they had occasion to describe. It would therefore be necessary to consider large numbers as only multiplications of certain smaller ones, and to name them accordingly. This is no doubt what gave rise to classes of numbers, which are different in different countries. For instance, the Chinese count by *twos;* the ancient Mexicans reckoned by *fours.* Some counted by *fives*, a number which the fingers would always be ready to suggest. The Hebrews, from an early period, reckoned by *tens*, which would also be an obvious mode, from the number of the fingers of the two hands, as well as of the toes of the two feet. The Greeks adopted this method; from the Greeks it came to the Romans, and from them to us and all civilised nations.

NUMERATION.

Numeration spoken.—As a number may be increased to any extent (for however great it may be, it is always possible to increase it by adding another unit to it), it is evident that the number of numbers is infinitely great, and consequently it would be impossible to express them in any language by means independent of each other. It is necessary, then, to find the means of expressing all numbers with a limited system of words combined in a convenient manner. The first numbers have received names independent of each other, and are *one* (or the unit by itself), *two* (or a unit more than one), *three*, *four*, *five*, *six*, *seven*, *eight*, *nine*. The number following is called *ten*. It is regarded as a new unit, or a unit of a new order. Then we count by *tens*, as we do by units, namely, *one ten*, *two tens* or *twenty*, *three tens* or *thirty*, *forty*, *fifty*, *sixty*, *seventy*, *eighty*, *ninety*. Between *ten* and *twenty* there are nine other numbers, namely, *eleven*, *twelve*, *thirteen*, *fourteen*, *fifteen*, *sixteen*, *seventeen*, *eighteen*, *nineteen*. Between *twenty* and *thirty* there are nine numbers, and also between *thirty* and *forty*, *forty* and *fifty*, &c. In this way we arrive at *ninety-nine*, and the addition of one to this gives *one hundred*.

We reckon by hundreds as we do by tens, thus: one hundred, two hundreds, three hundreds, &c. Then by placing successively between the words one hundred and two hundred, between two hundred and three hundred, &c. the names of all the numbers from *one* up to *ninety-nine*, we have at last the number *nine hundred and ninety-nine*, and the addition of one to this gives *ten hundred* or *one thousand*. This, again, is taken as a new unit, and we say *one thousand*, *two thousand*, *three thousand*, &c. . . . ten thousand . . . *nine hundred and ninety-nine thousand*. The number *nine hundred and ninety-nine thousand nine hundred and ninety-nine* can thus be formed, and the addition of a unit to this gives *ten hundred thousand*, or a *thousand thousands*, or *one million*. In the same manner a *million millions* may be formed, and this is called a *billion*, &c.

Numeration written.—The invention of arithmetical notation must have been coeval with the earliest use of writing, whether hieroglyphic or otherwise, and must have come into use about the time when it was felt that a mound, pile of stones, or huge misshapen pillar, was insufficient as a record of great events, and required to be supplemented by some means which would suffice to hand down to posterity the requisite information. The most natural method undoubtedly was to signify 'unity' by one stroke, thus: I; 'two' by two strokes, II; 'three' by three strokes, III, &c.: and, as far as we know, this was the method adopted by most of those nations who invented systems of notation for themselves. It is shewn on the earliest Latin and Greek records, and is the basis of the Roman, Chinese, and other systems. We have thus a convenient division of the different notational systems into the *natural* and *artificial* groups, the latter including the systems of those nations who adopted distinct and separate symbols for at least each of the nine digits. The Roman and Chinese systems are the most important of the former, and the Hebrew, later Greek, and 'decimal' systems of the latter group.

Roman System.—The system adopted by the Romans was most probably borrowed at first from the Greeks, and was distinguished equally by its

simplicity and its cumbrousness. The following seems to be the most probable theory of its development. A simple series of strokes was the basis of the system; but the labour of writing and reading large numbers in this way would soon suggest methods of abbreviation. The first and most natural step was the division of the strokes into parcels of tens, thus, 𐅀𐅀 𐅀𐅀, a plan which produced great facility in the reading of numbers. The next step was to discard these parcels of ten strokes each, retaining only the two cross strokes, thus, 𐅡, as the symbol for 10. Continuing the same method as larger numbers came to be used, they invented a second new symbol for 100, thus, 𐅂 (which was at first probably the cancelling stroke for ten 𐅡s, in the same way as 𐅡 was originally the cancelling stroke for ten units); and for the sake of facility in writing, subsequently employed the letter C, which resembled it, in its place. The circumstance that C was the initial letter of the word *centum*, 'a hundred,' was doubtless an additional reason for its substitution in place of the original symbol for 100. An extension of the same process produced M, the symbol for 1000, which was also written 𐅆, 𐅥, and very frequently CIↃ. This symbol was probably suggested by the circumstance that M was the initial letter of the Latin word *mille*, signifying a thousand. The early Roman system went no higher. But though the invention of these three symbols had greatly facilitated the labour of writing down and reading off numbers, further improvements were urgently required. The plan of 'bisection of symbols' was now adopted; 𐅡 was divided into two parts, and either half, 𐅤 or 𐅆, used as the symbol for 5; 𐅂 was similarly divided, 𐅃, or 𐅂, standing for 50; and 𐅄, CI, or IↃ, was obtained in the same manner, and made the representative of 500. The resemblance of these three new symbols to the letters V, L, and D, caused the substitution of the latter as the numerical symbols for 5, 50, and 500. A final improvement was the substitution of IV for 4 (in place of IIII), IX for 9 (in place of VIIII), XC for 90 (instead of LXXXX), and similarly XL for 40, CD for 400, CM for 900, &c.; the smaller number, when in front, being always understood as subtractive from the larger one after it. This last improvement is the sole departure from the purely additional mode of expressing numbers; and if the symbols for 4, 9, 90, &c. be considered as single symbols, which they practically are, the deviation may be looked upon as merely one of form. In later times, the Roman notation was extended by a multiplication of the symbol for 1000, thus CCIↃↃ represented 10,000; CCCIↃↃↃ represented 100,000, &c.; and the bisection of these symbols gave them IↃↃ and IↃↃↃ as representative of 5000 and 50,000 respectively. This, in all probability, is the mode according to which the Roman system of notation was constructed. To found a system of arithmetic upon this notation would have been well-nigh impossible; and so little inventive were the Romans, that the attempt seems never to have been made. They performed what few calculations they required by the aid of the *Abacus*.

Greek System.—The Greeks at first used a method similar to the Romans, though at the same time they appear to have employed the letters of the alphabet to denote the first 24 numbers. Such a cumbrous system was naturally distasteful to so fastidious a race, and they hit upon the happy expedient of dividing their alphabet into three portions—using the first to symbolise the 9 digits, the second the 9 tens, and the third the 9 hundreds. But as they possessed only 24 letters, they had to use three additional symbols; their list of symbols of notation then stood as follows:

Units.	Tens.	Hundreds.
α represents.... 1	ι represents..... 10	ρ represents..... 100
β..... 2	κ..... 20	σ..... 200
γ..... 3	λ..... 30	τ..... 300
δ..... 4	μ..... 40	υ..... 400
ε..... 5	ν..... 50	φ..... 500
ϛ (introduced).. 6	ξ..... 60	χ..... 600
ζ..... 7	ο..... 70	ψ..... 700
η..... 8	π..... 80	ω..... 800
θ or ϑ..... 9	ϟ or ϙ (introduced). 90	ϡ, ϻ, ϡ (introduced). 900

By these symbols, only numbers under 1000 could be expressed, but by putting a mark, called *iota*, under any symbol, its value was increased a thousandfold, thus $\alpha = 1000$, $\kappa_{\iota} = 20{,}000$; or by subscribing the letter M, the value of a symbol was raised ten-thousandfold, thus, $\eta_{M} = 80{,}000$. For these two marks, single and double dots placed over the symbols were afterwards substituted. This improvement enabled them to express with facility all numbers as high as 9,990,000, a range amply sufficient for all ordinary purposes. Further improvements were made upon this system by Apollonius, who also, by making 10,000 the root of the system, and thus dividing the symbols into tetrads, greatly simplified the expression of very large numbers. Both Apollonius and Archimedes had to a certain extent discovered and employed the principle of giving to symbols values depending on their position and multiplicative of their real value, but this principle was applied to tetrads or periods of four figures only, and the multitude of symbols seems to have stood in the way of further improvement. Had Apollonius, who was the chief improver of the system, discarded all but the first nine symbols, and applied the same principle to the single symbols which he applied to the 'tetrad' groups, he would have anticipated the decimal notation.

The Decimal System.—The first nine numbers are represented by nine separate symbols, or figures, known as the Arabic numerals; namely:

1, 2, 3, 4, 5, 6, 7, 8, 9.
one, two, three, four, five, six, seven, eight, nine.

The nine figures, with the addition of the symbol 0, enable us to write any number, however large or however small it may be. In the first place, we suppose these figures to represent not only simple units, but units of any order whatever; 3 may represent three *simple units*, three *tens*, three *hundreds*, &c.; and so with the other figures. As the figures then represent units of any order, we must see when they represent units of a particular order. Taking several columns, as is here shewn—and let it be understood that the simple units are placed in the column nearest to the right, the tens in the column next on the left, the hundreds in the column next again, and so on—then we may write down any number; as, for example, *three*

thousand five hundred and forty-eight, by placing each of the units in the column allotted to that particular unit; thus the 3 is placed in the column of thousands, the 5 in that of hundreds, the 4 in that of tens, and the 8 in the unit column. Similarly with the number two thousand and seventy-nine, the 2 is placed in the thousands column, the 7 in that of tens, and the 9 in the unit column. In this way we can write down any number; but we may, by a simple device, save ourselves the trouble of drawing the lines to form the columns; for, let it be understood, that the simple units are put on the right, the tens next on the left, the hundreds next on the left of the tens, the thousands on the left of the hundreds, the tens of thousands on the left of the thousands, and so on—then we may write the number three thousand five hundred and forty-eight at once, thus: 3548

Tens of thousands.	Thousands.	Hundreds.	Tens.	Simple units.
	3	5	4	8
	2		7	9

Again, the number two thousand and seventy-nine would be written 2 79

As there are here no units of hundreds, their place would be unoccupied, and we would be very apt to take the 2 to represent hundreds, instead of thousands, as it is intended to do. Now, to prevent any mistake arising on this account, we introduce the symbol 0 or zero to keep the place of the hundreds. This symbol has no value of itself, but merely serves for keeping the places of those units which may be wanting in any number; thus the number two thousand and seventy-nine will be written 2079. Again, two hundred and twelve thousand and eight will be written 212008, because the units of hundreds and also of tens are wanting, and their places are supplied by zeros. The number fifty will be written 50, because the unit figure is wanting. In the same way, five hundred will be written 500. In this manner we are enabled to write down any number.

It will at once be evident that if we annex a zero to the right of any number, we multiply it by 10, for by doing so we remove each of the figures one place to the left. Similarly, by annexing two zeros, we multiply by 100; annexing three zeros, we multiply by 1000; and so on.

Decimal Numbers.—In considering the number 5555, the 5 nearest to the right denotes *units;* the next on the left, *tens;* the next again, *hundreds;* and the last on the left, *thousands.* Or proceeding from left to right, we see that the figure on the right is *ten* times less than the one immediately on its left; thus the 5 on the left denotes *thousands;* the next on the right, *hundreds;* the next again, *tens;* and that on the left, *units.* There is no reason, however, why this last figure should not in its turn be ten times greater than the figure immediately on its right; and this, again, ten times greater than the next on the right; and so on. By thus extending the decimal system, we will be enabled to represent all fractions, however small. For example, if we take the following expression,

43276918,

in which the unit figure, to mark its position, is underlined, we can at once tell the value of each figure; thus 7 being the unit; 2, the first on the left, denotes *tens;* the 3 denotes *hundreds;* and the 4, *thousands.* Again, 6, the first figure on the right of the unit, being of ten times less value than if it stood in the units' place, denotes *tenths;* the 9, the next on the right, denotes *hundredths;* the 1, *thousandths;* and the 8, *tenths of thousandths.* Knowing the position of the unit figure, then we at once know the value of any other figure. The unit figure is marked, not by underlining it, but by placing a point or dot immediately on its right. The above number would be written

4327·6918.

The dot is called the *decimal point*, and separates the whole number in the expression from the fractional part of it. We are also enabled to read off at once any decimal expression; thus ·5 is read as decimal 5 or 5 *tenths*, ·05 as 5 *hundredths*, ·005 as 5 *thousandths*. Again, 1·5 is read 15 tenths, 1·15 as 115 *hundredths*—that is, we read off the number as if it contained no decimal point, and give to it the denomination of the last figure on the right.

It is evident that a decimal number is multiplied by 10, by 100, by 1000, &c. by simply moving the point *one*, *two*, *three*, &c. places to the right. Thus the number 3·4568, when multiplied by 10, becomes 34·568; when multiplied by 100, becomes 345·68; and so on. In the same manner a number is divided by 10, by 100, by 1000, &c. by simply moving the point *one*, *two*, *three*, &c. places to the left; thus the number 3·4568, when divided by 10, by 100, by 1000, becomes ·34568, ·034568, ·0034568. When we simply suppress the point in a decimal expression, we multiply it by 10, 100, &c. Thus, if for 3·456 we write down 3456, we have multiplied the number by 1000, for the point is now supposed to be on the right of the 6.

ADDITION AND SUBTRACTION OF WHOLE OR DECIMAL NUMBERS.

The two fundamental operations in arithmetic are *addition* and *subtraction*, as a number can only be altered by *increase* or *diminution.*

Addition is that process by which we increase a number by a given number: or it is *that process by which we form into one number several other numbers.* The resulting number is called the *sum.*

It is easy to add to a given number another small number; thus, to add 4 to 5, it is sufficient to add *one* unit to the 5 as often as there are units in 4; thus we say 5 and 1 make 6, 6 and 1 make 7, 7 and 1 make 8, 8 and 1 make 9; and 9 is the sum required. In the same way we might add to a number another number consisting of two or more figures; but it is evident that this process would be very tedious, and when the number to be added was very large, it would be almost impracticable; and hence we consider each of the numbers to be added as being resolved into its component units, and written one under the other, in such a way that the units of the same order stand under each other; we then add the several units separately. Thus let it be required to add together 453, 7546, 5314, 208. Here the number 453 is resolved into 3 simple units, 5 tens, and 4 hundreds. Again, 7546 is resolved into 6 simple units, 4 tens, 5 hundreds, and 7 thousands; and so with the

other numbers to be added: these are written under each other, as in the margin, the *simple units* under each other, the *tens* under each other; and so on. On adding the simple units, we find their sum is 21—that is, 1 simple unit and 2 tens; the 1 unit is written under the units, and the 2 tens are taken and added along with the tens—when the tens are added, we find their sum is 12—that is, 2 tens and 1 hundred; the 2 tens are written under the tens, and the 1 hundred is taken and added along with the hundreds of the given number; this makes their sum 15—that is, 5 hundreds and 1 thousand, which, when added along with the thousands of the given number, makes 13: hence the sum is 13521, or 13 thousands, 5 hundreds, 2 tens, and 1 unit.

453
7546
5314
208
13521

This simple method is employed in adding *decimal* numbers together. Thus, let it be required to add 4·75, 132·4, 721·4826, and ·70145. Here the numbers are written under each other as in the margin; the *hundreds* under *hundreds*, *tens* under *tens*, *units* under *units*, *tenths* under *tenths*, *hundredths* under *hundredths*, *thousandths* under *thousandths*, &c.; then the several units of the same order are added as before. Some care is here necessary in writing down the several numbers, in order that the units of the same order may be placed under each other; but we can easily assure ourselves of this by having the decimal points in each of the numbers all arranged under each other.

4·75
132·4
721·4826
·70145
859·33405

Subtraction is that process by which we diminish a number by a given number: or it is *that process by which we find the difference between a greater number and a less.*

It is easy from a given number to subtract another small number. Thus, let it be required to *subtract* or take away 4 from 9. Here we have only to take away 1 unit from 9 as often as there are units in 4. We say, 1 from 9 leaves 8, 1 from 8 leaves 7, 1 from 7 leaves 6, 1 from 6 leaves 5; and therefore 5 is the number left, or 5 is the difference between 9 and 4. This process would, however, prove very tedious if the number to be subtracted was large, and, as in addition, we resolve the numbers into their component units, and find the difference between each corresponding set. Thus: To find the difference between 7683 and 4361. Here, having written the numbers under each other as in the margin, we say, 1 unit from 3 units leaves 2, 6 tens from 8 tens leaves 2 tens, 3 hundreds from 6 hundreds leaves 3 hundreds, 4 thousands from 7 thousands leaves 3 thousands; and the difference is 3322, or 3 thousands, 3 hundreds, 2 tens, and 2 units.—Again, to find the difference between 845·424 and 23·113. Writing these numbers as in the margin, we say, 3 thousandths from 4 thousandths leaves 1 thousandth, 1 hundredth from 2 hundredths leaves 1 hundredth, 1 tenth from 4 tenths leaves 3 tenths, 3 units from 5 units leaves 2 units, 2 tens from 4 tens leaves 2 tens, 0 hundreds from 8 hundreds leaves 8 hundreds; and the result is 822·311, or 8 hundreds, 2 tens, 2 units, 3 tenths, 1 hundredth, and 1 thousandth. In this way we might subtract any number from any larger number, *provided the units in the smaller number are less than the corresponding units in the greater number.* If, however, this is not the case, we employ a certain device, which enables us to obtain the required difference between the two given numbers; and this we now proceed to explain.

7683
4361
3322

845·424
23·113
822·311

In the first place, it is necessary to see *that the difference between two numbers is not altered if we increase each of the given numbers by the same number:* thus, the difference between 5 and 3 is 2. Now, if to 5, and also to 3, we add, say 1, thus making the numbers 6 and 4, the difference is still 2. Again, if to 5, and also to 3, we add 4, the difference between the resulting numbers, 9 and 7, is still 2; that is, the difference remains unaltered. This is evidently what we might expect, for whatever be the difference between the resulting numbers, it is clear that it cannot arise from the *equal* numbers which have been added, but only from the original numbers.

5	6	9
3	4	7
2	2	2

Now, by applying this principle, we may find the difference between any two numbers whatever. Thus, let it be required to subtract 2768 from 9543. Writing the less number under the greater, as in the margin, the units of the same order being placed under each other, we find we cannot take 8 units from 3 units, nor 6 tens from 4 tens, 7 hundreds from 5 hundreds. Now, to avoid this difficulty, we shall in the first place add to both numbers 10 units; the addition of these 10 units, we have seen, does not alter in any way the difference between the original numbers. We shall add these units to the upper number as 10 units, and to the lower number as 1 ten; the number will then stand as in the margin. We can take 8 units from 13 units, but we cannot take 7 tens from 4 tens. We shall then add to both numbers 10 tens, and, as before, this does not alter the difference of the given numbers. We shall add these 10 tens to the upper line as *tens*, adding 10 of them, and to the under line as *hundreds*, adding 1; the numbers will then stand as in the margin. The units in the upper line are greater than the units below, the tens above are greater than the tens below, but the hundreds above are less than those below, and therefore, to both numbers we add 10 hundreds, or 1 thousand; add this to the upper line as hundreds, and to the under as thousands, the numbers will then stand as in the margin. Now, as the numbers below are each less than the corresponding numbers above, the operation may be performed: thus, we say, 8 from 13 leaves 5, 7 from 14 leaves 7, 8 from 15 leaves 7, 3 from 9 leaves 6; and the result is 6775, or 6 thousands, 7 hundreds, 7 tens, and 5 units. Now, it will at once be seen that by this process we have not found the difference between the original numbers, but, what is the same thing, we have found the difference between these numbers after each has been increased by one thousand, one

9	5	4	13
2	7	7	8

th.	h.	t.	u.
9	5	14	13
2	8	7	8

th.	h.	t.	u.
9	15	14	13
3	8	7	8
6	7	7	5

9543
2768
6775

hundred, and ten. This explains what is usually called the process of *borrowing* and *carrying*.

Again, let it be required to subtract 24·7653 from 684·234.

Writing the less number under the greater, as in the margin, we begin by adding to both 10 tenths of thousandths; we add this to the upper number as tenths of thousandths, and to the other as 1 thousandth. Again we add to both 10 *thousandths*, adding it as such to the upper number, and to the under as 1 hundredth. Again we add to both 10 *hundredths*, adding it as such to the upper number, and to the under as 1 *tenth*. Again adding to both 10 *tenths*, adding it as such to the upper number, and to the under as 1 *unit*; and so on. This device will now enable us to perform the subtraction, for we say, 3 from 10 there remains 7, 6 from 14 there remains 8, 7 from 13 there remains 6, 8 from 12 there remains 4, 5 from 14 there remains 9, 3 from 8 there is 5, and 0 from 6 remains 6. In this way any whole or decimal number can be subtracted from any other number which is greater.

684·234
24·7653
659·4687

MULTIPLICATION OF WHOLE AND DECIMAL NUMBERS.

Multiplication is that process by which, having given two numbers, we find a third, composed of either of the given numbers, in the same manner as the other is composed of the unit. Thus, for instance, if we are to multiply 7 by 4; this means that we are to perform on 7 the same operation as has been performed on the unit to *produce* 4. Now, to produce 4, the unit has evidently been repeated 4 times, hence we must also repeat 7 four times, as in the margin; the resulting number, 28, is said to be the *product* of 7 by 4. In the same manner we might multiply any number by any other number; as, for instance, 7459 by 365. Here we would require to write the number 7459 under itself 365 times, and add; this would involve an immense amount of trouble, which we can save ourselves. In the first place, the products of all the numbers up to 9 by all the numbers up to 9 have been found and tabulated in what is called the *multiplication table*, and these results serve us for obtaining the product of any two numbers, however large. For example, let it be required to multiply 7459 by 365. Here it is evident that if we write down the number 7459 under itself 365 times, the whole may be supposed to consist of three groups: the first group containing 7459 5 times, the second group containing it 60 times, and the third group containing it 300 times. Now the sum of the numbers in the first group, which contains 7459 5 times, may be found as here shewn; but it is clear that instead of taking the sum of 5 nines, 5 fives, 5 fours, 5 sevens, the multiplication table will enable us at once to write the product, for it shews us that 5 times 9 are 45, 5 times 5 are 25, with 4 carried make 29, &c. The product of 7459 by 5 is therefore 37295. Now the product of 7459 by 60 is the same as 10 times the product by 6; but the product by 6 is, as in the margin, 44754, and 10 times this is found by annexing a zero on the right. Again the product of 7459 by 300 is the same as 100 times the product by 3; but this product by 3 is 22377, and 100 times this is found by annexing two zeros on the right. It appears, then, that the sum of 7459 written under itself 365 times, is the same as the sum of three numbers, viz., the product of 7459 by 5, the product of 7459 by 60, and the product by 300; these are as in the margin. These three numbers are now summed, and the product required is found. This process may be abridged as is here shewn, by writing down 7459 once for all, then as the second product has always one zero on the right, it is not written down, nor are the two zeros on the right of the third product.

7
7
7
7
28

7459
7459
7459
7459
7459
...
...
...
...
...
...

5 times.

7459
7459
7459
7459
7459
37295

7459
5
37295

7459	7459	37295
60	300	447540
447540	2237700	2237700
		2722535

7459
365
37295
44754
22377
2722535

604076
30104
2416304
604076
1812228
18185103904

Again, we obtain the product of 604076 by 30104 as above.

In the same manner may be found the product of any two whole numbers whatever. The number to be multiplied or repeated is called the *multiplicand*; and that which marks the number of repetitions, the *multiplier*; the result is termed the product. Let it now be required to multiply together two decimal numbers; for example, let it be required to multiply 7·459 by 3·65. Here we will begin by multiplying the whole number 7459 by the whole number 365, and from this result we will deduce the result required. But the product of 7459 by 365 is, as in the margin, 2722535. Now, in taking 7459 for the multiplicand instead of 7·459, we have been making the multiplicand *one thousand* times too much, the product is therefore *one thousand* times too much. Again, since we have made the multiplier *one hundred* times too much, the product is on this account *one hundred* times too much, so that we must first make the product which we have found *one thousand* times less, and then *one hundred* times less still. But the product is made *one thousand* times less by removing the point (which is understood to be on the right of the unit figure of the product) *three* places to the left; again the resulting number is made *one hundred* times less by removing the point *two* places to the left; we will, therefore, have for the product of the given numbers—

7459
365
37295
44754
22377
2722535

27·22535.

Hence it appears—*that to multiply together two decimal numbers, we multiply as if they were whole numbers, and cut off as many decimals from the product as there are decimals in the multiplicand and multiplier together.*

Additional examples :

742·3	7·423	·7423
3·42	·342	34·2
14846	14846	14846
29692	29692	29692
22269	22269	22269
2538·666	2·538666	25·38666

·1	·1	1·1	·01
·1	·01	1·1	·01
·01	·001	11	·0001
		11	
		1·21	

The multiplication of one number by another is usually indicated by putting the mark × between the numbers to be multiplied : thus 4 × 7 is understood to mean that 4 is multiplied by 7.

DIVISION OF WHOLE AND DECIMAL NUMBERS.

Division is that process by which we find how often one number is contained in another. For example, to divide 30 by 6 is to find *how often* 30 contains 6, or *how often* 6 is contained in 30. We can at once find how often 6 is contained in 30 by subtracting 6 from 30 again and again, as often as we can, and the number of subtractions we require to perform will mark the number of times 30 contains 6. Here it is found that 6 can be subtracted from 30 5 times ; hence we say that 30 contains 6 5 times, or 30 divided by 6 gives 5. The number to be divided is called the *dividend;* the number by which we divide is called the *divisor;* and the result of the operation is called the *quotient.*

30
6
—
24
6
—
18
6
—
12
6
—
6
6
—
0

All such operations may be performed in the same manner ; but it is evident that when the dividend is large compared with the divisor, the number of subtractions will therefore be very numerous, and consequently the working will become very laborious. For example, suppose we wish to find by this method how often 7524 contains 2. If we begin by subtracting 2 again and again, we see at once that the number of subtractions is very great ; and therefore recourse must be had to some other method to obtain the quotient, and *that which constitutes the rule of division is a short method of obtaining the same result.* Taking the same example, we will begin by subtracting, not 2, but 2000, and this we find we can do 3 times, with a remainder 1524. But subtracting 2000 3 times is the same as subtracting 2 3000 times. We have yet 1524 to divide by 2 : instead of subtracting 2, however, time after time, from this number, we will subtract 100 times 2, or 200, as often as we can. We shall evidently have 100 times fewer subtractions to perform : it will be found that 200 can be subtracted 7 times with a remainder 124 ; but subtracting 200 7 times is the same as subtracting 2 700 times. We have yet 124 to divide by 2 ; and instead of subtracting 2 from this as often as we can, we will subtract 10 times 2, or 20, as often as we can, and this we find we can do 6 times. But subtracting 20 6 times is the same as subtracting 2 60 times. There remains 4, which we must divide by 2, and we find that from this number we can subtract 2 2 times. Hence the given number 7524 contains 2 3000 times, together with 700 times, together with 60 times, together with 2 times ; or, in all, it contains 2 3762 times. In this way we may perform all such operations ; and the device which we here introduce has enabled us to obtain the result by means of 18 instead of 3762 different subtractions. In practice, however, it is usual to shorten even this working, and the multiplication table enables us to do so : thus, if we write the dividend and divisor, as in the margin, then 7, which is the highest figure in the dividend, and denotes thousands, is first divided by 2. Now the multiplication table tells us that 2 times 3 makes 6, or that 7 contains 2 3 times ; dividing 7000 by 2, therefore, gives 3000, with 1000 over ; this 1000, or 10 hundreds, taken with the next figure in the dividend—namely 5, gives 15 hundreds to be divided by 2 ; this gives 7 hundreds, with 100 over ; and this 100, or 10 tens, taken with the 2 tens, gives 12 tens to be divided by 2 ; this gives 6 tens ; and the 4 units divided by 2 gives 2 units. Hence, as before, the quotient is 3762. In the same way it is usual to perform all divisions in which the divisor is less than 9.

7524	1524
2000	200
—	—
5524	1324
2000	200
—	—
3524	1124
2000	200
—	—
1524	924
	200
	—
	724
	200
	—
	524
	200
	—
	324
	200
	—
	124
	20
	—
	104
	20
	—
	84
	20
	—
	64
	20
	—
	44
	20
	—
	24
	20
	—
	4
	2
	—
	2
	2
	—
	0

3 times. 7 times. 6 times. 2 times.

2)7524
3762

Example 2.—Let it be required to divide 37452 by 7. We write down the dividend and divisor as in the margin, and begin by dividing the 3 in the dividend, which denotes *tens of thousands*, by 7. We find we cannot do this, but we include the following figure 7, and divide, if we can, 37 *thousands* by 7. This we can do, and find, as a result, 5, with a remainder 2. This denotes 5 thousands, with a remainder of 2 thousands, or 20 hundreds. These 20 hundreds, taken with the 4 *hundreds*, gives 24 hundreds to be divided by 7, and the multiplication table tells us that 24 contains 7 3 times, with a remainder 3 ; that is, 24 hundreds contain 7 300 times, with 3 hundreds over, or 30 tens. These 30 *tens*, taken along with the 5 tens of the dividend, give 35 tens to be divided by 7, which gives 5 tens exactly. The 2 units now require to be divided by 7. This cannot be done ; that is, there are no units in the dividend, but a remainder of 2. Hence the quotient is 5350, with a remainder of 2.

7)37452
5350...2

When the divisor is less than 9, it is usual to dispose the working as we have done in the examples given above, and the operation is termed *short division :* but when the divisor is above 9, or any large number, it is usual to exhibit the working as is shewn in the following example, and the

operation is termed *long division*. For example, let it be required to divide 23415 by 37. Here, arranging the dividend and divisor as in the margin, we begin by trying to divide 2 of the dividend, that is, 2 *ten-thousandths*, by 37. If we could perform this operation, the first figure in the quotient would be *tens of thousands*, but we cannot divide 2 by 37. We take in the next figure of the dividend—viz., 3. This makes 23; that is, 23 *thousands*. If we can divide this by 37, then the first figure in the quotient will denote thousands. We cannot, however, divide 23 by 37, and hence there are no *thousands* in the result. We then include the next figure in the dividend, that is, 4, and try if we can divide 234, that is, 234 *hundreds*, by 37. Now, on trial, we find that 37 is contained in 234 6 times, with a remainder of 12; that is, the first figure in the result is 6 *hundreds*, with 12 hundreds over. These 12 hundreds, or 120 tens, taken along with the 1 ten of the dividend, give 121 tens to be divided by 37, and this, we find, will give 3, that is, 3 tens, with 10 tens over. These 10 tens, or 100 units, taken with the 5 units of the dividend, give 105 units to be divided by 37. This will give 2 units, with a remainder of 31 units. The result will therefore be 632, with a remainder of 31 units. These 31 units have yet to be divided by 37, but this operation is merely indicated thus: $\frac{31}{37}$. So that the exact quotient will be $632\frac{31}{37}$. In the same manner all such divisions may be performed.

```
37)23415(632
  222
  ---
  121
  111
  ---
  105
   74
   --
   31
```

Division of Decimal Numbers.—Let us now divide a decimal number by another number. We here distinguish two cases, and begin by considering the divisor first a whole number. For example, let it be required to divide 3·1245 by 65: this differs in no respect from the division of whole numbers. As before, we arrange the dividend and divisor as in the margin, and begin by trying to divide the 3, that is, 3 units of the dividend, by 65. We cannot do this, and hence there are in the quotient no *units*. We include the next figure, which is 1, and divide, if we can, 31 *tenths* by 65. This we cannot do, and hence there are no *tenths* in the quotient. We include the next figure, that is, 2, and try if we can divide 312 *hundredths* by 65. This we can do, and we find that 312 contains 65 4 times; hence the first figure in the result denotes *hundredths*, and therefore it is written in the second place from the point. The rest of the division is performed as in the division of whole numbers.

```
65)3·1245(·04806...
  260
  ---
  524
  520
  ---
  450
  390
  ---
   60
  ...
  ...
```

Next, let the divisor be a decimal number, and let it be required, for example, to divide 6·3882 by 23·4. Now, this is the same as dividing *ten* times 6·3882 by *ten* times 23·4; but ten times 6·3882 is 63·882, and ten times 23·4 is 234; so that, instead of dividing the given dividend by the given divisor, we will do what is exactly the same thing, if we divide 63·882 by 234. By this device, we have made the divisor a *whole* number, and therefore, by the last case, we are enabled to perform the division as is here shewn.

```
234)63·882(·273
  468
  ---
 1708
 1638
 ----
  702
  702
  ---
```

Again, let it be required to divide 6·3882 by 2·34. Now, in order to transform the divisor into a whole number, it is sufficient to multiply it by 100. We will therefore divide 100 times the dividend by 100 times the divisor; this will not alter the required quotient. The working will evidently stand as in the margin, and the first figure in the quotient denotes *units*.

```
234)638·82(2·73
  468
  ---
 1708
 1638
 ----
  702
  702
  ---
```

Again, let it be required to divide 6·3882 by ·0234. This is the same as dividing *ten thousand* times 6·3882 by *ten thousand* times ·0234—that is, it is the same as dividing 63882 by 234, which gives 273 as quotient.

```
234)63882(273
  468
  ---
 1708
 1638
 ----
  702
  702
  ---
```

These examples are sufficient to shew how all such operations are performed.

The division of one number by another is often indicated by putting the mark ÷ between the numbers to be divided; thus, 8 ÷ 4 is understood to mean that 8 is divided by 4. This process is more frequently indicated by writing one number over the other, with a horizontal line between them, the number to be divided being above; thus, $\frac{8}{4}$.

Hitherto, we have considered only the arithmetic of *whole* and *decimal* numbers; we have now to consider that of *fractional* numbers. But before entering upon that part of our subject, it is necessary to understand the following two important processes—namely, that of finding the *greatest common divisor*, and the *least common multiple* of two or more numbers.

Greatest Common Divisor—Least Common Multiple.

The *greatest common divisor of two given numbers is the greatest number which divides each without leaving a remainder.* In finding the greatest common divisor of two numbers, then, we will consider two cases: first, when the one number contains the other an exact number of times. For example, let it be required to find the greatest common divisor of 40 and 8. Now, it is clear that no number greater than 8 will divide 8; and therefore, as 8 divides 40, it is the number required. Hence, in this case, the less of the two numbers is that required.

Again, let the one number not contain the other an exact number of times; for example, let it be required to find the greatest common divisor of 14 and 35. It is evident that no number higher than 14 will divide 14, but since 14 divides itself, it must first be tried to see if it also divides 35; if it does, it will be the number required. On dividing 35 by 14, we find a remainder, 7. Although this operation shews that 14 is not the number required, it yet puts us on the way of finding it; for whatever be the number required, it is clear that it must divide *twice* 14 or 28. Then, as it also divides 35, it must divide the difference between 35 and 28—that is, it must

```
14)35(2
  28
  --
   7
```

divide 7. In other words, the greatest common measure of 35 and 14 is the same as that of 14 and 7—numbers less than the given numbers. It now remains to find the greatest common measure of 14 and 7. Dividing 14 by 7, we find an exact quotient; hence 7 is the number required. It is usual to connect these separate processes, and form one continuous operation, thus:

```
7)14(2
  14
14)35(2
  28
 7)14(2
  14
```

As another example, let it be required to find the greatest common divisor of 1155 and 351. We first begin by trying the lowest number—namely, 351. It is sufficient to see if this number divides the greater, for we know that it divides itself. On dividing 1155 by 351, however, we find a remainder, 102. This shews that 351 is not the number required, but, as in the last case, this division shews that the number required is the greatest common divisor of 351 and 102. Then, as before, the lowest number—namely, 102, must first be tried, to see if it divides 351. It is found that there is a remainder of 45, and therefore 102 is not the number required; but, as before, we see that the greatest common divisor of the given numbers is the same as that of 102 and 45. Continuing this process, we find that the greatest common divisor of the given numbers is the same as that of 9 and 3, but the greatest common divisor of these numbers is 3; hence 3 is the number required. From these two examples, it will be seen how to find the greatest common divisor of any two numbers. *Two numbers whose greatest common divisor is unity, are said to be prime to each other.*

```
351)1155(3
   1053
  102)351(3
    306
   45)102(2
     90
    12)45(3
     36
     9)12(1
      9
      3)9(3
      9
```

The least common multiple of two or more given numbers is the least number which can be divided exactly by each of the given numbers.

Thus, for example, the least common multiple of the two numbers 8 and 15 will be the least number which can be divided both by 8 and by 15. Now, it is evident that the product of these two numbers—that is, 120—can be divided both by 8 and by 15. Hence it is a common multiple; and it is the *least*, since no number less can fulfil these two conditions.

To find the least common multiple of any two numbers—for example, 12 and 15. Here the greatest common divisor of 12 and 15 is 3; and therefore we may express these numbers as 3×4 and 3×5. Now, 3 being the highest common divisor, it is plain that 4 and 5 are prime to each other. Then, whatever the least common multiple is, it is clear, since it is divisible by both numbers, it must be divisible by 3, and also by 4, and also by 5. Hence the least common multiple is $3 \times 4 \times 5$. Now, this number is not altered by multiplying by 3 and dividing by 3. Hence the least common multiple is $3 \times 4 \times 3 \times 5$, divided by 3; but 3×4 is the one given number, and 3×5 is the other. Hence the least common multiple is 12×15, divided by 3; or the least common multiple of two numbers is found by *dividing the product of the two numbers by their greatest common divisor.*

VULGAR FRACTIONS.

A *fraction*, as the name implies, is a part *broken* off from a whole. We have already treated of a particular class of fractions—namely, decimal fractions. All other fractions are called *vulgar* fractions. Such, for example, are

$\frac{1}{2}$, $\frac{1}{3}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{9}{11}$, $\frac{15}{24}$, $\frac{144}{365}$.

The upper figure (or figures) is called the *numerator;* the under, the *denominator.* Fractions like the above, where the numerator is less than the denominator, are called proper fractions; otherwise, they are improper. The denominator of the fraction shews us into what parts the whole number has been divided; and the numerator shews us how many of these parts are represented. Before shewing how to perform the fundamental operations on fractions, it is necessary to prove (1) *that a fraction is not altered by multiplying or dividing numerator and denominator by the same number.* Thus, for example, if we take the fraction $\frac{3}{4}$, and multiply numerator and denominator by 2, we have the fraction $\frac{6}{8}$; which we say is the same as the original fraction $\frac{3}{4}$; for doubling the numerator, and afterwards the denominator, means that we first *double* the fraction, and then *halve* the result, which leaves the value of the fraction undisturbed.

Again, taking the fraction $\frac{6}{8}$, and dividing numerator and denominator by 2, we get for the resulting fraction $\frac{3}{4}$, which is equivalent to $\frac{6}{8}$; for dividing numerator by 2 means that we are *halving* the fraction, but multiplying denominator by 2 means that we are *doubling* the result; so that by these two operations we have first *halved* the fraction, and then *doubled* the result, which, of course, leaves the value of the original fraction undisturbed. The application of this principle enables us to simplify fractions.

To compare two or more fractions.—For example, let it be required to compare the values of the following fractions, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{8}$. We shall, in the first place, transform these fractions into others which have the same denominator; and for this common denominator we shall take the least common multiple of the denominators: this is evidently 24. Arranging the fractions as is here shewn, we see that, taking the first fraction, in which the denominator is 3, we have to change it into another whose denominator is 24. But this is done by multiplying the denominator by 8. Hence, to keep the fraction of the same value, we must multiply the numerator also by 8. This makes the first fraction equivalent to $\frac{16}{24}$; similarly, the second fraction is $\frac{18}{24}$, and the third is $\frac{15}{24}$. Then it is evident that $\frac{15}{24}$ is the *greatest*, and $\frac{16}{24}$ the *least* of the fractions.

$\frac{2}{3} = \frac{16}{24}$
$\frac{3}{4} = \frac{18}{24}$
$\frac{5}{8} = \frac{15}{24}$

Addition and Subtraction of Fractions.

To add or subtract fractions, we must first transform the fractions into others which shall have the

same denominators. Thus let it be required to add $\frac{3}{5}$, $\frac{5}{8}$, $\frac{9}{10}$ together. Arranging these fractions as in the margin, and bringing them to others with the same denominator, we find them transformed into $\frac{24}{40}$, $\frac{25}{40}$, and $\frac{36}{40}$, and the sum is $\frac{85}{40}$, or $2\frac{5}{40}$, or $2\frac{1}{8}$.

$\frac{3}{5} = \frac{24}{40}$
$\frac{5}{8} = \frac{25}{40}$
$\frac{9}{10} = \frac{36}{40}$
$\frac{85}{40} = 2\frac{1}{8}$

Again, let it be required to add $5\frac{1}{3}$, $2\frac{7}{8}$, $3\frac{5}{12}$. Arranging these numbers as in the margin, we first add the fractional part of each, and we do so as before, by bringing the fractions all to the same denominator; we will then have for the numbers to be added $5\frac{8}{24}$, $2\frac{21}{24}$, $3\frac{10}{24}$. Adding the fractions in each, we have for their sum $\frac{39}{24}$, or $1\frac{15}{24}$, or $1\frac{5}{8}$; the sum of the whole numbers is 10: therefore the whole sum will be $11\frac{5}{8}$.

$5\frac{1}{3} = 5\frac{8}{24}$
$2\frac{7}{8} = 2\frac{21}{24}$
$3\frac{5}{12} = 3\frac{10}{24}$
$10\frac{39}{24}$

Let it now be required to subtract $\frac{2}{3}$ from $\frac{10}{11}$. Arranging these fractions as in the margin, and bringing them to others having a common denominator, we find the fractions transformed into $\frac{30}{33}$ and $\frac{22}{33}$, and their difference will therefore be $\frac{8}{33}$.

$\frac{10}{11} = \frac{30}{33}$
$\frac{2}{3} = \frac{22}{33}$
$\frac{8}{33}$

Again, let it be required to subtract $2\frac{5}{6}$ from 7. We cannot take $\frac{5}{6}$ from zero, but to both fractions we will add 1; adding this to the upper line as *fifths*, and to the under as 1 whole, the numbers will stand as in the margin; we are now enabled to take $\frac{5}{6}$ from $\frac{6}{6}$, and 3 from 7.

7
$2\frac{5}{6}$

Lastly, let it be required to subtract $3\frac{1}{3}$ from $5\frac{1}{3}$. Bringing the fractions in each to others having a common denominator, the numbers will be $3\frac{8}{24}$ and $5\frac{8}{24}$. Arranging them as in the margin, we cannot take $\frac{8}{24}$ from $\frac{8}{24}$, but to both we add 1 whole; add this to the upper number as *twenty-fourths*, adding 24 of them, and to the under number as 1 whole, the numbers will now stand as in the margin. We can take $\frac{8}{24}$ from $\frac{27}{24}$, and 4 from 5. The result is therefore $1\frac{19}{24}$.

$5\frac{1}{3} = 5\frac{8}{24}$
$3\frac{1}{3} = 3\frac{8}{24}$
$5\frac{27}{24}$
$4\frac{8}{24}$
$1\frac{19}{24}$

Multiplication of Fractions.

The definition which has been given to multiplication of whole numbers applies to the multiplication of fractions.

First, the multiplicand being a whole number, and the multiplier a fraction, let it be required to multiply 12 by $\frac{1}{2}$. Now, to produce $\frac{1}{2}$, we have taken the unit, and divided it by 2. Therefore, to multiply 12 by $\frac{1}{2}$, we must perform the same operation on 12 as has been performed on the unit—that is, we must divide it by 2; therefore, $12 \times \frac{1}{2}$ equal to 6.

Again, multiply 12 by $\frac{2}{3}$. To produce $\frac{2}{3}$, the *double* of the unit has been divided by 3; hence, to multiply 12 by $\frac{2}{3}$, we must divide the *double* of 12 by 3, or $\frac{12 \times 2}{3}$ equal to 8.

Again, to multiply a fraction by a fraction. Thus, $\frac{3}{5}$ by $\frac{7}{8}$. Now, $\frac{7}{8}$ has been formed by dividing 7 times the unit by 8; we must, therefore, divide 7 times $\frac{3}{5}$ by 8; but 7 times $\frac{3}{5}$ is $\frac{21}{5}$, and this divided by 8 gives $\frac{21}{40}$. Hence, $\frac{3}{5} \times \frac{7}{8}$ equal to $\frac{21}{40}$.

It follows from these examples, that *one fraction is multiplied by another by multiplying together the two numerators for the numerator of the result, and the two denominators for the denominator of the result.*

Division of Fractions.

For example, let it be required to divide $\frac{1}{4}$ by $\frac{3}{5}$. We begin by dividing $\frac{1}{4}$ first by 3; this evidently gives for a result $\frac{1}{12}$; but on dividing by 3, we have been dividing by 5 times too much; hence this result must be made 5 times larger; it will therefore be $\frac{7 \times 5}{24}$ or $\frac{35}{24}$. To divide one fraction by another, therefore, 'we *invert the divisor, and proceed as in multiplication.*'

Conversion of Vulgar Fractions into Decimal Fractions.

Thus, let it be required to find the decimal fraction which is equivalent to $\frac{1}{2}$. This fraction, written as it is here, shews that 1 is to be divided by 2: the operation is merely indicated, and of course in whole numbers it cannot be continued, but 1 is the same as 10 *tenths*; if 10 can be divided by 2, the first figure in the result will be *tenths*. Hence $\frac{1}{2}$ is the same as ·5. Similarly, $\frac{3}{4}$ is the same as ·75, and $\frac{5}{8}$ is the same as ·625.

2)1·00000
·5

4)3·000
·75

8)5·0000
·625

Again, let it be required to convert $\frac{1}{64}$ into a decimal. Performing this division, we find $\frac{1}{64}$ equivalent to ·015625.

64)1·000000(·015625
64
360
320
400
384
160
128
320
320

Again, if we take $\frac{1}{3}$, and convert it into a decimal, the result is ·3333... and this is continued, so that $\frac{1}{3}$ is equivalent to ·333... or, as it is usually written, $\cdot\dot{3}$, and read, *decimal 3 repeating*. Similarly, $\frac{1}{9}$ is $\cdot\dot{1}$. $\frac{1}{6}$ is ·16666... or $\cdot 1\dot{6}$. $\frac{1}{7}$ is equal to $\cdot 1\dot{4}2857\dot{1}42857\ldots$ or $\frac{1}{7}$ is equal to $\cdot\dot{1}42857\dot{}$. Such results are called *repeating* decimals.

3)1·0000...
·3333...

Conversion of Decimal Fractions into Vulgar Fractions.

First, if the decimal is finite, the conversion may be performed at once: for example, ·2 is equal to $\frac{2}{10}$, ·02 is $\frac{2}{100}$, ·1427 is $\frac{1427}{10000}$, &c. Again, if the decimal is infinite—that is, if it repeats: for example, let it be required to find the vulgar fraction equivalent to $\cdot\dot{3}$. This is the same as finding the sum of the terms $\frac{3}{10}$, $\frac{3}{100}$, $\frac{3}{1000}$, &c. on to infinity, and this has been shewn to be $\frac{3}{9}$ or $\frac{1}{3}$. Again, $\cdot\dot{7}$ is $\frac{7}{9}$, $\cdot 1\dot{4}$ is $\frac{14}{99}$, $\cdot 7\dot{1}\dot{6}$ is $\frac{716}{999}$, and so on.

THE ARITHMETIC OF COMPOUND QUANTITIES.

TABLES OF WEIGHTS AND MEASURES.

LENGTH.

Inch..... = $\frac{1}{12}$ of a foot.
Foot..... = $\frac{1}{3}$ of a yard.
Yard..... = unit.
Pole..... = $5\frac{1}{2}$ yards.
Furlong... = 220 yards.
Mile..... = 1760 yards.

SURFACE.

Square inch. = $\frac{1}{144}$ of a square foot.
Square foot. = $\frac{1}{9}$ of a square yard.
Square yard = unit.
Square pole. = $30\frac{1}{4}$ square yards.
Rood ..... = 1210 square yards.
Acre..... = 4840 square yards.

VOLUME.

Cubic inch ..... = $\frac{1}{1728}$ of a cubic foot.
Cubic foot..... = $\frac{1}{27}$ of a cubic yard.
Cubic yard..... = unit.

CAPACITY (LIQUID MEASURE).

Gill ..... = $\frac{1}{4}$ of a pint.
Pint ..... = $\frac{1}{4}$ of a quart.
Quart ..... = $\frac{1}{4}$ of a gallon.
Gallon ..... = unit.

CAPACITY (DRY MEASURE).

Gallon ..... = unit.
Peck..... = 2 gallons.
Bushel ..... = 8 gallons.
Quarter..... = 64 gallons.

TROY WEIGHT.

Grain ..... = $\frac{1}{24}$ of a pennyweight (dwt.).
Pennyweight.. = $\frac{1}{20}$ of an ounce (oz).
Ounce ..... = $\frac{1}{12}$ of a pound (lb.).
Pound..... = unit.

APOTHECARIES' WEIGHT.*

Grain.. = $\frac{1}{20}$ of a scruple.
Scruple = $\frac{1}{3}$ of a dram.
Dram.. = $\frac{1}{8}$ of an ounce.
Ounce. = $\frac{1}{12}$ of a pound.
Pound. = unit.

AVOIRDUPOIS WEIGHT.

Dram..... = $\frac{1}{16}$ of an ounce.
Ounce..... = $\frac{1}{16}$ of a pound (lb.).
Pound..... = unit.
Stone..... = 14 pounds.
Quarter..... = 28 pounds.
Hundredweight..... = 112 pounds.
Ton..... = 20 hundredweights (cwt.).
1 Pound avoirdupois..... = 7000 grains Troy

TIME.

Second..... = $\frac{1}{60}$ of a minute.
Minute .... = $\frac{1}{60}$ of an hour.
Hour.. .... = $\frac{1}{24}$ of a day.
Day ..... = unit.
Year..... = 365¼ days.

MONEY.

Farthing.... = $\frac{1}{4}$ of a penny (d.).
Penny ..... = $\frac{1}{12}$ of a shilling.
Shilling .... = $\frac{1}{20}$ of a pound (£).
Florin ..... = $\frac{1}{10}$ of a pound.
Pound..... = unit.

When a quantity is made up of several other quantities expressed with reference to different units, it is said to be *compound*. Thus, £5, 14s. 10¾d., 7 tons 12 cwt. 3 qrs. 15 lbs., are compound quantities. Now, it will at once appear that the 'law of diminution,' which simplifies so much all questions relating exclusively to whole or decimal numbers, cannot be applied to numbers representing compound quantities, and referred to different units, for we see, from the above tables, that the divisions of the units which serve to measure quantity in this country are not in accordance with the decimal system. The inconvenience thus arising is so great that nearly all the nations of Europe, except Britain, have discarded their old subdivisions, and adopted the decimal division.

Reduction.

If a quantity is expressed with reference to any unit which measures it, it is easy to express it with reference to any other unit. For example, let it be required to express £5, 14s. 10¾d. as farthings. Here we begin by changing the pounds into shillings, and this we do by multiplying by 20; as there are 20 shillings in the pound, this gives 100, and the 14 shillings we had to begin with gives 114 shillings in all. These are now changed into pence by multiplying by 12; this gives, after adding in the 10 pence we had to begin with, 1378.

£5 14 10¾
20
114
12
1378
4
5515

These pence are now changed into farthings by multiplying by 4; and this gives, after adding the farthings we had to begin with, 5515—the number required.

Again, let it be required to change 17686 farthings into pounds; we begin by first changing the farthings into pence, and this we do by dividing by 4, as it takes 4 of them to make a penny. We then change the pence into shillings by dividing by 12, and the shillings into pounds by dividing by 20.

4)17686	
12)4421	½
20)368	5½
£18	8 5½

Addition and Subtraction of Compound Quantities.

Let it be required, for example, to add the sums of money here given in the margin. We begin by first adding the farthings, and we find their sum to be 9—that is, 2 pence and 1 farthing. We write the farthing under the farthings, and take the 2 pence, and add it along with the pence; this we find will make 41, or 3 shillings and 5 pence; we take the shillings, and add them to the shillings; and this we find gives 63, or £3 and 3 shillings. We write the 3 shillings under the shillings, and carry the 3 pounds, and add them along with the pounds; this makes the sum of the pounds 469. So that the whole sum is £469, 3s. 5¼d.

£		
14	15	10¾
276	18	7½
53	12	8
96	13	10¼
27	2	4¼
£469	3	5¼

Again, let it be required to subtract £27, 12s. 8¾d. from £112, 2s. 6½d. We begin by subtracting the farthings in the under line from those in the upper; but we cannot take 3 from 2, and therefore we add to both 1 penny; we add this penny to the upper line as 4 farthings, and to the under as 1 penny. We will then have six farthings above, from which we can take 3 farthings; there therefore remain 3 farthings. We have now 9 pence to take from 6 pence; this we cannot do, and we add to both 1 shilling, to the upper line we add this as 12 pence, and to the under as 1 shilling; we then take 9 from 18, and get a remainder of 9. There are now 13 shillings in the under line; but this we cannot take from 2; so to both we add 1 pound, and this we add to the upper line as 20 shillings, and to the other as 1 pound. We then take 13 from 22, and find a remainder 9. We now have 28 pounds to take from 112 pounds, and the remainder is found to be 84 pounds; so that the whole remainder is £84, 9s. 9¾d. In the above operation, we have not found the difference between the given quantities of money, but between these, after £1, 1s. 1d. has been added to both, and, as we have seen, the addition of this to both does not alter the difference between the original quantities.

£		
112	2	6½
27	12	8¾
£84	9	9¾

Multiplication of Compound Quantities—Practice.

Let it be required to multiply £25, 12s. 4¼d. by 53. We might begin by multiplying first the farthings by 53; this gives 53 farthings, or 13 pence and 1 farthing; then 53 times 4 pence is 212 pence, and 13 added makes 225 pence, or 18 shillings and 9 pence; 53 times 12 shillings with 18 added

£25	12	4¼
		53
£1357	14	9¼

* In the new British Pharmacopœia, medicines are now dispensed by avoirdupois weight.

is 654 shillings, or 32 pounds 14 shillings; then 53 times 25 pounds gives 1325 pounds, and 32 pounds added gives in all 1357 pounds; the complete product will therefore be £1357, 14s. 9¼d. We might have obtained the same result by taking first 10 times the given quantity, then 5 times the result; this will then be 50 times the given quantity; and to this, if we add 3 times the given quantity, we will have the required result.

£25	12	4¼	× 3
		10	
256	3	6½	
		5	
1280	17	8¼	
76	17	0¾	
£1357	14	9¼	

Again, let it be required to find the price of 5432 articles at £2, 3s. 7½d. each; that is, let it be required to multiply £2, 3s. 7½d. by 5432. Here we first find the price of 10 articles by multiplying the price of 1 by 10; then the price of 10 multiplied by 10 gives the price of 100, and the price of 100 multiplied by 10 gives the price of 1000. Having found the price of 1000, we multiply this by 5, and have the price of 5000; then the price of 400 is found by multiplying the price of 100 by 4; the price of 30 is found by multiplying the price of 10 by 3; and the price of 2 is found by multiplying the price of 1 by 2. Those four results being added give the result required.

£2	3	7½	× 2
		10	
21	16	3	× 3
		10	
218	2	6	× 4
		10	
2181	5	0	
		5	
10906	5	0	
4	7	3	
65	8	9	
872	10	0	
£11848	11	0	

When the number of articles is large, it is usual to find their value at a given price by the following method: for example, let it be required to find the price of 5432 articles at £2, 3s. 7½d. each. We first write down the price at one pound each; this will be 5432 pounds. Then, at 2 pounds each, it will be the double of this, or 10864 pounds. We next find

£5432 = price at £1.

2

		£10864	=	"	" £2	0	0
2s.	1/10	543	4	"	" 0	2	0
1s.	½	271	12	"	" 0	1	0
6d.	¼	135	16	"	" 0	0	6
1½d.	1/16	33	19	"	" 0	0	1½
		£11848	11	"	" 2	3	7½

the price at 2s., which is the tenth of the price at one pound; then the price at 1s. is half the price at 2s.; the price at 6d. is half the price at 1s.; and the price at 1½d. is one-fourth the price at 6d.: these several prices added together give the price at £2, 3s. 7½d. This method is called *Practice.*

Example 2.—What is the rent of 20 acres 3 roods, at £5 per acre?

Here rent of 1 acre = £5
" 20 acres = £5 × 20 = £100 0 0
" 2 roods = ⅒ of £5 = 2 10 0
" 1 rood = ½ of £2, 10s. = 1 5 0
" 20 acres 3 roods = £103 15 0

Division of Compound Quantities.

Let it be required to divide £273, 13s. 10½d. by 17. Here we first divide the 273 pounds by 17; this gives 16 pounds, with a remainder of 1 pound or 20 shillings; these shillings, taken along with the 13s. we have in the given sum, give 33 shillings, to be divided by 17; this gives a quotient of 1 shilling, with a remainder of 16 shillings or 192 pence; and these, taken along with the 10 pence, give 202 pence to be divided by 17; this gives a quotient of 11 pence with a remainder of 14 pence or 56 farthings; then these farthings, with 2 added, when divided by 17 give a quotient of 3 and a remainder of 7: so that the complete quotient is £16, 1s. 11¾d., with a remainder of 7 farthings.

£	s.	d.
17)273	13	10½(16
17		
103		
102		
1		
20		
17)33(1		
17		
16		
12		
17)202(11		
17		
32		
17		
14		
4		
17)58(¾		
51		
7		

RATIO.

The relation which one number has to another, as measured by the quotient of the one divided by the other, is called the *ratio* of these numbers. Thus the ratio of 18 to 9 is measured by 2, because it is the quotient which arises from dividing 18 by 9. That of 5 to 2 is measured by the mixed number 2½, and that of 4 to 13 by the fraction $\frac{4}{13}$. The former number is called the *antecedent*, and the latter the *consequent.* A ratio is expressed as follows:

The ratio of 36 to 6 is expressed 36 : 6.
" " 40 to 16 " " 40 : 16.

If the ratio of two numbers be equal to the ratio of two others, the fractions whose numerators and denominators are the antecedents and consequents of these ratios respectively are equal. For example, the ratio of 7 : 3 and 21 : 9 are equal, and their equality is thus expressed:

$$\frac{7}{3} = \frac{21}{9}.$$

There is another way of expressing the equality of two ratios, namely:

7 : 3 :: 21 : 9.

These four numbers are said to be *proportionals;* the first and last are called the *extremes*, the second and third are called the *means.*

If four numbers are proportionals, the product of the extremes is equal to the product of the means. Thus, since

$$\frac{7}{3} = \frac{21}{9},$$

the fractions are equal after both have been multiplied first by 3 and then by 9, or we have

$$7 \times 9 = 21 \times 3.$$

Hence it follows, that of four numbers which are proportionals, if any three be given, the fourth may be found; thus, the *first*, *second*, and *third*

being given, the *fourth* is evidently found by dividing the product of the second and third by the first.

Direct Proportion.

When two magnitudes vary simultaneously, and in such a manner that any two values whatever of the first have the same ratio as the corresponding values of the second, we say that the magnitudes are *directly proportional* the one to the other; or when two magnitudes are such, that if one of them becomes a certain number of times greater or less, the other becomes the same number of times greater or less, the two magnitudes are said to be *directly proportional.*

Inverse Proportion.

When two magnitudes are such, that if one of them becomes a certain number of times greater or less, the other becomes the same number of times less or greater; these two magnitudes are said to be *inversely proportional.* Thus the time necessary to finish a certain work is inversely proportional to the number of men employed.

RULE OF THREE.

In all such questions the following problem is proposed, namely: *Having given the simultaneous values of two magnitudes which are directly or inversely proportional, to find the value of one of the magnitudes which corresponds to a new given value of the other.* Thus, if 25 yards cost £40, what will 200 yards cost? Here the magnitudes under consideration are, yards bought and money paid. These magnitudes are *supposed* to be directly proportional. The simultaneous values of the two magnitudes are 25 and 40, and the question proposed is to find what the second becomes when the first is changed into 200; the proportion will then be stated:

$$25 \ : \ 200 \ :: \ 40;$$

and we have seen that when the first three terms are given, we find the fourth by dividing the product of the second and third by the first;

$$\text{therefore } \frac{200 \times 40}{25} = 320 = \text{fourth term};$$

that is, if the first magnitude change from 25 to 200, the second will change from 400 to 320.

Example 2.—If 3 lbs. of tea cost 9 shillings, how many lbs. can I purchase for 21 shillings? This will evidently be stated thus:

$$9 \ : \ 21 \ :: \ 3;$$

and the fourth term will be found to be.

$$\frac{21 \times 3}{9} = 7.$$

Example 3.—If 10 men do a work in 8 days, how long will 4 men take to do the same? The magnitudes here are workers and days, and it is evident that they are inversely proportional, for the *greater* number of men will require the *less* number of days to complete the same work. The simultaneous values of the two magnitudes are 10 and 8, and the question proposed is to find what the second magnitude becomes when the first becomes 4; the proportion will then be stated thus:

$$4 \ : \ 10 \ :: \ 8;$$

and the fourth term will evidently be 20. In this way all such questions may be *stated* and wrought out.

The following simple and elegant method of working questions in proportion will be easily understood from the annexed examples; it is called the *unitary* method, for a reason which will be at once apparent. (See Munn's *Theory of Arithmetic.*)

Example 1.—If 25 yards cost £40, what will 200 yards cost? Here we say

£40 = price of 25 yards.

$\therefore \frac{40}{25}$ = " 1 yd.; since 1 yd. is the 25th part of the price of 25 yds.

$\therefore \frac{40 \times 200}{25}$ = " 200 yds.; since price of 200 yds. is 200 times price of 1 yd.

Simplifying this fraction, we have

$$\frac{40 \times \overset{8}{\cancel{200}}}{\underset{5}{\cancel{25}}} = £320 = \text{price of 200 yards.}$$

Example 2.—If 3 lbs. of tea cost 9 shillings, how many lbs. can I purchase for 21 shillings?

3 lbs. = number of lbs. I get for 9 shillings.

$\therefore \frac{3}{9}$ = " " 1 shilling.

$\therefore \frac{3 \times 21}{9}$ = " " 21 shillings.

Or simplifying—

$$\frac{\overset{1}{\cancel{3}} \times 21}{\underset{3}{\cancel{9}}} = 7 = \text{" " 21 shillings.}$$

Example 3.—If 10 men do a work in 8 days, how long will 4 men take to do it?

8 days = time which 10 men take to do the work.

$\therefore 8 \times 10$ = " 1 man takes (since 1 man takes 10 times longer).

$\therefore \frac{8 \times 10}{4}$ = " 4 men take.

Simplifying—

$$\frac{\overset{2}{\cancel{8}} \times 10}{\underset{1}{\cancel{4}}} = 20 \text{ days} = \text{4 men take.}$$

Example 4.—If 5 men build 40 yards in 8 days, how many men will be required to build 120 yards in 12 days?

5 men = number required to build 40 yards in 8 days.

$\frac{5}{40}$ = 1 yard in 8 "

$\frac{5 \times 8}{40}$ = 1 " 1 day.

$\frac{5 \times 8 \times 120}{40}$ = 120 yards in 1 "

$\frac{5 \times 8 \times 120}{40 \times 12}$ = 120 " 12 days.

Or simplifying—

$$\frac{\cancel{5}\times\cancel{8}\times\overset{10}{\cancel{120}}}{\cancel{40}\times\cancel{12}} = 10 = \quad 120 \text{ yards in } 12 \text{ days.}$$

Example 5.—If 16 men earn £45 in 28 days, how much will 20 men earn in 35 days?

£45	= what 16 men earn in 28 days.				
$\therefore \frac{45}{16}$	=	"	1 man earns in 28	"	
$\frac{45}{16\times 28}$	=	"	1	"	1 day.
$\frac{45\times 20}{16\times 28}$	=	"	20 men earn in 1	"	
$\frac{45\times 20\times 35}{16\times 28}$	=	"	20	"	35 days.

Or—

$$\frac{45\times\overset{5}{\cancel{20}}\times\overset{5}{\cancel{35}}}{\underset{4}{\cancel{16}}\times\underset{4}{\cancel{28}}} = \frac{45\times 5\times 5}{16} = £70\tfrac{5}{16}$$

These examples are sufficient to shew how all such questions are wrought, and it may here be remarked, that questions belonging to such rules as *Interest*, *Percentages*, *Profit and Loss*, *Partnership*, *Discount*, *Stocks*, &c. are all treated in a similar manner. For example, let it be required to find the interest of £560 for $4\frac{1}{2}$ years, at $3\frac{1}{4}$ per cent.

Here

$£3\frac{1}{4}$	= interest of £100 for 1 year.				
$\therefore \frac{3\frac{1}{4}}{100}$	=	"	1	1	"
$\frac{3\frac{1}{4}\times 560}{100}$	=	"	560	1	"
$\frac{3\frac{1}{4}\times 560\times 4\frac{1}{2}}{100}$	=	"	560	$4\frac{1}{2}$ years.	

SQUARE ROOT.

When we multiply a number by itself, the product we obtain is said to be the *square* of the original number, and the original number is said to be the *square root* of this product. For example, 15 multiplied by 15 gives 225; then 225 is said to be the *square* of 15, and 15 is the *square root* of 225. Having given a number, then, it is easy to find its square, for we have only to multipy it by itself. It is not so easy, however, to find its square root, and it is important to be able to do so. For example, suppose we wish to find the side of a square which contains 625 square feet; it is here necessary to find the square root of 625. We first set off the figures in pairs (for the square of a single figure never consists of more than two places), and we find that the result contains two figures, that is, that it consists of tens and units. Now, by trial, we see that it lies between 20 and 30, for 20 multiplied by 20 gives 400, and 30 by 30 gives 900. As a first approximation then to the root required, we shall take 20; the square of 20 is 400, this taken from the given number leaves 225. Now, whatever the remaining part of the root is, it may be shewn that *twice* its product by 20 (the part of the root already found) together with its square make up 225; it, therefore, only remains to find a number, that, multiplied by 40, and also by itself, the two products together may make 225. It is evident that this number must be 5, for 40 × 5 is 200, and 5 × 5 is 25, and these together make 225. The several steps in this process will stand as in the margin. But this in practice is somewhat simplified. After finding that the first part of the root is 20, we write it in the result as 2 *tens*—that is, we write the 2 in the *second* place; the square of 20 is 400, which is written under the given number, but without the zeros—that is, the 4 is written under the *hundreds*, then 40 + 5 is written in the divisor as 45, and the product by 5 is written under the remainder 225.

$$\begin{array}{l} 6{\cdot}25(20 \\ 400 \\ \hline 225 \end{array}$$

$$\begin{array}{cc} 40 + 5 & \quad 5 \\ 5 & \\ \hline 200 + 25 & \end{array} \qquad \begin{array}{r|l} & 6{\cdot}25(20 \\ & 400 \\ \hline & 225 \\ & 225 \\ \hline \end{array}$$

$$\begin{array}{r|l} & 6{\cdot}25(25 \\ & 4 \\ \hline 45 & 225 \\ & 225 \\ \hline \end{array} \qquad \begin{array}{r|l} & 5{\cdot}90{\cdot}49(243 \\ & 4 \\ \hline 44 & 190 \\ & 176 \\ \hline 483 & 1449 \\ & 1449 \\ \hline \end{array}$$

Again, to find the square root of 59049. The working will be as is shewn in the above. The method for extracting the cube root is very complicated, and the operation is seldom needed in practical arithmetic. (See Chambers's *Arithmetic*, Educational Course.)

ALGEBRA.

It is evident that the value of all methods of computation lies in their brevity. Algebra must be considered as one of the most important departments of mathematical science, on account of the extreme rapidity and certainty with which it enables us to determine the most involved and intricate questions. The term *algebra* is of Arabic origin. It embodies a method of performing calculations by means of various signs and abbreviations, which are used instead of words and phrases, so that it may be called the system of symbols. Although it is a science of calculation, yet its operations must not be confounded with those of arithmetic. All calculations in arithmetic refer to some particular individual question, whereas those of algebra refer to a whole class of questions. One great advantage in algebra is, that all the steps of any particular course of reasoning are, by means of symbols, placed at once before the eye; so that the mind, being unimpeded in its operations, proceeds uninterruptedly from one step of reasoning to another, until the solution of the question is attained.

SIGNS AND SYMBOLS.

The sign +, which is called *plus*, means that the two quantities between which it is placed are to be *added*. Thus 5 + 3 is read 5 plus 3, and

means that 5 and 3 are added together. The sign —, which is called *minus*, means that the two quantities between which it is placed are to be *subtracted;* thus 5 — 3 is read, 5 minus 3, and means that from 5 3 is to be subtracted. The symbol × is the sign for multiplication, and ÷ for division, while = is the symbol for equality; thus 5 + 3 = 8, is read, 5 plus 3 equals 8. $\sqrt{}$, $\sqrt[3]{}$, $\sqrt[4]{}$, denote respectively the *square root, cube root, fourth root* of the quantity before which they stand, thus $\sqrt{5}$, $\sqrt[3]{5}$, $\sqrt[4]{5}$, mean respectively square root 5, cube root 5, fourth root 5. The letters *a, b, c,* at the beginning of the alphabet, are usually taken to denote *known* quantities; while those at the end, *x, y, z,* are taken to denote *unknown* quantities, or quantities to be found.

ADDITION.

Two quantities in algebra are added by simply putting the sign of addition between them; thus, if we wish to add x and y together, this operation is indicated by $x + y$. Again, if we have to add $2x$, $3x$, $4x$ together, we have as before for their sum $2x + 3x + 4x$; but we can go a step farther here, since $2x + 3x + 4x$ is the same as $9x$, and write the sum as $9x$.

Again, let it be required to add $7x - 3x + 4x + 5x + 6x - 2x$. Here the plus part of this expression is $7x + 4x + 5x + 6x$, or $22x$, and the minus part of it is $-3x - 2x$, or $-5x$, so that the expression is on the whole positive, and equal to $17x$. When like and unlike quantities are mixed together, as in the following example, the like quantities must first be collected together, and the unlike quantities annexed in order:

$$\begin{array}{r} 4x - 3xy + y \\ 2y + 4x - 2xy \\ -xy + 5y + 7x \\ -5y + 4xy - 3x \\ -a + 3b + xy \\ \hline 12x + 3y + 3xy - a + 3b \end{array}$$

SUBTRACTION.

One quantity is subtracted from another by simply writing the sign of subtraction between them; thus, to subtract x from y, we merely write $y - x$. Again, to subtract x from $y + z$, we write $y + z - x$. When the quantity to be subtracted, however, consists of several parts with different signs, some care is necessary, as the process is a little complicated. To explain this, we will do as we do in arithmetic, and write the quantity to be subtracted below the other given quantity. We will first suppose that each quantity consists only of one part. Thus, let it be required to subtract $+b$ from $+a$. Writing these as in the margin; now a is the same as $a - b + b$, then from a we have to take $+b$; instead, however, of taking $+b$ from a, we will take it from $a - b + b$, there therefore remains $a - b$.

$$\begin{array}{r} +a \\ +b \\ \hline a-b \end{array}$$

Again, let it be required to subtract from a the quantity $-b$. As before, a is the same as $a - b + b$, then if from this we take away $-b$, we have $a + b$ left. From these two examples it appears that the sign of the quantity below is changed, and then the two quantities are supposed to be added.

$$\begin{array}{r} +a \\ -b \\ \hline a+b \end{array}$$

As another example, let it be required to subtract $-a + b - c$ from $a - b - c$. Arranging the quantities as here shewn, we see that the result will be $+2a - 2b$, the $-c$ below becoming $+c$, and therefore destroying the $-c$ above.

$$\begin{array}{r} a - b - c \\ -a + b - c \\ \hline +2a - 2b \end{array}$$

Sometimes the subtraction is merely indicated, the part to be subtracted being inclosed within brackets; thus in the expression

$$2a + b - (a - b + c),$$

the part $a - b + c$, which is within the brackets, is understood to be subtracted from $2a + b$. In that case, if the subtraction were performed, $a - b + c$ would be made the under line, and, as before explained, its signs would be changed: bearing this in mind, we may save ourselves the trouble of writing it down in two lines if we take away the brackets, and change the signs of the part inclosed; when we do so, the expression will then become

$$2a + b - a + b - c.$$

Or

$$a + 2b - e.$$

MULTIPLICATION.

The multiplication of two different quantities is performed by merely indicating the process. Thus a multiplied by b is written $a \times b$, or $a \cdot b$, or simply ab. Similarly, a, b, c multiplied together is abc. Again, $2x$ by $3y$ is $6xy$. So also a multiplied by a—that is, by itself—is written aa or a^2. Similarly, $a \times a \times a = a^3$, and $a \times a \times a \times a = a^4$; and these expressions, a^2, a^3, a^4, &c. are read, *a square, a cube, a fourth power.* The numbers 2, 3, and 4 here introduced are called *indices.* Again, a^2 multiplied by a^3 is a^5. Since a^2 means aa, and a^3 means aaa, then, when a^2 and a^3 are multiplied, their product will be $aaaaa$ or a^5. Hence multiplication is performed by adding the indices; thus, $a^3 \times a^3 = a^6$, $a^3 \times a^4 = a^7$. If the quantities which are multiplied together have the same sign, the sign of their product is +. If they have different signs, the sign of their product is —.

Example 1.—Multiply $2x - 3y + 5z$ by $3x - 2y + z$.

$$\begin{array}{r} 2x - 3y + 5z \\ 3x - 2y + z \\ \hline 6x^2 - 9xy + 15xz \\ -4xy + 6y^2 - 10yz \\ 2xz - 3yz + 5z^2 \\ \hline 6x^2 - 13xy + 6y^2 + 17xz - 13yz + 5z^2 \end{array}$$

Example 2.—Multiply $a + b$ by $a + b$.

$$\begin{array}{r} a + b \\ a + b \\ \hline a^2 + ab \\ + ab + b^2 \\ \hline a^2 + 2ab + b^2 \end{array}$$

Example 3.—Multiply $a + b$ by $a - b$.

$$\begin{array}{r} a + b \\ a - b \\ \hline a^2 + ab \\ - ab - b^2 \\ \hline a^2 \quad - b^2 \end{array}$$

The results of the last two examples ought to be remembered, as they are very useful.

DIVISION.

The division of two different quantities is performed by merely indicating the process. Thus, a divided by b is written $a \div b$, or simply $\frac{a}{b}$. Again, $6x$ divided by $3y$ is written $\frac{6x}{3y}$; but as the division of 6 by 3 can actually be performed, this result becomes $\frac{2x}{y}$. Again, a^4 divided by a^2 will be a^2, since a^4 means $aaaa$, and a^2 means aa. Hence division is performed by subtracting the indices, and the signs in division will be the same as in multiplication—that is, like signs in division give $+$; unlike, give $-$. Thus,

$$+ abx^2 \div - ax.$$

Or
$$\frac{abx^2}{-ax} = -bx.$$

Again,
$$\frac{12c^2x^3}{4cx^2} = 3cx.$$

The following example will shew how to divide when the divisor consists of more than one quantity:

$$\begin{array}{l} a+b) \; a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4 \; (a^3 + 3a^2b \\ \quad\; a^4 + a^3b \\ \hline \quad\quad 3a^3b + 6a^2b^2 \\ \quad\quad 3a^3b + 3a^2b^2 \\ \hline \quad\quad\quad 3a^2b^2 + 4ab^3 \\ \quad\quad\quad 3a^2b^2 + 3ab^3 \\ \hline \quad\quad\quad\quad ab^3 + b^4 \\ \quad\quad\quad\quad ab^3 + b^4 \\ \hline \end{array} \qquad + 3ab^2 + b^3$$

FRACTIONS.

The rules regulating the management of fractions in algebra are similar to those in arithmetic.

A mixed quantity is reduced to a fraction by multiplying the whole or integral part by the denominator of the fraction, and annexing the numerator with its proper sign to the product; the former denominator, if placed under this sum, will give the required fraction. Thus the mixed quantity $2x + \frac{5ab}{6e}$ may be thus reduced to a fraction: $2x \times 6e = 12ex$, and as $5ab$ must be added to form the numerator, and the former denominator be retained, the required fraction is the following: $\frac{12ex + 5ab}{6e}$. An operation exactly the reverse of this would of course be requisite were it proposed to reduce a fraction to a mixed quantity. Thus the fraction $\frac{12ex + 5ab}{6e}$ may be reduced to a mixed number by dividing the numerator by the denominator; the numerator of the fractional part must be formed by that term which is not divisible without a remainder; the following is therefore the required mixed quantity: $2x + \frac{5ab}{6e}$. A fraction is reduced to its lowest terms, in algebra as in arithmetic, by dividing the numerator and denominator by any quantity capable of dividing them both without leaving a remainder. Thus, in the fraction $\frac{10a^3 + 20ab + 5a^2}{35a^2}$ it is evident that the coefficient of every term can be divided by 5; and as the letter a enters into every term, $5a$ may be called the greatest common measure of this fraction, because it can divide both the numerator and the denominator. The numerator $(10a^3 + 20ab + 5a^2) \div 5a = 2a^2 + 4b + a$; and the denominator, $35a^2 \div 5a = 7a$; hence the fraction, in its lowest terms, is $\frac{2a^2 + 4b + a}{7a}$.

When two or more fractions are to be added or subtracted, they must, as in arithmetic, be first brought to others having a common denominator. For example, let it be required to add $\frac{3x}{4y}$ and $\frac{2x}{3z}$. We have for their sum $\frac{3x}{4y} + \frac{2x}{3z}$. Taking $12yz$ for the denominator of each, the two fractions will be $\frac{9xz}{12yz}$ and $\frac{8x^2}{12yz}$, and therefore their sum will be $\frac{9xz + 8x^2}{12yz}$. Again, to multiply one fraction by another, we do so by multiplying their numerators together for the numerator of the product, and their denominators together for the denominator of their product. Thus, multiplying $\frac{a}{b}$ by $\frac{c}{d}$, we have for the result $\frac{ac}{bd}$. Then, again, to divide one fraction by another, as in arithmetic we invert the divisor, and proceed as in multiplication.

Involution and Evolution.

The raising of a quantity to any required power is called *involution*, and is performed by successive multiplications; thus $(a + b)$ multiplied by itself gives the *square* or *second* power of $a + b$; this is equal to $a^2 + 2ab + b^2$, and is thus expressed:

$$(a + b)^2 = a^2 + 2ab + b^2.$$

Similarly $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$;

and $(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$.

A theorem discovered by Sir Isaac Newton, named the Binomial Theorem, enables us to write down at once such expressions as the above. The operations of evolution are the inverse of those of involution, and are designed to enable us to discover the *square* root, cube root, &c. of any given quantity. The extraction of the square root of a compound quantity is precisely similar to the method employed for the extraction of the arithmetical square root.

Irrational Quantities, or Surds.

Some numbers have no exact root; for instance, no number multiplied into itself can produce five. The roots of such quantities are expressed by fractional indices, or by the sign $\surd$, which is called the radical sign, from the Latin *radix*, a root; thus the square root of 5, and the cube root of $(a + b)^2$, may be expressed either by $\surd 5$, $\sqrt[3]{(a + b)^2}$, or by $5^{\frac{1}{2}}$, $(a + b)^{\frac{2}{3}}$.

The approximate value of such quantities can be ascertained to any required degree of exactness by the common rules for extracting roots;

thus the square root of 2 is 1 and an indefinite number of decimals; but as the exact value can never be determined, the name of *irrational* is given to such quantities, to distinguish them from all numbers whatever, whether whole or fractional, of which the value can be found, and which are therefore termed *rational*. Irrational numbers are generally called *surds*, from the Latin *surdus*, deaf or senseless.

Equations.

When two quantities are equal to each other, the algebraical expression denoting their equality is called an *equation*. Thus $x - 2 = 4 + 3$ is an equation denoting that if 2 be deducted from some unknown quantity represented by x, the remainder will be equal to $4 + 3$, that is, to 7; therefore the value of x in this equation is evidently $7 + 2$, or 9.

The doctrine of equations constitutes by far the most important part of algebra, it being one of the principal objects of mathematics to reduce all questions to the form of equations, and then to ascertain the value of the unknown quantities by means of their relations to other quantities of which the value is known.

When the unknown quantity x appears in the equation only in the first power, the equation is said to be a *simple* one. When x appears in the second power, the equation is a *quadratic*; and when x appears in the third power, the equation is *cubic*.

One side of an equation remains equal to the other:

1. After the same quantity is added to both. Thus if $A = B$, then $A + m = B + m$.

2. After the same quantity is subtracted from both. Thus if $A = B$, then $A - m = B - m$.

3. After both sides have been multiplied by the same number. Thus $A = B$, then $mA = mB$.

4. After both sides have been divided by the same number. Thus if $A = B$, then

$$\frac{A}{m} = \frac{B}{m}.$$

5. After both sides have been raised to the same power. Thus if $A = B$, then

$$A^2 = B^2.$$

6. After the extraction of the same root of both sides. Thus if $A = B$, then $\sqrt{A} = \sqrt{B}$.

Solution of a Simple Equation with one Unknown Quantity.

Example 1.—Solve the equation $3x - 5 = 2x + 1$.

In the first place, I get the xs all on one side, and arrange it so that nothing but xs will appear on this side. Now, for this purpose, I subtract $2x$ from both sides; we then have

$$3x - 2x - 5 = 1.$$

I next add 5 to both sides, and get

$$3x - 2x = 1 + 5,$$

or $x = 6$, which is the solution of the given equation.

Example 2.—Solve the equation $x - 5 = \frac{x}{3} + 3$.

Here I multiply both sides by 3; there results then $3x - 15 = x + 9$.

Subtract x from both sides:

$$\therefore 3x - x - 15 = 9.$$

Add 15 to both sides:

$$\therefore 3x - x = 9 + 15;$$
$$\therefore 2x = 24.$$

Divide both sides by 2:

$$\therefore x = 12.$$

Solution of an Equation with two Unknown Quantities.

When two unknown quantities are to be determined, we must have two separate and independent equations; this is evident, for if we wish to know, for example, what two numbers added together make 20, we have evidently as many pairs as we please.

Example.—Solve the equations

$$\left.\begin{aligned} 3x + 2y &= 22 \\ 4x - y &= 11 \end{aligned}\right\}$$

Here, if we multiply the second equation by 2, we get

$$8x - 2y = 22.$$

If this last equation be added to the first, we have

$$11x = 44;$$
$$\therefore x = 4.$$

Substituting this value of x in either of the given equations, say the first, we have

$$12 + 2y = 22,$$
$$2y = 10,$$
$$y = 5;$$
$$\therefore x = 4, y = 5, \text{ is the solution.}$$

In a similar manner we can find x, y, and z from a system of three equations between these three unknowns.

Solution of a Quadratic Equation.

First, if the unknown quantity x appears only in the second power, the equation may be solved for x^2 in the same way as we solved for x; it will then reduce to an equation, having x^2 on the one side and a number or given quantity on the other side; as, for example,

$$x^2 = \pm 16;$$
$$\therefore x = \pm 4,$$

x being obtained by extracting the square root of both sides.

Again, suppose x appears in the equation both in the second power and also in the first power, as in the following example: Solve the equation $x^2 - 12x = -35$. We should proceed to extract the square root of both sides, but we see at once that the left-hand side of the equation is not an exact square; and hence, before solving, we must complete the square, and this we do by adding 36 to it; for this reason, that in a complete square the third term is always the square of half the coefficient or multiplier of x in the second term, which is here 12; but if we add 36 to the one side, we must also add 36 to the other. We then have

$$x^2 - 12x + 36 = -35 + 36.$$

Or $$x^2 - 12x + 36 = 1.$$

Taking the square root of both sides, we have

$$x - 6 = \pm 1;$$
$$\therefore x = \pm 1 + 6,$$
$$= 7 \text{ or } 5.$$

Hence $x = 7$, or 5, which is the required solution.

GEOMETRY.

GEOMETRY (from two Greek words signifying the *earth* and *to measure*) is that branch of mathematical science which is devoted to the consideration of form and size, and may therefore be said to be the best and surest guide to the study of all sciences in which ideas of dimension or space are involved. Almost all the knowledge required by navigators, architects, surveyors, engineers, and opticians, in their respective occupations, is deduced from geometry and other branches of mathematics. All works of art are constructed according to the rules which geometry involves; and we find the same laws observed in the works of nature. The study of mathematics, generally, is also of great importance in cultivating habits of exact reasoning; and in this respect it forms a useful auxiliary to logic.

It has been frequently asserted, though apparently with little foundation, that geometry was first cultivated in Egypt, in reference to the measurement of the land. Thales of Miletus, who lived about 600 B.C., is among the first concerning whose attainments in mathematical knowledge we have any authentic information. Plato made several important discoveries in mathematics, which he considered the chief of sciences. A celebrated school, in which great improvement was made in geometry, was established about 300 B.C. To this school the celebrated Euclid belonged. In modern times, Kepler, Galileo, Tacquet, Pascal, Descartes, Huygens of Holland, our own Newton, Maclaurin, Lagrange, and many others, have enlarged the bounds of mathematical science, and have brought it to bear upon subjects which, in former ages, were considered to be beyond the grasp of the human mind.

As improved by the labours of mathematicians, geometrical science now includes the following leading departments: Plane Geometry, Solid and Spherical Geometry, Spherical Trigonometry, the Projections of the Sphere, Perpendicular Projection, Linear Perspective, and Conic Sections. But to these main branches of the science there are added Practical Mathematics, which may be defined as an elaboration of the abstract doctrines of general mathematics in application to many matters of a practical nature in the business of life. For example, among the branches of Practical Mathematics we find Practical Geometry, Trigonometry, Measurement of Heights and Distances, Levelling, Mensuration of Surfaces, Mensuration of Solids, Land-surveying, Calculations of Strength of Materials, Gauging, Projectiles, Fortification, Astronomical Problems, Navigation, Dialling, &c.

It is proposed, in this and the following number, to treat of Plane and Solid Geometry, and to give the reader some insight into the Mensuration of Lines, Surfaces, and Volumes, and some of the more important constructions in Practical Geometry.

The truths or propositions of geometry are not discovered by experience like those of physical science, but are proved or deduced from certain definitions and axioms, the truth of which is at once admitted. The usual text-book of this science in Britain has long been the well-known elements of Euclid; but in the following pages, which contain all the leading propositions in geometry, an attempt has been made to present the demonstrations in a somewhat simpler form than those of Euclid, and at the same time to preserve all the rigour and completeness demanded by the present state of the science.

PLANE GEOMETRY.

DEFINITIONS.

A *solid* is a limited portion of space.

A *surface* is the boundary of a solid, or that which separates it from surrounding space.

A *line* is the limit or boundary of a surface.

A *point* is the limit of a line.

A solid has extension in all directions; but for the purpose of measuring its magnitude, it is considered as having three dimensions, called *length*, *breadth*, and *thickness*.

A surface has only two dimensions—namely, length and breadth.

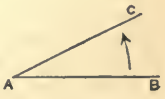
A line has only one dimension—namely, length. The intersection of two surfaces is a line.

A point has no extension, and has therefore neither length, breadth, nor thickness. The intersection of two lines is a point.

If two lines be such that they cannot coincide in two points without coinciding altogether, each is said to be a *straight* line. Hence it follows that only one straight line can pass through the same two points, or a straight line is determined in position by two points through which it passes. It follows also that two straight lines cannot inclose a surface.

A *plane surface*, or a plane, is that in which, any two points being taken, the line which joins them lies wholly in that surface.

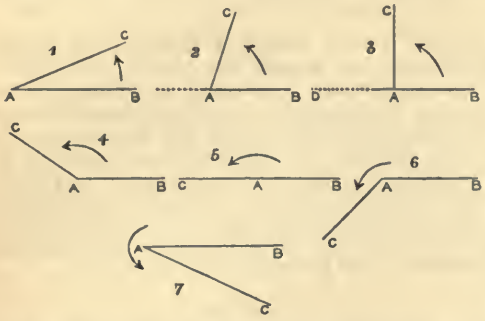
A *plane rectilineal angle* is formed by two straight lines meeting at a point. Thus the two lines AB and AC, meeting at A, form the angle BAC, or the angle CAB. The angle may be regarded as the amount of opening between any two positions of a straight line considered as moving always in the same plane round a fixed point. Thus the opening between the two positions AB and AC of the same line moving round A as on a pivot, is the angle A, or the angle BAC, or CAB; the angle being named by a letter placed at the vertex, or by three letters, that at the vertex being between the two others.



When the line AC, in revolving round A, arrives at the position indicated in fig. 3, and such that the angle CAB is equal to the angle CAD, each of

these angles is called a *right angle*, and the line AC is in that position said to be *perpendicular*, or at *right angles* to AB.

When AC, in revolving round A, arrives at the position indicated in fig. 5, and such that it forms



one continuous line with AB, the angle thus formed is said to be an angle of *two right angles*.

An angle which is *less* than a right angle is said to be *acute*, as in figs. 1 and 2.

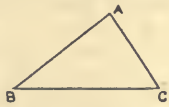
An angle which is *greater* than a right angle is said to be *obtuse*, as in fig. 4.

An angle greater than two right angles is said to be *reflex*, as in figs. 6 and 7.

A *figure* is a portion of space inclosed by one or more boundaries.

A *plane figure* is inclosed by one or more lines.

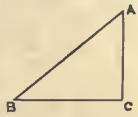
A *triangle* is a plane figure inclosed by three lines; thus ABC is a triangle, the lines AB, AC, BC are called its sides; and any one of these sides, with reference to the other two, is termed the *base*.



If the sides of the triangle are all equal, it is said to be *equilateral*.

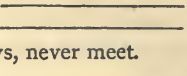
If two sides are equal, the triangle is said to be *isosceles*.

If one angle, as C, of a triangle, ABC, be a right angle, the triangle is said to be *right-angled*, and the side AB, which is opposite the right angle, is called the *hypotenuse;* and if one angle be obtuse, it is an *obtuse-angled triangle.*



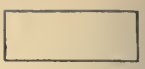
A *quadrilateral* is a figure of four sides, and a *polygon* of several; when the sides and angles of a polygon are equal, it is said to be a *regular* polygon.

Parallel lines are lines in the same plane, which, being produced ever so far both ways, never meet.



A *parallelogram* is a four-sided figure, whose opposite sides are parallel.

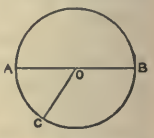
A *rectangle* is a parallelogram, having one of its angles a right angle.



A *square* is a rectangle, having its adjacent sides equal, or a four-sided figure having its sides equal, and each of its angles a right angle.

A *circle* is a plane figure contained by one line called the circumference, and is such that all straight lines drawn from a certain point within it to the circumference are equal to one another. This point is called the *centre.*

The *circumference* of a circle may be defined as the line traced out by a point which moves in such a manner that its distance from a fixed point is always the same.



An *arc* of a circle is any portion of the circumference.

A *chord* is the line joining any two points on the circumference.

A *diameter* is a chord which passes through the centre, as AB.

A *radius* is a line drawn from the centre to the circumference, as OC.

A *segment* of a circle is the figure contained by an arc and its chord.

A *semicircle* is a segment whose chord is a diameter.

POSTULATES.

Let it be granted,

1. That a straight line may be drawn from one point to another.
2. That a terminated straight line may be produced or continued any length.
3. That a circle may be described with any radius, and hence that a length equal to a given length may be cut from a given line.

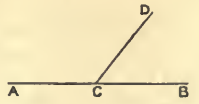
AXIOMS.

1. Things which are equal to the same thing are equal to one another.
2. If equals be added to equals, the wholes are equal.
3. If equals be taken from equals, the remainders are equal.
4. If equals be added to unequals, the wholes are unequal.
5. If equals be taken from unequals, the remainders are unequal.
6. Things which are double of the same are equal.
7. Things which are halves of the same are equal.
8. Magnitudes which exactly coincide—that is, which exactly fill the same space—are equal.
9. The whole is greater than any part of it.
10. All right angles are equal.
11. Lines which intersect cannot be parallel to the same line.

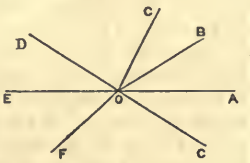
ANGLES.

PROPOSITION I.—*The angles which one straight line makes with another upon the same side of it are together equal to two right angles.*

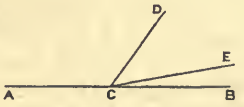
Let the straight line CD make with AB upon one side of it the two angles ACD, BCD; these two angles are together equal to two right angles. Since AC and CB are in one line, ACB is an angle of two right angles, but the two angles ACD, BCD taken together make up this angle; hence the two angles ACD, BCD are together equal to two right angles.



Corollary.—All the angles which can be made round any point O are together equal to four right angles. For, produce the line AO through O to E; then all the angles AOB, BOC, COD, DOE are together equal to two right angles. Similarly, the angles on the other side of AE are together equal to two right angles, therefore all the angles round O are together equal to four right angles.



Conversely, if the two angles ACD, BCD together make up two right angles, AC, CB are in one line. For if CB be not the continuation of AC, let CE be its continuation. Then since ACE is a straight line, the two angles ACD, ECD make two right angles; but ACD, BCD are also equal to two right angles, therefore the one pair is equal to the other; and if ACD be taken from both, we have the angle DCE equal to DCB, which is absurd, therefore CB must be the continuation of AC.



PROP. II.—*If two lines cut each other, the vertical or opposite angles are equal.*

Let AB and CD cut each other in O; it is required to prove that the angle AOC is equal to the angle BOD, or the angle COB equal to angle AOD. Since CO makes with AB the two angles AOC, COB on the same side of it, these are together equal to two right angles. Similarly, the two COB, BOD are equal to two right angles, therefore the one pair is equal to the other; and if COB be taken from both, we have the angle AOC equal to the angle BOD.

PROP. III.—*If one side of a triangle be produced:*

(1.) *The exterior angle is equal to the two interior remote angles.*

(2.) *The exterior angle is greater than either of the interior remote angles.*

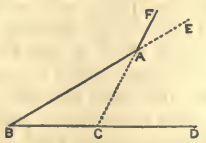
(3.) *The three interior angles are together equal to two right angles.*

Let ABC be a triangle, having the side BC produced to D: to prove

(1.) That the two angles ABC, BAC are together equal to the exterior angle ACD.

(2.) That ACD is greater than each separately.

(3.) That the three interior angles of the triangle taken together make up two right angles.



(1.) Suppose the line BA or BE to have originally coincided with BD, and to have attained its present position by revolving about B. Conceive the line BE to be now broken as it were at A, and that the part AE revolves about the point A, into the position AF; and let FA be produced to C. The angle EBD or ABC measures the opening or divergence between BE and its original position. But the part AF diverges still farther from the original position by the angle EAF. Therefore AF diverges from BD, by the two angles ABC and EAF, or BAC, which is equal to EAF (Prop. II.). But the divergence or opening between FA or FC and BD is the angle ACD; therefore the angle ACD is equal to the two angles ABC, BAC taken together.

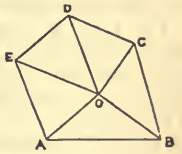
(2.) Hence the exterior angle is greater than either taken separately.

(3.) Since the exterior angle ACD is equal to the two interior angles ABC, BAC, if ACB be added to each, we have the two ACD, ACB together equal to the three ABC, BAC, ACB. But the two ACD, ACB make up two right angles, therefore the three ABC, BAC, ACB also make two right angles.

Cor. 1.—Any two angles of a triangle are together less than two right angles.

Cor. 2.—The interior angles of any rectilineal figure are equal to twice as many right angles as the figure has sides less four.

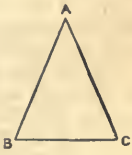
Let ABCDE be a figure, say of *five* sides; to prove that the interior angles taken together make up *six* right angles. Take any point O within the figure. Join O with each of the angles. We thus divide the figure into as many triangles as the figure has sides, that is, into five, and the angles of each triangle make up two right angles, hence all the angles of the triangles are equal to ten right angles; but these angles include those round O, which are four right angles, therefore the angles of the figure make up *six* right angles.



THE TRIANGLE.

PROP. IV.—*The angles at the base of an isosceles triangle are equal to each other.*

Let ABC be an isosceles triangle, having the side AB equal to the side AC; it is required to prove that the angle ACB is equal to the angle ABC. For if the triangle ABC be lifted up, turned round, and placed upon its old position, so that A lies on A, and so that AC lies on the former position of AB, then AB shall lie on the former position of AC; and as AC is equal to AB, the point C shall lie on B, and the point B on C, and the line CB shall lie on its former position, and therefore the angle ACB shall be equal to the angle ABC.



Cor. 1.—If the equal sides be produced, the angles on the other side are also equal.

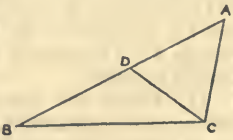
Cor. 2.—If a triangle be equilateral, it is also equiangular.

The converse of Prop. IV.—namely, that, *if two angles of a triangle be equal to each other, the sides opposite to them are also equal*—is proved by supposing the triangle turned over and laid on its former position. The learner should try to work out the demonstration for himself.

Cor.—If a triangle be equiangular, it is also equilateral.

PROP. V.—*If two sides of a triangle be unequal, the greater side has the greater angle opposite to it, or the less side has the less angle opposite to it.*

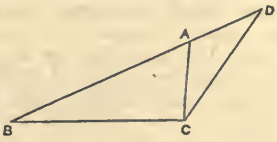
Let ABC be a triangle, having the side AB greater than the side AC; it is required to prove that the angle ACB, which is opposite to AB, is greater than the angle ABC, which is opposite to AC. From AB cut off the part AD equal to AC. Join DC. Then in the isosceles triangle ADC we have the angle ACD equal to the angle ADC; but the exterior angle ADC is greater than the angle at B, therefore the angle ACD is also greater than the angle at B; much greater, then, will the angle ACB be than the angle ABC.



The converse of Prop. V. is, that, *if two angles of a triangle be unequal, the greater angle has the greater side opposite to it.* This is proved by shewing that a contradiction would follow from supposing it not to be true.

PROP. VI.—*Any two sides of a triangle taken together are greater than the third side.*

Let ABC be a triangle; it is required to prove that the two sides AB and AC taken together are greater than the third side BC. Produce AB through A to D, making AD equal to AC. Join DC. Then since the triangle ACD is isosceles, we have the angle ACD equal to the angle ADC, therefore the whole angle BCD is greater than the angle at D; therefore the side BD is greater than the side BC. But BD is equal to BA and AC together, therefore BA and AC together are greater than BC.



EQUALITY OF TRIANGLES.

PROP. VII.—*Two triangles are equal in every respect:*

(1.) If two sides and the angle between them in the one triangle be respectively equal to two sides and the angle between them in the other.

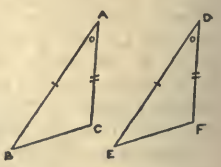
(2.) If two angles and the side between them in the one triangle be respectively equal to two angles and the side between them in the other.

(3.) If the three sides of the one be equal to the three sides of the other.

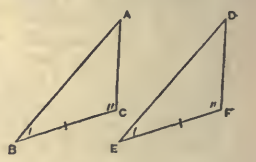
(4.) If two angles of the one be equal to two angles of the other, and a side opposite one of these angles in the one triangle be equal to a side opposite the equal angle in the other.

(5.) If two sides of the one be equal to two sides of the other, and an angle opposite one of these sides in the one triangle be equal to an angle opposite to the equal side in the other, the angles opposite the other equal sides being either both acute or both obtuse.

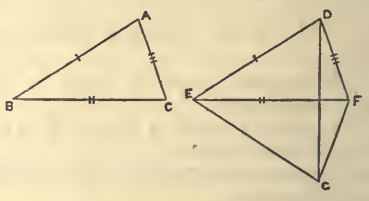
(1.) Let ABC, DEF be two triangles, having the side AB in the one equal to the side DE in the other, and the side AC equal to DF, and the angle at A equal to the angle at D; it is required to prove that the two triangles are equal in every respect. For if the triangle ABC be applied to the triangle DEF, so that A lies on D, and so that AB lies along DE, then B shall lie on E, since AB is equal to DE; and AB being on DE, AC shall be on DF, since the angle at A is equal to the angle at D; and the point C shall lie on F, since AC is equal to DF. But B lies on E, and C on F, therefore the line BC shall lie on EF, and be equal to it, and the one triangle shall exactly coincide with the other, and be equal to it in every respect; that is, the two triangles shall be equal in area, and the angle at B shall be equal to the angle at E, and the angle at C to the angle at F.



(2.) Let ABC, DEF be two triangles, having the angle B equal to the angle E, and the angle C equal to the angle F, and the side BC equal to the side EF; it is required to prove that the triangles are equal in every respect. For if the triangle ABC be applied to DEF, so that B lies on E, and BC on EF, then the point C shall lie on F; and BC lying along EF, BA shall lie along ED, since the angle B is equal to the angle E; and CA shall lie on FD, since the angle C is equal to the angle F; and the point A, which lies both on AB and on AC, shall lie both on DE and on DF; that is, it must lie on D, the only point common to both. Hence the triangles are equal in every respect.

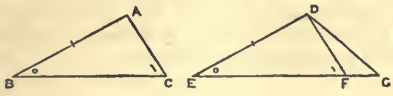


(3.) Let ABC and DEF be two triangles, having the three sides of the one equal respectively to the three sides of the other; it is required to prove that the triangles are equal in every respect. For if the triangle ABC be applied to DEF, so that B shall lie on E, and BC on EF, then C shall lie on F, since BC is equal to EF, and let the triangle ABC take the position GEF. Join DG. Since ED equals EG, the angle EGD equals the angle EDG (Prop. IV.); and since FD equals FG, the angle FGD equals the angle FDG, therefore the whole angle EGF equals the whole angle EDF; that is, the angle BAC is equal to the angle EDF; then in the two triangles ABC, DEF, we have two sides in the one equal to two sides in the other, and the contained angles equal; therefore, by the first



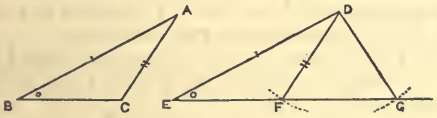
case of this proposition, the triangles are equal in every respect.

(4.) Let ABC, DEF be two triangles, having the two angles B and C in the one triangle equal respectively to the two E and F in the other, and the side AB in the one equal to the corresponding side DE in the other; it is required to prove that



the two triangles are equal in every respect. For if ABC be applied to DEF, so that A lies on D, and AB along DE, then B shall lie on E, because AB is equal to DE, and BC shall lie on EF, because the angle ABC is equal to the angle DEF, and C shall lie on F; for, if it do not, let it lie at G in EF produced, then GD will be the position of AC, and DGE will represent the angle ACB, and be equal to angle DFE; but DFE is greater than DGE, since it is the exterior angle, therefore the point C must lie on F, and hence the triangles must be equal in every respect.

(5.) Let ABC, DEF be two triangles, having the two sides AB, AC in the one triangle equal respectively to the two sides DE, DF in the other, and the angle B in the one equal to the corresponding angle E in the other, the remaining angles C and F being each greater or each less than a right angle; it is required to prove that the triangles are equal in every respect. For if

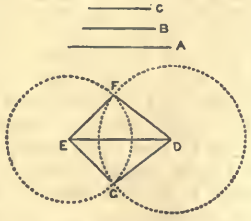


the triangle ABC be applied to DEF, so that A may lie on D, and AB on DE, then B shall lie on E, for AB is equal to DE; and angle B being equal to angle E, BC shall lie along EF, and C shall lie on F; for if it does not, it can only lie at one other point G, in EF, since only two equal lines can be drawn from D to the line EF. But the point C cannot lie at G, since the two angles ACB, DFE are supposed to be both acute or both obtuse; hence the point C must lie on F, and therefore the two triangles are equal in every respect.

CONSTRUCTIONS (I.).

(1.) *To describe a triangle of which the three sides are equal to three given lines.*

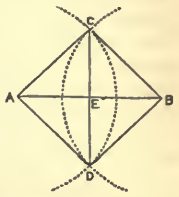
Let A, B, and C be the three given lines. Take DE equal to A, and from D as centre, with radius equal to B, describe a circle; and from E as centre, with radius equal to C, describe a circle. Let the two circles cut each other in F and G. Join DF, EF; then DFE will evidently be the triangle required, so also will DGE. The problem is evidently impossible (Prop. VI.), when



any two of the sides together are not greater than the third side. It follows that an isosceles triangle may be described upon a given line. Also that an equilateral triangle may be described upon a given line.

(2.) *To bisect a given line.*

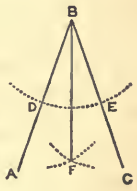
Let AB be a given line; it is required to bisect it. From A and B as centres, and with the same length as radius, describe two circles which cut each other in C and D. Join CD, and let this line cut AB in E. E is the middle of AB. Join AC, BC, AD, and BD. Because, in the two triangles ACD and BCD, we have AC in the one equal to BC in the other, AD in the one equal to BD in the other, and CD common to both triangles; therefore (Prop. VII. 3) the angle ACE is equal to the angle BCE. Again, in the two triangles ACE, BCE, we have the side AC equal to BC and CE common, and the contained angle ACE in the one equal to the contained angle BCE in the other; therefore (Prop. VII. 1) the side AE is equal to the side BE, and AB is bisected in E.



Cor.—Hence a line may be divided into four, eight, sixteen, &c. equal parts.

(3.) *To bisect a given angle.*

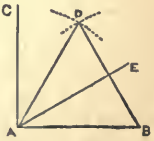
Let ABC be the given angle which it is required to bisect. From B as centre, describe an arc cutting BA in D, and BC in E. From D and E as centres, and with the same length as radius, describe two arcs cutting in F. The line which joins B and F bisects the angle at B. For, in the two triangles BDF, BEF, we have the three sides of the one equal to the three sides of the other, and (Prop. VII. 3) the angle DBF is equal to the angle EFB; hence BF bisects the angle at B.



Cor. 1.—Hence an angle may be divided into four, eight, sixteen, &c. equal parts.

Cor. 2.—The right angle may be divided into *three* equal parts.

Let CAB be a right angle; it is required to divide it into three equal parts. On AB, one of its sides, describe the equilateral triangle ADB; then each angle of this triangle is one-third of two right angles (Prop. III. 3), or two-thirds of one right angle, therefore the angle CAD is one-third of a right angle. Let the angle DAB be bisected by the line AE; then the right angle CAB is divided into three equal parts by the two lines AD, AE.



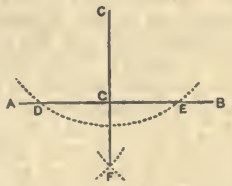
(4.) *From a given point, to draw a line perpendicular to a given line.*

Let C be the given point, and AB the given line; it is required to draw from the point C a line perpendicular to AB.

First, If the point C be situated *on* the given line. This is the same as bisecting the angle ACB, and the construction of the preceding proposition

will give the required line. For from C as centre, with any radius, describe an arc cutting AB in D and E. Then from D and E as centres, with the same length as radius, describe two arcs cutting in F. Join FC. Then FC bisects the angle ACB, or it is perpendicular to AB.

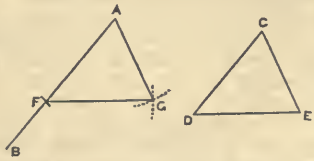
Second, If the point C be situated *not* on the given line. From C as centre, describe a circle cutting AB in D and E. Then from D and E as centres, with the same length as radius, describe two arcs cutting in F. Join FC. FC is perpendicular to AB; for it is evident that the angle CGD is equal to the angle CGE, and these are adjacent angles; therefore each is a right angle, and CG is perpendicular to AB.



Cor.—It is evident that only *one* perpendicular can be drawn from a given point to a given line, whether the point is on the line or without it.

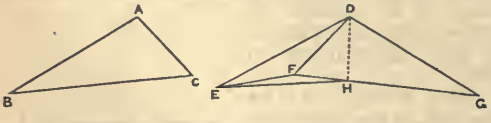
(5.) *At a given point in a given line, to make an angle equal to a given angle.*

Let A be the given point, AB the given line, and C the given angle; it is required to make an angle at A equal to the given angle C. In CD and CE, the lines containing the given angle take any points D and E. Join DE. From AB cut off AF equal to CD. From A as centre, with radius equal to CE, describe an arc; from F as centre, with radius equal to DE, describe an arc. Let these arcs meet in G. Join AG. Then the angle which has been thus formed at A, is equal to the angle at C.



PROP. VIII.—*If two triangles have two sides of the one equal to two sides of the other, but the contained angles unequal, the base of that which has the greater angle is greater than the base of the other.*

Let ABC, DEF be two triangles, having AB in the one equal to DE in the other, and AC in the one equal to DF in the other, but the angle BAC greater than the angle EDF; it is required to prove that the base BC is greater than the base EF; for if the triangle ABC be lifted up, and applied to DEF, so that A lies on D, and AC on DF, then C shall lie on F, for AC is equal to DF. Let DG be the position of AB, then BC shall take the position FG, and it is required to prove that FG is greater than EF. Bisect the angle EDG by the line DH. Join EH. Then in the two triangles EDH, GDH, we have two sides and



the contained angle in the one equal to two sides and the contained angle in the other, therefore the base EH of the one is equal to GH of the other.

Add FH to each of these, then we have EH and HF together equal to GF; but EH and HF are greater than EF, therefore FG is greater than EF; but FG is the same as BC, therefore BC is greater than EF.

Conversely, *if two triangles have two sides of the one equal to two sides of the other, but their bases unequal, the angle contained by the two sides of that which has the greater base is greater than the angle contained by the two sides of the other.* This is proved by supposing it *not* true, and shewing that a contradiction follows.

PARALLEL LINES.

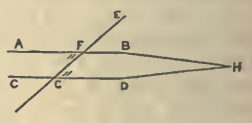
PROP. IX.—*Two straight lines are parallel when a line intersecting them makes:*

(1.) The alternate angles equal.

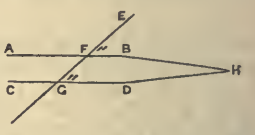
(2.) The exterior angle equal to the interior, and remote on the same side.

(3.) The two interior angles on the same side equal to two right angles.

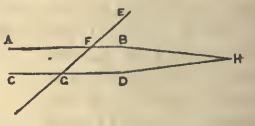
(1.) Let AB and CD be two lines intersected by a third line EG, making the alternate angle AFG equal to the alternate angle FGD; it is required to prove that AB is parallel to CD. If AB and CD be not parallel, let them meet in H. Then HFG will be a triangle, and the exterior angle AFG will be greater than the interior remote angle FGD; but by hypothesis these angles are equal. They are therefore equal and unequal, which is absurd; therefore AB and CD do not meet—that is, they are parallel.



(2.) Let AB and CD be two lines intersected by EF, making the exterior angle EFB equal to the interior angle FGD; it is required to prove that AB is parallel to CD. If AB and CD be not parallel, let them meet in H. Then HFG will be a triangle, and the exterior angle EFB will be greater than the interior angle FGD; but by hypothesis these angles are equal. They are therefore equal and unequal, which is absurd; therefore AB and CD do not meet—that is, they are parallel.



(3.) Let AB and CD be two lines, and EG another line intersecting them, and making the two angles BFG, FGD together equal to two right angles; it is required to prove that AB and CD are parallel. If AB and CD be not parallel, let them meet in H. Then HFG will be a triangle, and any two of its angles HFG, FGH will be together less than two right angles; but by hypothesis they are together equal to two right angles. They are therefore together equal to two right angles, and together less than two right angles, which is absurd; therefore AB and CD do not meet if produced—that is, they are parallel.



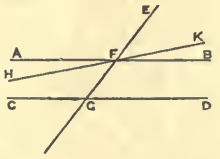
Conversely, *if a line intersect two parallel lines:*

(1.) *The alternate angles are equal.*

(2.) *The exterior angle is equal to the interior and remote angle.*

(3.) *The two interior angles are together equal to two right angles.*

(1.) Let AB and CD be two parallel lines intersected by the line EG; it is required to prove that the angle AFG is equal to the alternate angle FGD. If these angles are not equal, at the point F in the line FG, make the angle HFG equal to the angle FGD. Then since these angles are equal, the two lines HK, CD are parallel; but AB is parallel to CD by hypothesis, therefore AB and HK, two intersecting lines, are parallel to the same line, which is absurd; therefore the angle AFG must be equal to the angle FGD.



(2.) Since AFG is equal to FGD, and AFG also equal to EFB; therefore EFB is equal to FGD.

(3.) To each of the equal angles AFG, FGD add the angle BFG, then we have the two angles AFG, BFG equal to the two BFG, FGD; but AFG, BFG make two right angles, therefore BFG, FGD also make two right angles.

Cor.—It follows at once that lines which are parallel to the same line are parallel to each other; for if they are not parallel, they must meet. Then through the same point we shall have two lines drawn parallel to the same line, which is absurd.

THE PARALLELOGRAM.

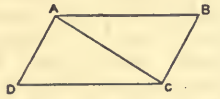
PROP. X.—*In a parallelogram:*

(1.) *The opposite sides are equal.*

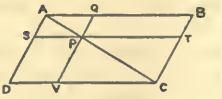
(2.) *The opposite angles are equal.*

(3.) *Each diagonal bisects the figure.*

Let ABCD be a parallelogram; it is required to prove that its opposite sides AB and CD are equal, also that AD and BC are equal; the angle A equal to the angle C, the angle B equal to the angle D, and the triangle ABC equal to the triangle ADC. In the two triangles ABC and ADC we have two angles BAC, ACB in the one equal respectively to the two ACD, DAC in the other (Prop. IX.), and the side AC common to both; therefore (Prop. VII. 4) the triangles are equal in every respect—that is, AB is equal to DC, BC to AD, the angle B equal to the angle D, and the triangle ABC equal in area to ADC.



Cor.—If through a point P in the diagonal of a parallelogram lines be drawn parallel to the sides, of the four parallelograms thus formed, those through which the diagonal does not pass, and which are called the complements, are equal.



Since the triangle ABC is equal to ADC, ASP to AQP, PVC to PTC; therefore SV equals PB.

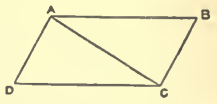
Conversely, *a four-sided figure is a parallelogram:*

(1.) *If the opposite sides are equal.*

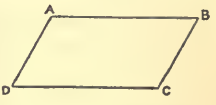
(2.) *If the opposite angles are equal.*

(3.) *If two opposite sides are both equal and parallel.*

(1.) If AB equals CD, and AD equals BC. Join AC. Then we have two triangles ABC, ADC having the three sides of the one equal to the three sides of the other, and therefore (Prop. VII. 3) their angles are equal—namely, angle BAC equal to angle ACD; but these are alternate angles, therefore (Prop. IX. 1) AB is parallel to CD; and the angle ACB equals the angle CAD, therefore AD is parallel to CB. The figure is consequently a parallelogram.



(2.) If the opposite angles are equal—namely, angle BAD equal to angle BCD, and angle ABC equal to angle ADC. Since the four angles of the figure together make up four right angles, angle B and angle C together make two right angles; therefore (Prop. IX. 3) AB and CD are parallel. Again, angle D and angle C together make two right angles, therefore AD and BC are parallel; therefore ABCD is a parallelogram.



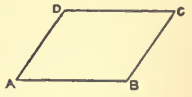
(3.) The learner will readily demonstrate this for himself.

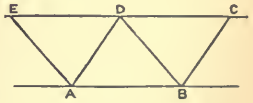
PROP. XI.—*Parallelograms are equal in area:*

(1.) *If they are on the same base, and between the same parallels.*

(2.) *If they are on equal bases, and between the same parallels.*

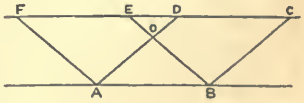
(1.) Let ABCD be a parallelogram; it is equal in area to another which stands on the same base AB and between the same parallels.



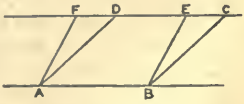


First, Let the two parallelograms ABCD, ABDE stand as in the figure. Then each of them is double of the triangle ABD, and consequently equal to each other.

Second, Let ABCD, ABEF stand as in the figure, then (Prop. VII. 1) the triangles BEC, AFD are equal in area. Take away the common part EOD, and there remains the four-sided figure DOBC equal to the four-sided figure EOAF. Add AOB to each; therefore the parallelogram ABCD is equal to the parallelogram ABEF.

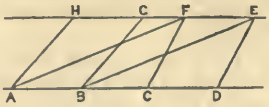


Third, Let ABCD, ABEF stand as in the figure, then (Prop. VII. 1) the triangles BEC, ADF are equal in area. Add to each the four-sided figure ABED, and we have ABCD equal to ABEF.

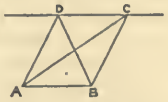


(2.) The parallelograms ABGH, CDEF are equal, if they stand upon the equal bases AB and

CD, and between the same parallels AD and HE. Join AF, BE. Then the figure ABEF is a parallelogram, since its opposite sides AB and FE are both equal and parallel (Prop. X.); and the parallelogram ABEF is equal to the parallelogram ABGH, since they stand on the same base and between the same parallels. It is also equal to CDEF; therefore ABGH is equal to CDEF.

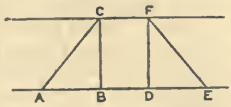


Cor. 1.—Triangles upon the same base, and between the same parallels, are equal.



Let ABC and ABD be two triangles on the same base AB, and between the same parallels AB and CD; then they are equal, being halves of equal parallelograms.

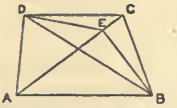
Cor. 2.—Triangles upon equal bases, and between the same parallels, are equal.



Let ABC, DEF be two triangles on the equal bases AB, DE, and between the same parallels AE and CF; then they are equal, being halves of equal parallelograms.

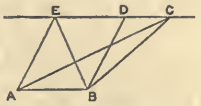
Conversely, *equal triangles upon the same side of equal bases are between the same parallels.*

Let ABC, ABD be equal triangles upon the same side of the same base AB, then they are between the same parallels—that is, DC is parallel to AB. If DC be not parallel to AB, draw DE parallel. Join EB. Then the two triangles ADB, AEB are equal. But ADB is equal to ACB, therefore AEB is equal to ACB, which is absurd; therefore DE cannot be parallel to AB, and no other line than DC through D can be.



Cor. 3.—If a parallelogram and triangle be upon the same base, and between the same parallels, the parallelogram is double of the triangle.

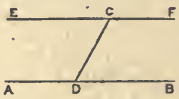
Let ABC be a triangle, and ABDE a parallelogram on the same base AB, and between the same parallels. The parallelogram is double of the triangle. Join BE. Then the two triangles ABE, ABC are equal, being on the same base, and between the same parallels; but ABDE is double of ABE, therefore ABDE is also double of the triangle ABC.



CONSTRUCTIONS (II.).

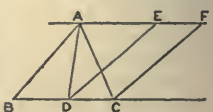
(1.) *Through a given point to draw a line parallel to a given line.*

Let AB be the given line, C the given point; it is required to draw through C a line parallel to AB. Take any point, D in AB, and join CD. At the point C, in the line CD, make the angle ECD equal to the angle CDB: then EC will be parallel to AB, since these are two lines intersected by a third, CD, making the alternate angles equal.



(2.) *To transform a triangle into a parallelogram having an angle equal to a given angle.*

Let ABC be the given triangle, which it is required to transform into a parallelogram, having one of its angles equal to a given angle. Bisect the base BC in D. Join AD. Then the whole triangle ABC is double of the triangle ADC. At the point D in DC make the angle CDE equal to the given angle, and through C draw CF parallel to ED; through A draw AEF parallel to BC, then DCFE is a parallelogram, and it is double of the triangle ADC (Prop. XI. Cor. 3); but ABC is also double of this triangle, therefore EDCF is equal to ABC, and has an angle equal to a given angle.



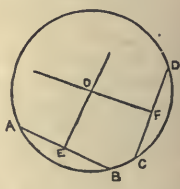
THE CIRCLE.

The Chord and Tangent.

PROP. XII.—*The line which bisects a chord at right angles passes through the centre of the circle.*

Let AB be any chord, having C for its middle point. If a line CQ be drawn through C perpendicular to AB, it passes through the centre. For if the centre be not in this line, let it be any point P. Join PA, PC, PB. Then in the two triangles PAC, PBC we have PA equal to PB, AC equal to CB, and PC common; therefore (Prop. VII. 3) the angle PCA is equal to the angle PCB, therefore each is a right angle. But QCB is a right angle, therefore QCB is equal to PCB, which is absurd; therefore the centre of the circle lies on the line QC.

Hence to find the centre of the circle. Draw any two chords AB, CD, which are not parallel. Bisect each of these chords, and through the points of bisection, E and F, draw lines at right angles to AB and CD; these lines will each pass through the centre, and therefore the centre will be their point of intersection.

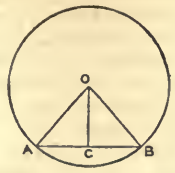


Conversely, (1.) *A line drawn from the centre perpendicular to a chord bisects it.*

(2.) *A line drawn from the centre to the middle of a chord is perpendicular to the chord.*

(1.) If the line OC, drawn from the centre O perpendicular to the chord AB, meets it in C; it is required to prove that C is the middle of AB. In the two triangles ACO, BCO we have the two angles ACO, OAC (Prop. IV.) in the one equal to the two BCO, OBC in the other, and the side OC is common to both; therefore their other sides are equal—namely, AC to CB; therefore C is the middle of AB.

(2.) If the line OC be drawn from the centre to C, the middle point of AB, OC shall be perpendicular to AB. Join OA, OB. In the two triangles OCA, OCB we have the three sides of the one equal to the three sides of the other, therefore (Prop. VII. 3) their angles are equal—namely, the angle ACO to the angle BCO; but these are adjacent angles, therefore OC is perpendicular to AB.



Definition.—A tangent to the circle is a chord which cuts it in two points infinitely near each other, and either of these points is called the point of contact.

Hence it follows from the above:

(1.) That the line which is drawn from the point of contact perpendicular to the tangent passes through the centre.

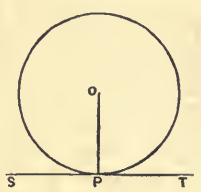
(2.) A line drawn from the centre perpendicular to the tangent passes through the point of contact.

(3.) A line drawn from the centre to the point of contact is perpendicular to the tangent.

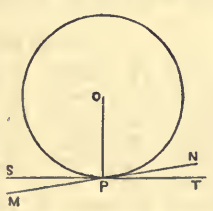
CONSTRUCTIONS (III.).

(1.) *Through a given point to draw a tangent to the circle.*

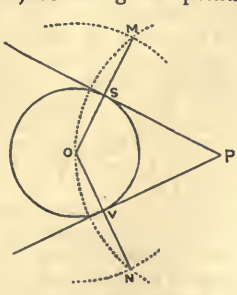
(*a.*) If the given point be *on* the circumference. Let P be the given point through which it is required to draw a tangent to the circle. Join P with O the centre, and through P draw SPT perpendicular to OP. ST is evidently the tangent required.



There can only be *one* tangent drawn through the point P; for if there could be another, let it be MN. Then since MN is a tangent, the angle OPN is a right angle; but the angle OPT is also a right angle, therefore the angle OPN is equal to the angle OPT, which is absurd. Hence, when the point is on the circumference of the circle, there can only be *one* tangent drawn through it to the circle.



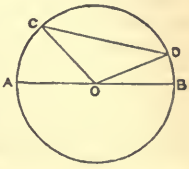
(*b.*) If the given point be *without* the circumference. Let P, as before, be the given point. From P as centre, with radius equal to PO, describe a circle; and from O as centre, with radius equal to the diameter of the given circle, describe another circle cutting the circle whose centre is P in M and N. Join OM and ON, and let these lines cut the given circle in S and V. Join PS and PV. The lines PS and PV are lines drawn from P touching the given circle. This is evident, for the lines OM and ON are bisected in S and V, and these points are joined with P, the centre of the circle; therefore each of the angles PSO, PVO is a right angle, therefore PS and PV are tangents.



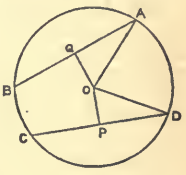
PROP. XIII.—(1.) *The diameter is the greatest chord in a circle.*

(2.) *Of others, those are equal which are equally distant from the centre, and conversely.*

(1.) Let AB be the diameter of a circle whose centre is O; it is required to prove that it is greater than a chord CD, which is not a diameter. Join CO, DO. Then the two sides CO and DO are together greater than CD (Prop. VI.); but CO and DO are equal to the diameter AB, therefore AB is greater than CD.



(2.) Let AB and CD be two chords which are equally distant from the centre—that is, such that the perpendiculars OQ and OP upon them from the centre are equal; it is easily proved (Prop. VII. 5) that AQ is equal to PD, and therefore the doubles of these, or AB and CD, are also equal.

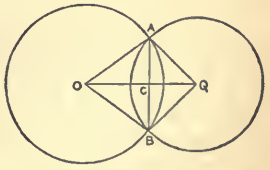


The converse proposition is evident.

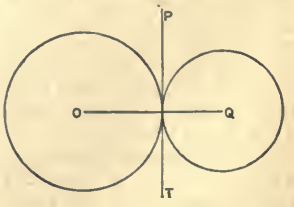
Intersection and Contact of two Circles.

PROP. XIV.—*If two circles intersect each other, the line which joins their centres bisects perpendicularly their common chord.*

Let the two circles whose centres are O and Q intersect in A and B; it is required to prove that the line which joins O and Q bisects the line AB at right angles. Join O and Q with A and B. Comparing the two triangles AOQ, BOQ we have the three sides in the one triangle equal to the three sides in the other, therefore (Prop. VII. 3) the angle AOQ is equal to the angle BOQ. Again, comparing the two triangles AOC, BOC we have the two sides AO, OC in the one equal to the two sides BO, OC in the other, and the contained angle AOC equal to the contained angle BOC, therefore (Prop. VII. 1) the side AC is equal to the side BC, and the angle ACO is equal to the angle BCO; but these are adjacent angles, therefore each is a right angle, and OQ is perpendicular to AB.

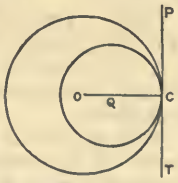


Cor.—If the circle O remain fixed, and the circle Q be supposed drawn outwards, so that the points of intersection A and B gradually approach each other and ultimately coincide, the common chord becomes the common *tangent*, and the middle point C of this



chord becomes the point of contact, and the circles touch each other externally.

Again, if the circle O remain fixed, and the circle Q be supposed to be drawn inwards, the points of intersection A and B will ultimately coincide. The common chord will become the common tangent, and the middle point of this chord the point of contact, and the circles will touch each other internally. Hence, *if two circles touch each other either internally or externally, the line which joins their centres passes through the point of contact.*



Arcs and Angles.

PROP. XV.—*The angle at the centre of a circle is double of the angle at the circumference standing on the same arc.*

Let AOB (fig. 1) be an angle at the centre of the circle standing upon the arc AB, and let ACB be an angle at the circumference standing on the same arc; it is required to prove that the angle AOB is double of the angle ACB. Join CO, and produce it to S. Then in the triangle OCA we have the exterior angle AOS equal to the two angles OCA, OAC; but these angles are equal, therefore the exterior angle AOS is double of the angle ACO. Similarly, the exterior angle BOS of the triangle BOC is double of the angle BCO, therefore the whole angle AOB at the centre is double of the whole angle ACB.

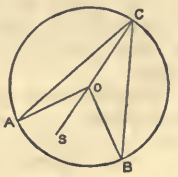


Fig. 1.

Similarly (fig. 2), it can be shewn that the exterior angle SOB is double of the angle OCB, and the part SOA is double of the part OCA; therefore the remaining angle AOB is double of the remaining angle ACB.

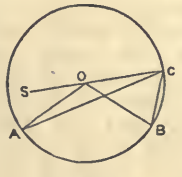
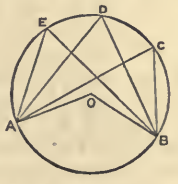
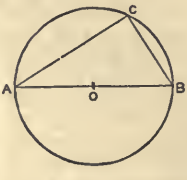


Fig. 2.

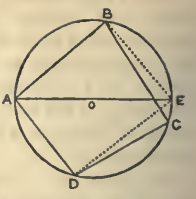
It follows from this (1.) That the angles ACB, ADB, AEB, &c. at the circumference standing on the same arc AB are equal to each other; for each of these angles is *half* of the angle AOB at the centre on the same arc.



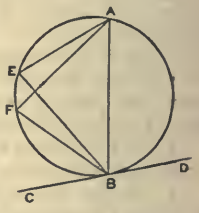
(2.) That the angle ACB at the circumference, which has a semicircle for its arc, is a right angle; for if the arc AB be a semicircle, AO and OB are in one line, and the angle AOB at the centre is an angle of two right angles; therefore the angle ACB is one right angle.



(3.) That the opposite angles ABC, ADC of a four-sided figure inscribed in the circle are together equal to two right angles; for, drawing the diameter AE, it is evident that the angle ABC falls short of a right angle by the angle EBC, and that the angle ADC exceeds a right angle by the angle EDC; but EBC and EDC are equal, being angles at the circumference on the same arc EC, therefore the angle ABC falls short of a right angle by as much as the angle ADC exceeds the right angle; therefore the two angles ABC, ADC together are equal to two right angles.

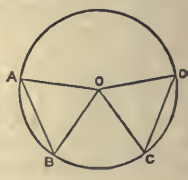


(4.) That the angle ABD, between the chord AB and the tangent BD at the point B, is equal to any angle E in the alternate segment. For the angles AEB, AFB, &c. are all equal; and when the point E approaches B, and ultimately coincides with it, AE becomes AB, and EB becomes the tangent BD, and the angle at E becomes the angle ABD.



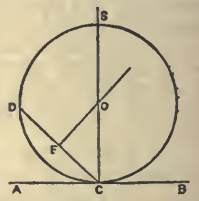
PROP. XVI.—*Equal arcs have equal chords, and conversely.*

Let AB and CD be two equal arcs; it is required to prove that the chord AB is equal to the chord CD. Since the arc AB is equal to the arc CD, the angle AOB is equal to the angle COD, for the arc is the measure of the angle. Then comparing the two triangles AOB, COD we have two sides of the one equal to two sides of the other, and the contained angles equal; therefore the base AB is equal to the base CD. The converse proposition is evident.

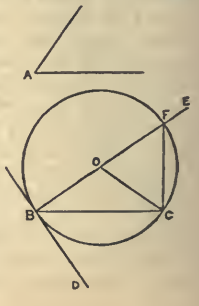


CONSTRUCTIONS (IV.).

(1.) *To describe a circle touching a given line in a given point, and passing through a given point.* Let AB be the given line, C the given point in it, and D the point through which the circle passes. From C draw a line CS perpendicular to AB—the centre of the circle lies in this line. Join CD. Bisect it in E, and through E draw EO perpendicular to CD—the centre of the circle is in this line also; therefore it must be at O their common point. Hence, from O as centre, with radius equal to OC, describe a circle. This circle passes through C and D, and AB touches it.

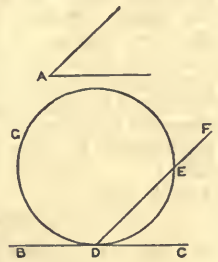


(2.) *On a given line to describe a segment of a circle containing an angle equal to a given angle.* Let A be the given angle, BC the given line; it is required to describe on BC a seg-



ment containing an angle equal to the angle A. At the point B in BC make the angle CBD equal to the given angle; describe a circle touching BD in B, and passing through the point C, then the segment BFC is that which is required (Prop. XV. 4).

(3.) *From a given circle to cut off a segment containing an angle equal to a given angle.* Let A be the given angle; it is required to cut off a segment from the given circle which shall contain an angle equal to this angle. Take any point D on the circumference, and through it draw a tangent to the circle; at the point D in BC make the angle FDC equal to the given angle, the segment EGD is that which is required (Prop. XV. 4).

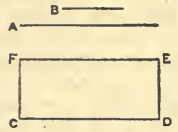


THE RECTANGLE, SQUARE, AREAS, &c.

CONSTRUCTION (V.).

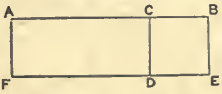
(1.) *To describe a rectangle whose two adjacent sides shall be equal to two given lines.*

Take a line CD equal to A. Through D draw DE perpendicular to CD, and make DE equal to B. Through E draw EF parallel to CD, and through C draw CF parallel to ED. Then CDEF is the rectangle required. The rectangle CDEF is said to be contained by its two adjacent sides. Hence on a given line we can describe a square.



Definition.—The projection of a point upon a line is the foot of the perpendicular drawn from the point to the line, and the projection of one line upon another is the portion of the latter intercepted by the perpendiculars upon it from the extremities of the former.

PROP. XVII.—*If a line be divided into two parts, the rectangle contained by the two parts, together with the square of one of the parts, is equal to the rectangle contained by the whole line and that part.*



If the line AB be divided into two parts in C; it is required to prove that the rectangle

$$AC \cdot CB + CB^2 = AB \cdot BC.$$

From C draw CD perpendicular to AB, making it equal to CB, and complete the rectangle. The figure CE will be the square on CB. Then the figures

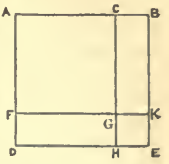
$$AD + CE = AE,$$

or

$$AC \cdot CB + CB^2 = AB \cdot BC.$$

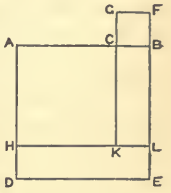
PROP. XVIII.—*If a straight line be divided into any two parts, the square upon the whole line is equal to the squares upon each of the parts, together with twice the rectangle contained by the parts.*

Let AB be divided into two parts in C. To prove that the square described on AB is equal to the square upon AC, and the square on CB, and twice the rectangle contained by AC and CB. On AB describe the square AE, on AC the square AG. Produce FG and CG to meet BE and DE in K and H; then GE is evidently the square on CB. Now the whole figure AE is made up of AG, GE, FH, and BG—that is, the square on AB is equal to the square on AC and the square on CB, and twice the rectangle $AC \cdot CB$.



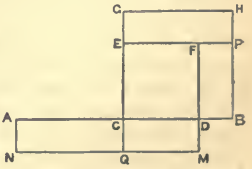
PROP. XIX.—*If a straight line be divided into any two parts, the square upon the whole line, together with the square upon one of the parts, is equal to twice the rectangle contained by the whole line and that part, together with the square upon the other part.*

Let AB be divided into two parts in C. To prove that the square on AB, together with the square on BC, is equal to the square on AC, together with twice the rectangle contained by AB and BC. On AC describe the square AK; and on CB the square CF; CK and CG will evidently be in one line. Produce HK to meet BE in L. The figure AE, together with GB, is made up of AK, HE, and GL. But AE is the square of AB, GB is the square of CB, AK the square on AC, HE is equal to GL, and each is the rectangle contained by AB and BC; therefore the square on AB, together with the square on CB, is equal to twice the rectangle contained by AB and BC, together with the square on AC.



PROP. XX.—*If a line be divided equally, and unequally, the rectangle contained by the unequal parts, together with the square of the parts between the points of section, is equal to the square of half the line.*

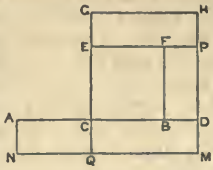
Let AB be divided equally in C, and unequally in D. To prove that $AD \cdot DB + CD^2 = CB^2$. Form the rectangle AD · DB. Let this be AM. On CD describe the square CF, and on CB the square CH. Produce EF to P, and EC to Q. Then AQ equals EH, CM equals FB, therefore AM equals GP and FB taken together—that is, the rectangle AM is equal to GP and FB together. Add to these CF, which is the square of CD. Then the rectangle $AD \cdot DB + CD^2 = CB^2$.



PROP. XXI.—*If a line be divided equally and produced to any point, the rectangle contained by the whole line thus produced and the part produced, together with the square of half the line, is equal to the square upon the line made up of the half and the part produced.*

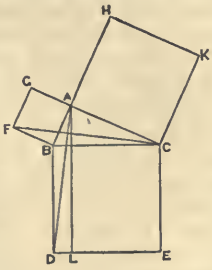
Let AB be bisected in C, and produced to D. To prove that $AD \cdot DB + CB^2 = CD^2$. Form the

rectangle AD · DB. Let this be AM. On CB and CD describe the squares CF and CH. Produce EF and EC to meet HM and NM respectively in P and Q. Then AQ equals BP, CM equals GP; therefore AM equals GP and BP taken together. Add to these CF, which is the square on CB, then AD · DB + $CB^2 = CD^2$. Hence it follows that the difference of two squares is a rectangle, one of whose sides is the sum of the sides of the two squares, and the other is their difference.



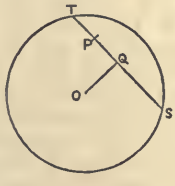
PROP. XXII.—*In a right-angled triangle, the square on the side opposite the right angle is equal to the sum of the squares described on the sides containing it.*

Let ABC be a right-angled triangle, having the angle at A a right angle; it is required to prove that the square on BC is equal to the square on BA, together with the square on AC. On the sides BC, BA, AC describe the squares BE, BG, and AK. Join AD and FC, and through A draw AL parallel to BD. Then it is evident that the two triangles ABD, FBC are equal, as they have two sides in the one equal to two in the other, and also the contained angles equal; their doubles must therefore be equal—that is (Prop. XI. Cor. 3), BL must be equal to GB. In a similar manner it may be shewn that CL is equal to AK; therefore the whole square BE is equal to the two squares BG and CH taken together.



PROP. XXIII.—*If through a point in the plane of a circle a line be drawn to cut the circumference, the rectangle contained by the two distances of the fixed point from the points of intersection is always the same, however the line may be drawn.*

(1.) If the point P be *within* the circumference. Through P draw any line SPT, cutting the circumference in S and T; it is required to prove that the rectangle SP · PT is always the same, however the line may be drawn. From the centre O draw the line OQ perpendicular to the chord ST, which it will bisect (Prop. XII.). Then since the chord is bisected in Q, and divided unequally in P, we have (Prop. XX.)



$$SP \cdot PT + PQ^2 = QT^2.$$

Add to each OQ^2;

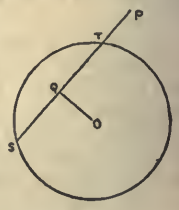
$$\therefore SP \cdot PT + PQ^2 + OQ^2 = QT^2 + OQ^2,$$

or SP · PT + (Prop. XXII.) OP^2 = (Prop. XXII.) $(\text{radius})^2$;

$$\therefore SP \cdot PT = (\text{radius})^2 - OP^2.$$

Now OP is the distance of the point from the centre; and since the point is fixed, this cannot vary, and the radius of the circle does not vary; hence the rectangle SP · PT is always the same, however the line through P may be drawn.

(2.) If the point P be *without* the circumference. Through P draw any line cutting the circle in S and T; it is required to prove that the rectangle SP · PT is always the same, however the line may be drawn. From the centre O draw the line OQ perpendicular to ST, which it will bisect (Prop. XII.). Then since ST is bisected in Q, and produced to P, we have (Prop. XXI.)



$$SP \cdot PT + TQ^2 = PQ^2.$$

Add to each OQ^2;

$$\therefore SP \cdot PT + TQ^2 + OQ^2 = PQ^2 + OQ^2,$$

or $SP \cdot PT + (\text{radius})^2 = OP^2$ (Prop. XXII.);

$$\therefore SP \cdot PT = OP^2 - (\text{radius})^2.$$

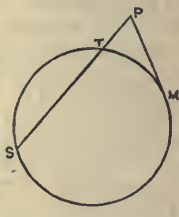
But, as before, since the point is fixed, its distance from the centre cannot vary; hence the rectangle SP · PT is always the same, however the line through P may be drawn.

Cor.—If from P the tangent PM be drawn, it follows that

$$SP \cdot PT = PM \cdot PM,$$

or $SP \cdot PT = PM^2$;

or that, if from a point without the circumference a line be drawn cutting the circumference, and another touching it, the rectangle by the whole line cutting the circumference and the part without it is equal to the square of the line touching the circumference.

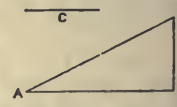


Conversely, it may be shewn that if SP · PT = PM^2, PM will be a tangent to the circle.

CONSTRUCTIONS (VI.).

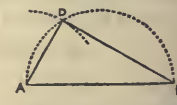
(1.) *To describe a square equal to the sum of two squares.*

Let AB and C be the sides of the two given squares. From the extremity of AB draw a line BD perpendicular to it and equal to C. Join AD. Then the square on AD is equal to the sum of the squares on AB and C (Prop. XXII.).



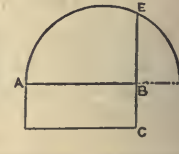
(2.) *To describe a square equal to the difference of two squares.*

Let AB and C be the sides of the given squares. On AB describe a semicircle. In this semicircle inscribe a chord AD equal to C. Join BD. Since (Prop. XV. 2) ADB is a right angle, the square on BD is evidently equal to the difference of the squares on AB and C.



(3.) *To describe a square equal to a given rectangle.*

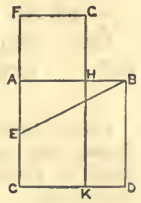
Let AC be the given rectangle; it is required to describe a square which shall be equal to it. Produce AB to D, making BD equal to BC, and on AD as diameter describe a semicircle. Produce CB to meet the circumference in E. Then the



square on EB will be equal to the given rectangle, for (Prop. XXIII. 1) $AB \cdot BD = EB^2$.

(4.) *To divide a line into two parts, so that the rectangle contained by the whole line and one of the parts may be equal to the square of the other part.*

Let AB be the given line; it is required to divide it into two parts in H, so that $AB \cdot BH = AH^2$. On AB describe the square AD. Bisect AC in E. Join EB, and produce EA to F, making EF equal to EB. Upon AF describe the square FH. H is the point required. For (Prop. XXI.)



$$CF \cdot FA + AE^2 = EF^2$$
$$= EB^2$$
$$= AE^2 + AB^2 \text{ (Prop. XXII.)};$$
$$\therefore CF \cdot FA = AB^2.$$

Take away the common part AK, and we have

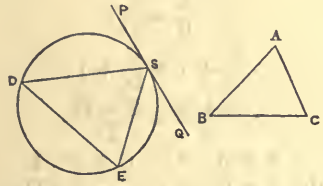
$$HD = AH^2,$$

or

$$AB \cdot BH = AH^2.$$

(5.) *In a given circle to inscribe a triangle equiangular to a given triangle.*

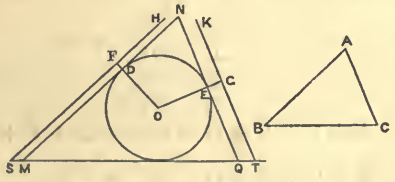
Let ABC be the given triangle; it is required to inscribe within the given circle SDE a triangle equiangular to ABC. Take any point S on the



circumference, through it draw a tangent PQ; at S in the line PQ, make the angle QSE equal to B, and PSD equal to C. Join DE. Then (Prop. XV. 4) SDE is evidently the triangle required.

(6.) *About a given circle to describe a triangle equiangular to a given triangle.*

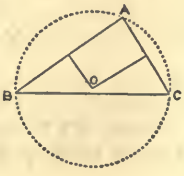
Draw any tangent to the circle. At any point S in this line make the angle TSH equal to the angle B, and at any point T make the angle STK



equal to C. If the lines SH, TK touch the circle, the thing is done; but if they do not, from the centre O draw OF and OG perpendicular to SH and TK, meeting the circle in D and E. Through D and E draw tangents NM and NQ. Then (Prop. IX.) NMQ is the triangle required.

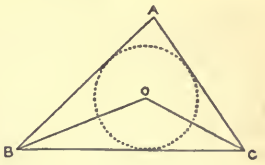
(7.) *To describe a circle about a given triangle.*

Bisect the sides AB and AC, and through the points of intersection draw perpendiculars to these sides. Let these perpendiculars meet in O. Then (Prop. XII.) O is the centre of the circle circumscribing the triangle.



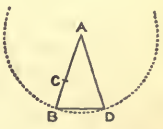
(8.) *To inscribe a circle within a triangle.*

Bisect the angles B and C by the lines BO and CO, meeting in O. Then O is the centre of the circle inscribed within the triangle.



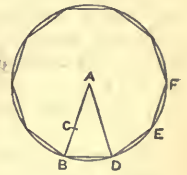
(9.) *To describe an isosceles triangle, having each of the angles at the base double of the vertical angle.*

Take any line AB, divide it into two parts in C, so that $AB \cdot BC$ may be equal to the square of AC. From A as centre, with AB as radius, describe a circle, and in this circle place the chord BD equal to AC. Join AD. Then ABD is the isosceles triangle required. The demonstration of this is rather long and complex; the student may exercise his ingenuity in finding it out for himself. To do so, he must join CD, and describe a circle about the triangle ACD. The truth of it being in the meantime taken for granted, it is manifest that the angle at A is one-fifth of two right angles, or one-tenth of *four*. Hence ten such angles may be put round the point A, and BD will be the side of a regular decagon within the circle.



(10.) *To inscribe a regular decagon within a circle.*

Take the radius AB, divide it in C, as in the last problem, and inscribe the chords BD, DE, EF, &c. each equal to AC, and the thing is done.

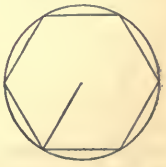


(11.) *To inscribe a regular pentagon within a circle.*

Inscribe the regular decagon, and join the alternate vertices.

(12.) *To inscribe a regular hexagon within the circle.*

Inscribe a chord equal to the radius; this is evidently the side of a regular hexagon.



RATIO—PROPORTION.

Definition 1.—The first of four magnitudes is said to have to the second the *same ratio* which the third has to the fourth; when, if the first be divided into any number whatever of equal parts, and the third be divided into the same number of equal parts, the second contains the same integral number of the former parts as the fourth does of the latter.

Definition 2.—Magnitudes which have the same ratio are called *proportionals*.

If there are four magnitudes, A, B, C, D, which are proportionals, it is thus expressed:

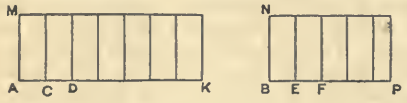
$$A : B :: C : D,$$

and is read A to B as C to D.

Euclid's test of proportion is the following: The first of four magnitudes is said to have the same ratio to the second which the third has to the fourth, when any equimultiples whatever of the first and third being taken, and any equimultiples whatever of the second and fourth; if the multiple of the first be equal to that of the second, then the multiple of the third is equal to that of the fourth; if greater, greater; and if less, less.

PROP. XXIV.—*Straight lines have to one another the same ratio as rectangles of equal altitude described upon them.*

Let AK, BP be the two lines, MK and NP two rectangles described on them of the same altitude. Then the ratio of AK to BP is the same as the ratio of MK to NP. Let AK be divided into any number whatever of equal parts AC, CD, &c.,



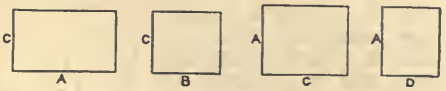
then MK will be divided into the same number of equal rectangles. If also from BP parts BE, EF, &c., each equal to AC, be laid off till there is no remainder, or a remainder less than AC, and lines be drawn through E and F parallel to BN, then NP will contain the same integral number of parts each equal to MC as BP does of parts equal to AC;

$\therefore$ AK has the same ratio to BP that MK has to NP.

Cor.—In a similar manner it may be shewn that straight lines have to one another the same ratio as parallelograms or triangles of equal altitude described upon them.

PROP. XXV.—*If four straight lines are proportional, the rectangle contained by the extremes is equal to the rectangle contained by the means.*

Let the four straight lines A, B, C, D be proportional, then $A \cdot D = B \cdot C$. On A and B con-



struct rectangles, of which C shall be the altitude of each. On C and D construct rectangles, of which A shall be the altitude of each.

Then $A : B ::$ rect. AC : rect. BC.

But $A : B :: C : D$;

$\therefore$ rect. AC : rect. BC :: C : D.

But $C : D ::$ rect. AC : rect. AD;

$\therefore$ rect. AC : rect. BC :: rect. AC : AD;

$\therefore$ rect. BC = rect. AD.

Hence, if $A : B :: C : D$,

$$AD = BC.$$

Conversely, if A, B, C, D be four straight lines such that AD = BC.

Then $A : B :: C : D$.

The same construction being made.

Since $AD = BC$;

$\therefore$ rect. AC : rect. BC :: rect. AC : rect. AD.

But rect. AC : rect. BC :: A : B,

and rect. AC : rect. AD :: C : D;

$\therefore A : B :: C : D$.

Cor.—Hence if three straight lines be proportional, the rectangle contained by the first and third is equal to the square of the mean, and conversely.

PROP. XXVI.—If $A : B :: C : D$.

It follows (1.) That $A : C :: B : D$;

for $AD = BC$.

then $A : C :: B : D$.

(2.) Similarly, that $B : A :: D : C$.

PROP. XXVII.—If $A : B :: C : D$,

$$A + B : B :: C + D : D,$$

and $$A - B : B :: C - D : D.$$

For $AD = BC$,

or $$\frac{A}{B} = \frac{C}{D};$$

$$\therefore \frac{A}{B} + 1 = \frac{C}{D} + 1;$$

$$\therefore \frac{A+B}{B} = \frac{C+D}{D};$$

$\therefore A + B : B :: C + D : D$.

Similarly, $A - B : B :: C - D : D$;

$\therefore A + B : A - B :: C + D : C - D$.

PROP. XXVIII.—If $A : B :: C : D :: E : F : G : H$,

or if $$\frac{A}{B} = \frac{C}{D} = \frac{E}{B} = \frac{G}{H},$$

then $$\frac{A+C+E+G}{B+D+F+H} = \frac{A}{B}.$$

For let $\frac{A}{B} = \frac{C}{D} = \frac{E}{F} = \frac{G}{H} = K$;

$$\therefore A = BK,$$
$$C = DK,$$
$$E = FK,$$
$$G = HK;$$

$$\therefore A + C + E + G = K(B + D + F + H);$$

$$\therefore \frac{A+C+E+G}{B+D+F+H} = K = \frac{A}{B} = \frac{C}{D} = \&c.$$

PROP. XXIX.—If $A : B :: B : C$,

then $A : C :: A^2 : B^2$.

For $$\frac{A}{B} = \frac{B}{C};$$

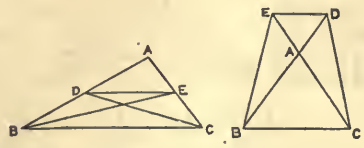
$$\therefore \frac{A}{BC} = \frac{B}{C^2},$$

or $$\frac{A}{C} = \frac{B^2}{C^2} = \frac{A^2}{B^2}.$$

PROP. XXX.—*If a straight line be drawn parallel to one of the sides of a triangle, it divides*

the other sides, or the other sides produced proportionally, and conversely.

Let ABC be a triangle, and let DE be drawn parallel to the side BC, meeting AB and AC, or



those sides produced in D and E; it is required to prove that

$$\frac{AD}{DB} = \frac{AE}{EC}.$$

Join BE and CD. Then since the two triangles BDE, ADE have the same altitude, they are to each other as their bases,

$$\text{or} \qquad \frac{BDE}{ADE} = \frac{BD}{DA}.$$

$$\text{Similarly,} \qquad \frac{DEC}{ADE} = \frac{CE}{EA}.$$

But DEC and BDE are equal, being on the same base, and between the same parallels;

$$\therefore \frac{BD}{DA} = \frac{CE}{EA},$$

$$\text{or} \qquad \frac{AD}{DB} = \frac{AE}{EC},$$

$$\text{or} \qquad \frac{BD \pm DA}{DA} = \frac{CE \pm EA}{EA},$$

$$\text{or} \qquad \frac{BA}{AD} = \frac{CA}{AE}.$$

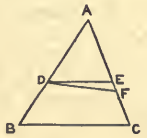
$$\text{Conversely, if} \qquad \frac{BD}{DA} = \frac{CE}{EA},$$

to prove that DE is parallel to BC. If DE is not parallel to BC, draw DF parallel to BC;

$$\text{then} \qquad \frac{BD}{DA} = \frac{CF}{FA}.$$

$$\text{But} \qquad \frac{BD}{DA} = \frac{CE}{EA};$$

$$\therefore \frac{CF}{FA} = \frac{CE}{EA},$$



which is absurd; therefore DE is parallel to BC.

Definition.—Rectilineal figures are similar when they are equiangular, and have also the sides about the equal angles proportional.

SIMILARITY OF TRIANGLES.

PROP. XXXI.—*Two triangles are similar:*

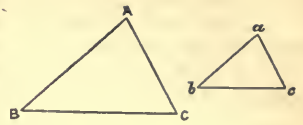
(1.) If two angles of the one be equal to two angles of the other.

(2.) If the sides about two angles in the one be proportional to the sides about two angles in the other.

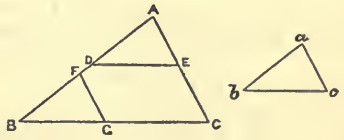
(3.) If an angle of the one be equal to an angle of the other, and the sides about the same angles be proportional.

(4.) If an angle of the one be equal to an angle of the other, and the sides about two other angles be proportional, the remaining angles being each either less or greater than a right angle.

Let ABC and *abc* be two triangles; it is required to prove that they are similar:



(1.) If angle A equal to angle *a*, angle B equal to angle *b*; it is required to prove that the triangles are similar—that is, that they are *equiangular, and have the sides about the equal angles proportional.* They are equiangular, for the remaining angle C in the one is equal to the remaining angle *c* in the other; they have also the sides about the equal angles proportional. For if the triangle *abc* be applied to ABC, so that



a may lie on A, and *ab* on AB, then *ac* shall lie on AC, since angle A is equal to angle *a*.

Let ADE be the new position of *abc*, then since angle ADE is equal to angle ABC, DE (Prop. IX.) is parallel to BC; hence

$$\frac{AB}{AD} = \frac{AC}{AE},$$

$$\text{or} \qquad \frac{AB}{ab} = \frac{AC}{ac}.$$

Similarly, by applying the triangle *abc* to ABC, so that *b* lies on B, and *ba* on BA, we have

$$\frac{AB}{ab} = \frac{BC}{bc};$$

$$\therefore \frac{AB}{ab} = \frac{AC}{ac} = \frac{BC}{bc}.$$

Therefore the sides about the equal angles are proportional, and it was proved that the triangles are equiangular; hence they are similar.

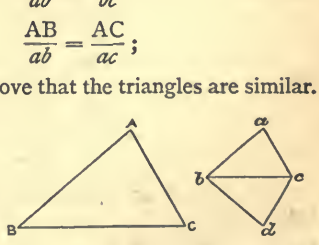
(2.) If

$$\frac{AB}{ab} = \frac{BC}{bc},$$

and

$$\frac{AB}{ab} = \frac{AC}{ac};$$

it is required to prove that the triangles are similar. At the point *b* in the line *bc* make the angle *cbd* equal to the angle CBA, and at the point *c* in the line *bc* make the angle *bcd* equal to the angle BCA. Then, by the last case,



$$\frac{AB}{db} = \frac{BC}{bc}.$$

But $\frac{BC}{bc}$ equals $\frac{AB}{ab}$ by hypothesis;

$$\therefore \frac{AB}{db} \text{ equals } \frac{AB}{ab};$$

$$\therefore db \text{ equals } ab.$$

Similarly, dc equals ac;

then the two triangles *dbc* and *abc* are equiangular, but ABC and *dbc* are equiangular;

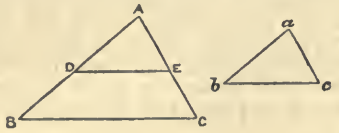
∴ ABC and *abc* are also equiangular,

hence they are similar.

(3.) If angle A be equal to angle *a*, and the sides about these angles be proportional—namely,

$$\frac{AB}{ab} = \frac{AC}{ac};$$

it is required to prove that the triangles are similar. For if the triangle *abc* be applied to ABC, so that *a* lies on A, and so that *ab* lies along AB, then will *ac* lie along AC, since the angles at A and *a* are equal. Let ADE be the position of *abc*. Then since



$$\frac{AB}{AD} = \frac{AC}{AE},$$

DE must be parallel to BC;

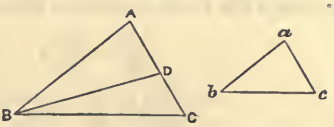
∴ (Prop. IX.) the angle ADE is equal to ABC, and AED to ACB.

But ADE is equal to *abc*, and AED to *acb*, therefore the angle *abc* is equal to ABC, and *acb* to ACB; hence the two triangles ABC, *abc* are similar.

(4.) If angle A be equal to angle *a*, and the sides about angles B and *b* be proportional—namely,

$$\frac{AB}{ab} = \frac{BC}{bc},$$

the angles at C and *c* being each either less or greater than a right angle; it is required to prove that the triangles are similar. If the angles at B and *b* are equal, then the triangles are equiangular, and consequently similar. But if angle B be not equal to angle *b*, at the point B in AB make the angle ABD equal to the angle *abc*. Then the two triangles ABD, *abc* are equiangular;



$$\therefore \frac{AB}{ab} = \frac{BD}{bc}.$$

But

$$\frac{AB}{ab} = \frac{BC}{bc};$$

$$\therefore \frac{BD}{bc} = \frac{BC}{bc};$$

$$\therefore BD = BC.$$

Then, first, if we suppose the angles at C and *c* both acute;

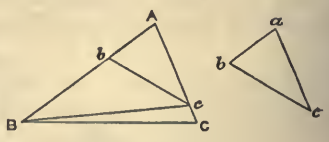
since BD = BC,

angle BCD = angle BDC (Prop. IV.);

and since angle BCD is acute, angle BDC is also acute; therefore angle BDA must be obtuse, but BDA is equal to *bca*, which is acute; therefore BDA is both acute and obtuse, which is absurd; therefore the angle at B is equal to the angle at *b*, and the triangles are similar. In like manner, if the angles at C and *c* be supposed both obtuse, it may be shewn that the triangles are similar.

PROP. XXXII.—*Two triangles, which have an angle of the one equal to an angle of the other, are to each other in the ratio compounded of the ratios of the sides about the equal angles.*

Let ABC and *abc* be two triangles which have the angle A equal to the angle *a*; it is required to prove that



$$\frac{ABC}{abc} = \frac{AB}{ab} \times \frac{AC}{Ac}.$$

Let the triangle *abc* be applied to ABC, so that *a* may lie on A, and *ab* along AB, then *ac* shall lie on AC. Join B*c*. Then we have

$$\frac{ABC}{ABc} = \frac{AC}{Ac},$$ since they have the same altitudes,

and

$$\frac{ABc}{Abc} = \frac{AB}{Ab}.$$

Multiplying these ratios, we have

$$\frac{ABc}{Abc} = \frac{AB}{Ab} \times \frac{AC}{Ac}.$$

But $Abc = abc$, $Ab = ab$, and $Ac = ac$.

$$\therefore \frac{ABC}{abc} = \frac{AB}{ab} \times \frac{AC}{ac}.$$

Cor. 1.—If the two triangles ABC, *abc* are similar, we have

$$\frac{AB}{ab} = \frac{AC}{ac};$$

$$\therefore \frac{ABC}{abc} = \frac{(AB)^2}{(ab)^2}.$$

It follows that *similar triangles are to each other as the squares upon their corresponding sides.*

Cor. 2.—If the two triangles ABC and *abc* are equal, we have

$$AB \cdot AC = ab \cdot ac,$$

or

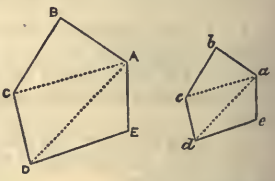
$$\frac{AB}{ab} = \frac{ac}{AC};$$

hence it follows that *in equal triangles, if any angle of the one be equal to an angle of the other, the sides about the equal angles are reciprocally proportional.* It is also evident that if the sides are reciprocally proportional, the triangles are equal.

Cor. 3.—Hence it follows that equiangular parallelograms have to one another the ratio which is compounded of the ratios of their sides.

PROP. XXXIII.—*Similar rectilineal figures may be divided into the same number of similar triangles, and they are to each other as the squares upon their corresponding sides.*

Let ABCDE, *abcde* be two similar rectilineal figures, then they may be divided into the same number of similar triangles, and they are to each other as the squares on the corresponding sides. Join AC and *ac*. Then the two triangles ABC, *abc* are similar, since angle B equals angle *b*,



and

$$\frac{AB}{ab} \text{ equals } \frac{BC}{bc}.$$

Since these triangles are similar, we have

angle BCA equal to angle *bca*,

and angle BAC equal to angle *bac*.

Again, join AD and *ad*. Then since the whole angle BCD equals the whole angle *bcd*, and the angle BCA equals the angle *bca*, the remaining angle ACD equals the remaining angle *acd*, and the sides about the angles are proportional.

For $\frac{BC}{bc}$ equals $\frac{CA}{ca}$,

but $\frac{BC}{bc}$ equals $\frac{CD}{cd}$, since the figures are similar;

$\therefore \frac{CA}{ca}$ equals $\frac{CD}{cd}$.

Hence the triangles ACD, *acd* are similar.

The triangles AED, *aed* are also similar;

$\therefore$ the figures are divided into the same number of similar triangles.

Again, $\frac{ABC}{abc} = \frac{AB^2}{ab^2}$,

and $\frac{ACD}{acd} = \frac{AC^2}{ac^2} = \frac{AB^2}{ab^2}$,

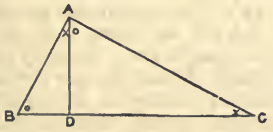
and $\frac{AED}{aed} = \frac{AB^2}{ab^2}$;

$$\therefore \frac{ABC + ACD + AED}{abc + acd + aed} = \frac{AB^2}{ab^2},$$

or $$\frac{\text{figure ABCDE}}{\text{figure } abcde} = \frac{AB^2}{ab^2} = \frac{BC^2}{bc^2} = \frac{CD^2}{cd^2}.$$

PROP. XXXIV.—*In a right-angled triangle, the perpendicular drawn from the right angle to the hypotenuse divides the triangle into two triangles, which are similar to the whole triangle and to each other.*

Let ABC be a right-angled triangle, having the angle at A a right angle; from A, AD is drawn perpendicular to BC; it is required to prove that the two triangles ABC, ACD are similar to the whole triangle and to each other.



Comparing the two triangles ABC and ABD, we have angle B common, angle BAC equal to angle ADB, each being a right angle; hence the triangles are similar. In like manner, it may be shewn that the two triangles ABC, ACD are similar; therefore ABD, ACD are similar to each other.

Cor. 1.—Since ABC and ABD are similar, we have

$$\frac{BC}{AB} = \frac{AB}{BD};$$

$\therefore$ AB is a mean proportional between BC and BD.

Similarly, comparing the two triangles ABC, ADC it may be shewn that AC is a mean proportional between BC and CD; and comparing the two triangles ABD, ACD it may be shewn that AD is a mean proportional between BD and DC.

Cor. 2.—Since $BC \cdot BD = AB^2$,

and $BC \cdot CD = AC^2$;

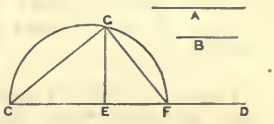
$$\therefore BC\{BD + CD\} = AB^2 + AC^2,$$

or $$BC^2 = AB^2 + AC^2.$$

Hence, in a right-angled triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides.

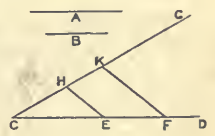
PROP. XXXV.—*To find a mean proportional to two given straight lines.*

Let A and B be the two given lines; it is required to find a mean proportional to them. Take any straight line CD; from this line cut off CE equal to A and EF equal to B. Upon CF describe a semicircle. From E draw EG perpendicular to CF, meeting the semicircle in G. Then EG is a mean proportional to CE and EF. For join CG, FG. Then the angle CGF is a right angle, and GE is drawn from the right angle perpendicular to CF; then, by the last proposition, EG is a mean proportional to CE and EF.



PROP. XXXVI.—*To find a third proportional to two given straight lines.*

Let A and B be the two given lines; it is required to find a third proportional to them. Take any straight line CD; from this line cut off CE equal to A, and EF equal to B. At the point C draw a line CG, making any angle with CD; and from CG cut off CH equal to EF or B; and join EH, and draw FK parallel to EH. Then HK is the line required—that is, HK is a third proportional to A and B.



Since EH is parallel to FK, we have (Prop. XXX.)

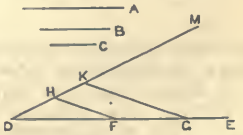
$$\frac{CE}{EF} = \frac{CH}{HK},$$

or $$\frac{A}{B} = \frac{B}{HK};$$

$\therefore$ HK is a third proportional to A and B.

PROP. XXXVII.—*To find a fourth proportional to three given straight lines.*

Let A, B, and C be the three given straight lines; it is required to find a fourth proportional to them. Take any line DE, and cut off from it DF equal to A, FG equal to B. At the point D draw the line DM, making any angle with DE; cut off from DM, DH equal to C. Join FH, and through G draw GK parallel to FH. Then HK is the fourth proportional required.



Since FH is parallel to GK, we have (Prop. XXX.)

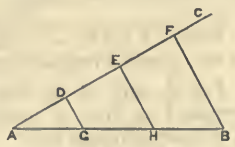
$$\frac{DF}{FG} = \frac{DH}{HK},$$

or $$\frac{A}{B} = \frac{C}{HK};$$

$\therefore$ HK is the fourth proportional required.

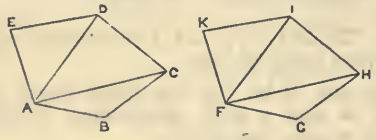
PROP. XXXVIII.—*To divide a given straight line into any number of equal parts.*

Let AB be the given line which it is required to divide into any number of equal parts. At the point A draw a line AC, making any angle CAB with the given line. In this lay off the equal portions AD, DE, EF, &c. Join BF, and through E and D draw the lines EH and DG parallel to BF.



PROP. XXXIX.—*To describe a rectilineal figure equal and similar to a given rectilineal figure.*

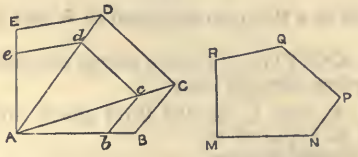
Let ABCDE be the given figure. Join AC, AD. Take the line FG equal to AB, and at the points F and G in the line FG make the angles GFH, FGH respectively equal to the angles BAC and ABC. Again, at the points F and H, in the



line FH, make the angles HFI, FHI equal respectively to the angles CAD, DCA. At the points F and I make the angles IFK, FIK equal respectively to the angles DAE, ADE. Then the figure FGHIK is evidently similar and equal to the given figure ABCDE.

PROP. XL.—*On a given straight line to describe a figure similar to a given rectilineal figure.*

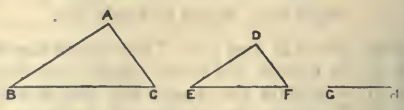
Let MN be the given straight line, upon which it is required to describe a figure similar to the given figure ABCDE. Join AC and AD. In AB, or in AB produced, take A*b* equal to MN, the given line. Through *b* draw *bc* parallel to BC,



through *c* draw *cd* parallel to CD, and through *d* draw *de* parallel to DE; then it is evident that the figure A*bcde* is similar to the given figure ABCDE. On MN, by the last proposition, describe the figure MNPQR equal and similar to A*bcde*. This is evidently the figure required.

PROP. XLI.—*To find two lines having the same ratio to each other as two given similar figures.*

Let ABC, DEF be the given similar figures; it is required to find two lines which shall have the same ratio to each other as the figures have. To BC, EF, corresponding sides in the two figures, find the third proportional GH. Then the ratio



of BC to GH is the same as the ratio of ABC to DEF.

Since GH is a third proportional to BC and EF, we have

$$\frac{BC}{EF} = \frac{EF}{GH};$$

$$\therefore BC \cdot GH = EF^2.$$

Again, $$\frac{BC}{GH} = \frac{BC^2}{GH \cdot BC}.$$

But $$GH \cdot BC = EF^2;$$

$$\therefore \frac{BC}{GH} = \frac{BC^2}{EF^2}.$$

But since the figures are similar, they are to each other as

$$\frac{BC^2}{EF^2};$$

$$\therefore \frac{BC}{GH} = \frac{ABC}{DEF}.$$

SOLID GEOMETRY.

Definition 1.—A *plane* is a surface in which any two points being taken, the straight line which joins them lies wholly in that surface.

Definition 2.—A *solid* has length, breadth, and thickness.

THE DETERMINATION OF A PLANE.

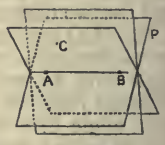
PROP. I.—*A plane is fixed or determined:*

(1.) If it pass through three points not in one line.

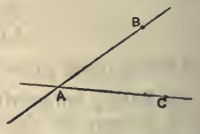
(2.) If it contain two lines which cut each other.

(3.) If it contain two parallel lines.

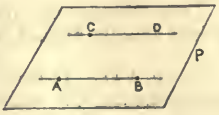
(1.) Let A, B, and C be the three points not in one straight line. Let any plane whatever P pass through A and B, then the line AB lies wholly in that plane. Let this plane revolve round the line AB till it contains C, then it is evident that in this position the plane is fixed; for, if its revolution be continued, it will no longer contain C. Hence, of the infinite number of planes which all pass through A and B, only one contains the point C.



(2.) Let AB and AC be two lines cutting each other in A. Take any point B on the first line, and any point C on the second, the three points B, A, and C, which are not in one line, determine a plane P; this plane contains the given lines, and the plane which contains the two lines BA and CA contains the three points B, A, and C, and therefore coincides with the plane P. This plane is therefore the plane of the two lines.



(3.) Let AB and CD be two parallel lines. By the definition of parallel lines, they are in the same plane P. If we take upon the line AB any two points A and B, and in the line CD any point C, the plane P containing these three points not in a straight line is completely determined.

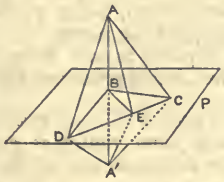


THE LINE AND PLANE PERPENDICULAR TO EACH OTHER.

Definition.—A straight line and a plane which intersect are perpendicular to each other, when the straight line is perpendicular to every straight line which can be drawn through its foot in the plane.

PROP. II.—*A line which is perpendicular to each of two intersecting lines at their point of intersection, is perpendicular to every straight line through the point in the plane which contains them.*

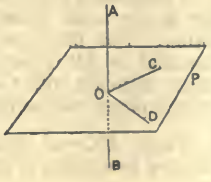
Let AB be perpendicular to BD, and also perpendicular to BC at their point of intersection B; then it shall be perpendicular to any line BE drawn through B in the plane of BD and BC. Draw a line DEC, cutting BD, BE, and BC in D, E, and C, and join each of these points with A and A′, two points in AB at equal distances from B. Then it is evident (Prop. VII. 1, p. 612) that AC = A′C, and AD = A′D. Comparing the two triangles ACD, A′CD, we have three sides in the one equal to three sides in the other, and therefore angle ACE = angle A′CE. Again, comparing the two triangles ACE, A′CE, we have two sides AC, CE in the one equal to A′C, CE in the other, and the contained angles ACE, A′CE equal, therefore AE = A′E. Then in the two triangles ABE, A′BE, we have the three sides of the one equal to the three sides of the other, therefore the angle ABE is equal to the angle A′BE; therefore each is a right angle, therefore AB is perpendicular to BE. Hence a line is perpendicular to a plane, when it is perpendicular to each of two lines drawn through its foot in that plane.



PROP. III.—*Through a given point to draw a plane perpendicular to a given line.*

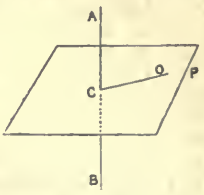
(1.) If the given point be on the line.

Let AB be the given line, and O the given point in it; it is required to draw through O a plane perpendicular to AB. From the point O draw the two lines OC and OD each perpendicular to AB, but in different planes—namely, AOC and AOD; then it is evident that the plane of OC and OD is the plane required.



(2.) If the given point be without the given line.

From the point O, in the plane which is determined by O and AB, draw the perpendicular OC to AB, then it is evident that the required plane must cut the line AB in the point C. Since OC is the only perpendicular which can be drawn from O to AB, then, by the previous case, the problem is solved.

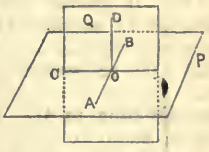


Cor.—Hence only one plane can be drawn through a given point perpendicular to a given line.

PROP. IV.—*Through a given point to draw a line perpendicular to a given plane.*

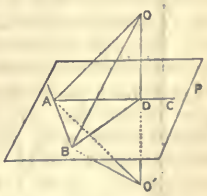
(1.) If the given point be on the plane.

Let O be the given point, and P the given plane; it is required to draw through O a line perpendicular to the plane P. Through O in the given plane draw any line AB, and through the point O draw a plane Q perpendicular to the line AB by the last proposition, and in this plane through the point O draw OD perpendicular to OC. Then OD is the line required—that is, it is perpendicular to the given plane P. For it is perpendicular to OC, and also perpendicular to OA; therefore it is perpendicular to the plane of these two lines—that is, perpendicular to P.



(2.) If the given point be without the plane.

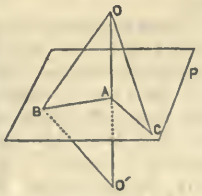
In the given plane P draw any straight line AB, and from O draw a plane perpendicular to the line intersecting the given plane P in the line AC. Then in the plane OAC, from the point O draw OD perpendicular to AC. Then OD is perpendicular to the given plane P, for it is perpendicular to any other line DB through its foot in the plane. Let OD be extended beyond the plane to O′, so that O′D is equal to OD. Join O and O′ with A and B. Comparing the two triangles OAB and O′AB, we have the two sides OA, AB in the one equal to the two O′A, AB in the other, and the contained angles equal; therefore the side OB is equal to O′B. Then in the two triangles ODB, O′DB, we have three sides in the one equal to three sides in the other, and therefore the angle ODB is equal to the angle O′DB; each therefore is a right angle; therefore OD is perpendicular to DB, and it is also perpendicular to DA; it is therefore perpendicular to their plane P.



PROP. V.—*Of the straight lines which can be drawn from an external point to a plane, the perpendicular is the shortest; and of the others, those whose extremities are equally distant from the foot of the perpendicular are equal, and conversely.*

Let OA be drawn perpendicular to the plane P

from the external point O, and from the same point let any other line OB be drawn. To prove

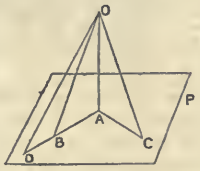


(1.) That OA is less than OB. Let OA be produced to O′, so that O′A may be equal to OA. Join O′B. Then OB (Prop. VII. 1, p. 612) is equal to O′B, and the two sides OB + O′B are together greater than OO′; therefore the half of OB + O′B—that is, OB is greater than the half of OO′—that is, OA.

(2.) That AB being equal to AC, OB shall be equal to OC. Because in the two triangles OAB, OAC, we have two sides in the one equal to two sides in the other, and the contained angles equal; therefore the third side OB shall be equal to the third side OC.

Conversely, if in the two right-angled triangles OAB, OAC we have OB equal to OC, then (Prop. VII. 5, p. 612) shall AB be equal to AC.

Cor.—It follows that a line OD meeting the plane at D, so that AD is greater than AC; then shall OD be greater than OC. Cut off from AD the part AB equal to AC. Then OB is equal to OC. But OA, OB, OD being all in one plane, and the angle OAD a right angle, OD is greater than OB—that is, OD is greater than OC.

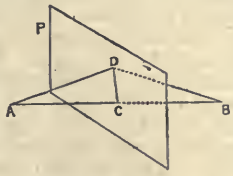


Scholium.—The distance of a point from a plane is estimated by the length of the perpendicular drawn from the point to the plane.

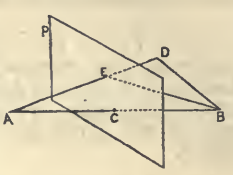
Definition.—A *locus* is an assemblage of points which have a common property.

PROP. VI.—*Every point of the plane drawn through the middle of a line perpendicular to the line is equally distant from the extremities of the line, and any point exterior to this plane is at unequal distances from the extremities.*

Let P be a plane drawn through C, the middle point of the line AB, and perpendicular to AB. To prove that every point in this plane is equally distant from A and B. In the plane take any point whatever D. Join DA, DC, DB. Then it is evident that the angles DCA, DCB are right angles. Comparing the two triangles ACD, BCD, we have two sides AC, CD of the one equal to BC, CD of the other, and the contained angles equal, therefore AD is equal to BD; hence the point D is equally distant from A and B. In the same manner it may be shewn that any other point is equally distant from A and B.

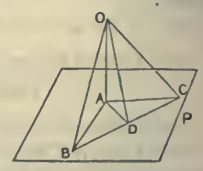


Again, any point D exterior to the plane is at unequal distances from A and B. Let the line AD cut the plane in E; then AE is equal to BE. Add to each ED, therefore AE + ED, or AD is equal to BE, ED; but (Prop. VI., p. 612) BE + ED are greater than BD, hence AD is greater than BD.



Cor.—Hence the plane P is the *locus* of all points equally distant from A and B.

PROP. VII.—If from the intersection A of the perpendicular OA with the plane P a line AD be drawn perpendicular to BC any line in the plane, and if D be joined to any point O in OA, then OD shall be perpendicular to BC. In BC, take BD equal to DC. Join AB, AC, OB, OC. Then in the two triangles ADB, ADC we have two sides and the contained angle in the one equal to two sides and the contained angle in the other, therefore AB is equal to AC. Again, comparing the two triangles OAB, OAC we have evidently OB equal to OC. Then in the two triangles ODB, ODC we have the three sides of the one equal to the three of the other, therefore the angle ODB is equal to the angle ODC; therefore each is a right angle, and OD is perpendicular to BC.



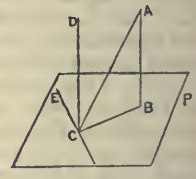
THE LINE AND PLANE PARALLEL.

Definition.—A line is said to be parallel to a plane when, being produced indefinitely, it does not meet the plane.

A plane is said to be parallel to another plane when, being produced indefinitely, it never meets it.

PROP. VIII.—*If two straight lines are parallel, every plane which is perpendicular to the one is also perpendicular to the other.*

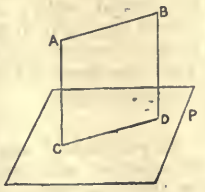
Let AB and CD be two parallel lines, and let the plane P be perpendicular to AB; it is also perpendicular to CD. Let the plane of the two parallel lines AB and CD cut the plane P along the straight line CB; then as AB is perpendicular to the plane, it is perpendicular to the line BC, so also will CD be perpendicular to CB. Then if it can be shewn that CD is perpendicular to any other line through C in the plane P, it shall be perpendicular to the plane itself. Draw in the plane P, CE perpendicular to CB; then, by the last proposition, if C be joined to A, any point in AB, CE is perpendicular to AC; but it was also perpendicular to CB, it is therefore perpendicular to the plane of CAB. It follows that the line CD drawn through C in this plane is perpendicular to CE. But it was before shewn that CD was perpendicular to CB, therefore it is perpendicular to the plane of CE and CB—that is, it is perpendicular to the given plane P.



Conversely, if AB and CD be each perpendicular to the same plane P, they are parallel to each other. For the line which is drawn through C parallel to AB is perpendicular to the plane, and must coincide with CD, as only one perpendicular to the plane can be drawn through C.

PROP. IX.—*A straight line parallel to a line drawn in a plane is parallel to the plane.*

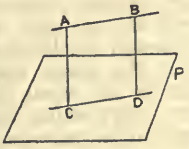
Let the line AB be parallel to the line CD situated in the given plane P; it shall be parallel to the plane itself. The plane of the two parallels cuts the given plane P along the line CD; hence if AB intersects the plane P, it must be on the line CD; but AB and CD never intersect, since they are parallel; hence AB and the given plane P are parallel.



Conversely, if AB be parallel to the plane P, then the intersection CD of a plane through AB and the given plane will be parallel to AB.

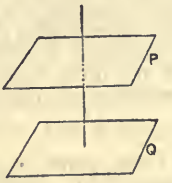
PROP. X.—*If a straight line be drawn parallel to a plane, the portions of parallel lines intercepted between the line and the plane are equal.*

Let the line AB and the plane P be parallel to each other, and let AC and BD be parallel, then AC and BD are equal. The plane of AC and BD cuts the given plane P along the line CD parallel to AB; therefore the figure ABDC is a parallelogram, and AC is equal to BD.

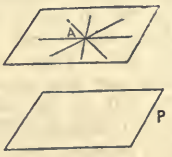


PROP. XI. — *Two planes which are perpendicular to the same straight line are parallel to each other.*

These planes cannot intersect, for only one plane can be drawn through a point perpendicular to another plane.



Cor. 1.—Hence it follows that lines drawn through a point A, parallel to a given plane P, lie in a plane parallel to the given plane.

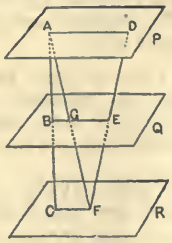


Cor. 2.—If two planes are parallel, every plane perpendicular to the one is also perpendicular to the other.

PROP. XII.—*If two straight lines are cut by three parallel planes, they will be cut proportionally.*

Let the three parallel planes P, Q, R cut the two lines ABC, DEF; to prove that

$$\frac{AB}{BC} = \frac{DE}{EF}.$$



Join AF, cutting the plane Q in G. Join BG, GE. Then we have (Prop. XXX., p. 622)

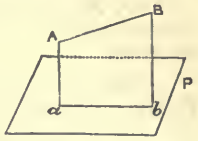
$$\frac{AG}{GF} = \frac{DE}{EF}, \text{ and } \frac{AG}{GF} = \frac{AB}{BC};$$

$$\therefore \frac{AB}{BC} = \frac{DE}{EF}.$$

THE LINE AND PLANE INCLINED TO EACH OTHER.

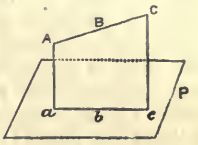
Definition.—The projection of a point on a plane is the foot of the perpendicular drawn from the point on the plane.

The projection of a line upon a plane is the locus of the projections of the different points of the line on the plane; thus *a* is the projection of A, and *ab* that of AB on the plane P.



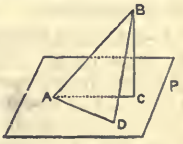
PROP. XIII.—*The projection of a straight line on a plane is a straight line.*

Let ABC be a straight line, and let *a*, *b*, and *c* be the feet of the perpendiculars from any three points A, B, C of the line on the plane P; then *abc* will be a straight line. For the plane which contains AC and A*a* will (Prop. IV., p. 627) contain all the perpendiculars, and it will intersect the plane P in the straight line *abc*.



PROP. XIV.—*If a straight line is oblique to a plane, the angle which it makes with its projection is less than that which it makes with any other line that meets it in that plane.*

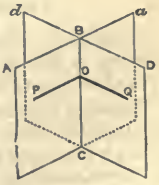
Let AB be the given line, meeting the plane P in A. From B draw BC perpendicular to the plane. Then AC is the projection of AB on the plane; and it is required to prove that the angle BAC is less than BAD, formed by AB and another line AD from A. Make AD equal to AC, and join BD; then BD (Prop. V., p. 627) is greater than the perpendicular BC. And in the two triangles BAD, BAC we have the sides BA, AD in the one equal to BA, AC in the other; but BD is greater than BC, therefore angle BAC is less than BAD.



Scholium.—The inclination of a line to a plane is measured by the angle the line makes with its projection on the plane.

THE PLANE INCLINED TO THE PLANE.

Definition.—The angle between two planes is called a dihedral angle; thus the figure formed by the two planes ABC, DBC, which intersect along BC, is a dihedral angle; the line BC is called its *edge*, and the planes AC and DC its faces. The dihedral angle is named by the two letters which distinguish its edge, if there is only one angle having this line for its edge; otherwise it is named by four letters, of which the two middle ones denote the edge; thus the dihedral angle ABCD is the angle formed by the two faces AC and DC.

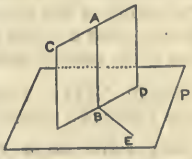


A dihedral angle is measured by the angle between the two lines, drawn one in each plane perpendicular to the intersection of the planes from any point in that line. Thus the dihedral

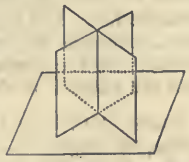
angle ABCD is measured by the plane angle POQ, where O is any point in BC, and PO, OQ, lines drawn through this point perpendicular to BC, and in the planes AC and DC.

PROP. XV.—*Every plane passing through a perpendicular to a plane, is also perpendicular to the plane.*

Let the line AB be perpendicular to the plane P, then any plane CD which passes through AB is also perpendicular to P. From the point B draw in the plane P, BE perpendicular to BD; then since AB is perpendicular to BD, the dihedral angle of the two planes is measured by the plane angle ABE. But ABE is a right angle, since AB is by hypothesis perpendicular to the plane P. Hence the plane CD is perpendicular to the given plane P.

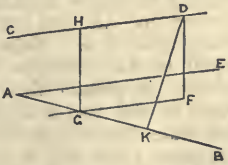


Cor.—It follows that if two planes intersecting be each perpendicular to a third plane, the line of their intersection is also perpendicular to the third plane.



PROP. XVI.—*To two straight lines in space not being in the same plane one common perpendicular can be drawn, and this is the shortest line joining the given lines.*

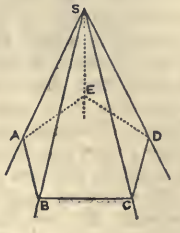
Let AB and CD be the two straight lines not in the same plane. Through A draw AE parallel to CD, and drop a perpendicular DF to the plane of AEB, and let the plane of CDF cut the plane AEB in the line FG intersecting AB in G. Draw GH parallel to FD, to meet CD in H; GH is the line required. For since AE and CD are parallel, CD is parallel to the plane AEB (Prop. IX., p. 628), and therefore GF is parallel to CD; therefore DF is perpendicular to CD. Therefore, also, GH is perpendicular to CD and to the plane AEB, and GH is perpendicular both to CD and AB. Also, if any other line DK be drawn to join the given lines, it is greater than GH; for DK $\succ$ DF, and DF = HG, therefore DK $\succ$ HG.



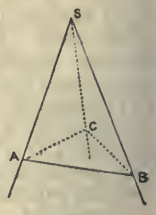
TRIHEDRAL ANGLES.

Definition.—The figure formed by several planes meeting in one point is called a *polyhedral angle.*

Thus the planes SAB, SBC, SCD, SDE, SEA, which pass through the same point S, and are terminated by their intersections SA, SB, SC, SD, SE, form a polyhedral angle, and the point S is the vertex, and SA, SB, SC, &c., the *edges.* The plane angles ASB, BSC, CSD, &c., are called the *faces* of the polyhedral S.

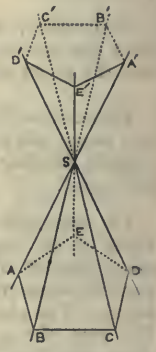


Three planes at least are necessary to form a polyhedral angle, and a polyhedral angle which has only three faces is termed a *trihedral* angle. Thus the figure SABC is called a *trihedral angle.*



A polyhedral angle is *convex* or *concave*, according as it lies on the *same* or on *different* sides of each of the planes produced which form it.

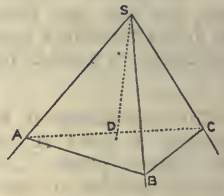
Two polyhedral angles are said to be vertically opposite when the edges of the one are the continuations of the edges of the other; thus the two polyhedral angles SABCDE, SA′B′C′D′E′ are vertically opposite. And it will be at once evident that, although the dihedral angles and also the plane angles of these figures are equal, the figures are not superposable. Such angles are said to be *symmetrical.*



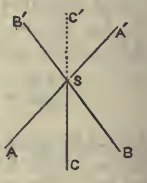
PROP. XVII.—*In any trihedral angle, the sum of any two of its faces is greater than the third.*

Let SABC be a trihedral angle, any two of its faces together are greater than the third face. If the three angles ASC, BSC, ASB are equal, the proposition is evident. Let ASC be the greatest of the three faces, it is sufficient to prove that

ASB + BSC $\succ$ ASC.



At the point S, in the plane ASC, make the angle CSD equal to the angle CSB. Draw any line ADC cutting SA, SD, SC in A, D, and C. Make SD = SB. Join AB, BC. Then in the two triangles CSD, CSB there are two sides CS, SD in the one equal to CS, SB in the other, and the contained angles equal; therefore CB = CD, and AD is the difference between AC and BC, therefore it is less than AB (Prop. VI., p. 612). Again, in the two triangles BSA, DSA there are two sides BS, SA in the one equal to DS, SA in the other; but the base BA is greater than DA, therefore the angle BSA is greater than DSA. Consequently the two angles ASB, BSC together are greater than the angle ASC.

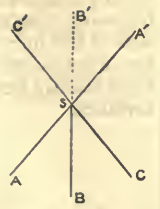


Cor.—It will be evident that the two trihedral angles SABC, SA′B′C′, are superposable, if SABC has two equal faces.

PROP. XVIII.—*In a trihedral angle, if two faces are equal, the dihedral angles opposite to these faces are also equal.*

Let SABC be a trihedral angle, having the face

BSA equal to the face BSC, then the dihedral angle SC is equal to the dihedral angle SA. Let SA′B′C′ be the corresponding trihedral formed by producing the edges SA, SB, SC. Then since the trihedral SABC has two equal faces, SABC, SA′B′C′ are superposable, and therefore the dihedral SC = dihedral SA′; but SA′= SA, therefore dihedral SC = dihedral SA.



The converse of the proposition is evidently true.

Cor. 1.—If the three faces are equal, the three dihedral angles are also equal, and conversely.

Equality of Trihedral Angles.

It may be shewn that two trihedral angles are equal:

(1.) If they have two faces in the one equal to two in the other, and also the contained dihedral angles equal.

(2.) If they have two dihedral angles in the one equal to two in the other, and a face in the one equal to the corresponding face in the other.

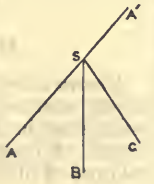
(3.) If they have three faces in the one equal to three faces in the other, and similarly placed.

(4.) If they have the three dihedral angles in the one equal to the three in the other, and similarly placed.

Scholium.—It is important to notice the analogy which exists between the properties of the trihedral angle and those of the triangle; thus the sides and angles of the triangle correspond with the plane angles and dihedral angles respectively of the trihedral.

PROP. XIX.—*The sum of the faces of a trihedral angle is less than four right angles.*

Let SABC be the trihedral angle; to prove that the sum of its faces is less than four right angles. Produce AS through the vertex S to A′. Then in the trihedral SA′BC, we have



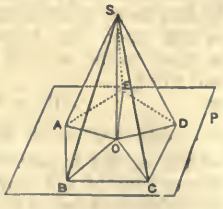
$$BSC < BSA' + CSA'.$$

Add to each ASB + ASC;

$$\therefore BSC + ASB + ASC < BSA' + BSA + CSA' + CSA$$
$$< 2 \text{ right angles} + 2 \text{ right angles}$$
$$< 4 \text{ right angles}.$$

PROP. XX.—*The sum of the faces of any convex polyhedral angle is less than four right angles.*

Let SABCDE be a polyhedral; to prove that the sum of its faces is less than four right angles. Let a plane be drawn cutting the edges on the same side of the vertex in A, B, C, D, E. Take any point O within the figure. Join it with S, A, B, C, D, E. Then in the trihedral angle A we have



$$SAE + SAB > EAB + OAE + OAB.$$

Similarly for the other angular points of the polygon; therefore, by adding, we have the sum of the angles at the base of the triangles SAB, SBC, &c. greater than the sum of the angles at the base of the triangles OAB, OBC, &c.; but we have as many triangles in the one set as in the other, and therefore the sums of all these angles are equal; and therefore the sum of the angles at the vertex S is less than the sum of the angles at the vertex O. But all the angles round O make four right angles, therefore the angles at vertex S are together less than four right angles.

POLYHEDRA.

Definitions.—A polyhedron is a geometrical solid bounded by planes. The bounding planes, by their mutual intersections, limit each other, and determine the faces (which are polygons), the edges, and the vertices of the polyhedron. A diagonal of a polyhedron is a straight line joining any two of its vertices not in the same face. The least number of planes that can form a polyhedral angle is three; but the space within the angle is indefinite in extent, and it requires a fourth plane to inclose a finite portion of space, or to form a solid; hence the least number of planes that can form a polyhedron is four.

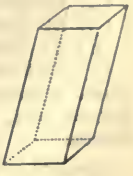
A polyhedron of four faces is called a tetrahedron; one of six faces, a hexahedron; one of eight faces, an octahedron; one of twelve faces, a dodecahedron; one of twenty faces, an icosahedron.

A polyhedron is convex, when the section formed by any plane intersecting it is a convex polygon.

A prism is a polyhedron, two of whose faces are equal polygons lying in parallel planes, and having their homologous sides parallel; the other faces being parallelograms formed by the intersections of planes passed through the homologous sides of the equal polygons. The parallel faces are called the bases of the prism; the parallelograms taken together constitute its lateral or convex surface; the intersections of its lateral faces are its lateral edges. The altitude of a prism is the perpendicular distance between the planes of its bases. A triangular prism is one whose base is a triangle; a quadrangular prism, one whose base is a quadrilateral, &c.

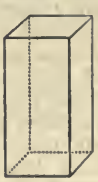
A right prism is one whose lateral edges are perpendicular to the planes of its bases. In a right prism, any lateral edge is equal to the altitude. An oblique prism is one whose lateral edges are oblique to the planes of its bases.

A parallelopiped is a prism whose bases are parallelograms. It is therefore a polyhedron all of whose faces are parallelograms. From this definition, it is evident that any two opposite faces of a parallelopiped are equal parallelograms.

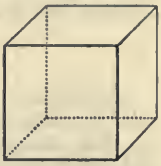


A right parallelopiped is a parallelopiped whose lateral edges are perpendicular to the planes of its

bases. Hence, its lateral faces are rectangles; but its bases may be either rhomboids or rectangles. A rectangular parallelopiped is a right parallelopiped whose bases are rectangles. Hence it is a parallelopiped all of whose faces are rectangles. Since the perspective of figures in space distorts the angles, the diagram may represent either a right or a rectangular parallelopiped.

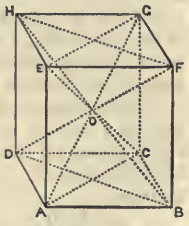


A cube is a rectangular parallelopiped whose six faces are all squares.



PROP. XXI.—*The four diagonals of a parallelopiped bisect each other.*

Let ABCD — G be a parallelopiped; its four diagonals AG, EC, BH, DF bisect each other. Through the opposite and parallel edges AE, CG pass a plane which intersects the parallel faces ABCD, EFGH in the parallel lines AC and EG. The figure ACGE is a parallelogram, and its diagonals AG and EC bisect each other in the point O. In the same manner it is shewn that AG and BH, AG and DF bisect each other, therefore the four diagonals bisect each other in the point O.



Scholium.—The point O, in which the four diagonals intersect, is called the centre of the parallelopiped; and it is easily proved that any straight line drawn through O, and terminated by two opposite faces of the parallelopiped, is bisected in that point.

The Regular Polyhedra.

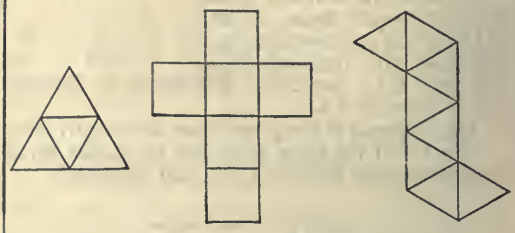
PROP. XXII.—*There cannot be more than five regular polyhedra.*

The faces of a regular polyhedron must be regular polygons, and at least three faces are necessary to form a polyhedral angle. Since (Prop. XX., p. 631) the sum of the plane angles at each vertex is less than four right angles, therefore the faces of a regular polyhedron must be equilateral triangles, squares, or regular pentagons; for three hexagons placed with an angular point in common, and having edges common, would make the adjacent angles equal to four right angles. The only possible polyhedra therefore will have their polyhedral angles composed respectively:

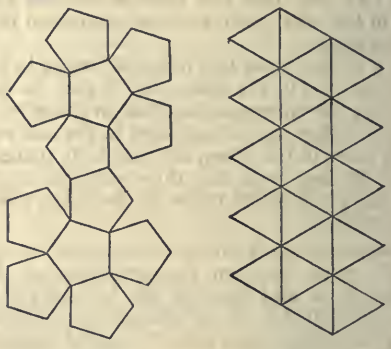
(1.) By three equilateral triangles.
(2.) By three squares.
(3.) By four equilateral triangles.
(4.) By three pentagons.
(5.) By five equilateral triangles.

These figures are named respectively the *tetrahedron*, *cube*, *octahedron*, *dodecahedron*, and *icosahedron*.

Remark.—The five regular polyhedra may be readily constructed by drawing on card-board the following diagrams. Let them be cut out entire, and at the lines separating adjacent polygons cut the card-board half through. The figure will then readily bend into the form of the respective surfaces.



Tetrahedron. Cube. Octahedron.



Dodecahedron. Icosahedron.

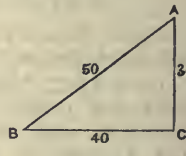
MENSURATION.

Mensuration is that branch of mathematics which enables us, by means of the principles established in the preceding pages, to *measure* the length of lines, the areas of surfaces, and the volumes of different bodies.

OF LINES.

PROP. I.—*Having given any two sides of a right-angled triangle, to find the remaining side.*

Thus, for example, in the right-angled triangle ACB, of which ACB is a right angle, let the side AC = 30 ft., BC = 40 ft.; to find the length of the hypotenuse AB. It has been proved that the square upon the hypotenuse is equal to the sum of the squares on the other two sides,



or $$AB^2 = AC^2 + BC^2;$$

$$\therefore AB = \sqrt{AC^2 + BC^2} = \sqrt{900 + 1600} = 50$$

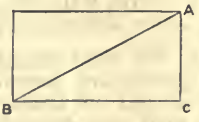
—that is, the hypotenuse is found by taking the square root of the sum of the squares of each of the sides containing the right angle.

Again, let the two sides which are given be AB and BC; to find AC.

Then $AC^2 = AB^2 - BC^2$;

$\therefore AC = \sqrt{AB^2 - BC^2} = \sqrt{2500 - 1600} = 30$,

or the side AC is found by taking the square root of the difference of the squares upon the given sides. This proposition enables us to find the diagonal of a rectangle when two adjacent sides are given.



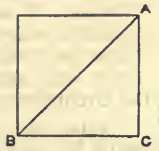
For, as before,

$AB^2 = AC^2 + BC^2$,

or $AB = \sqrt{AC^2 + BC^2}$.

We can also find the diagonal of a square when the side is given; and conversely, we can find the side when the diagonal is given. Thus

$AB^2 = AC^2 + BC^2$.



But the figure being a square,

$AC^2 = BC^2$;

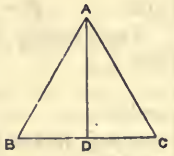
$\therefore AB^2 = 2AC^2$;

$\therefore AB = AC\sqrt{2}$,

or $AB : AC :: \sqrt{2} : 1$

—that is, the diagonal is to the side as $\sqrt{2}$ is to 1. But as $\sqrt{2}$ cannot be expressed exactly by a limited number of figures, we say that the diagonal and side are *incommensurable*. Then since the diagonal is found by multiplying the side by $\sqrt{2}$, it follows that the side is found by dividing the diagonal by $\sqrt{2}$.

Again, in the equilateral triangle, if the side is given, we can find the perpendicular on it from the opposite angle.



Thus $AD^2 = AB^2 - BD^2$,

or $AD^2 = AB^2 - \frac{1}{4}AB^2 = \frac{3}{4}AB^2$;

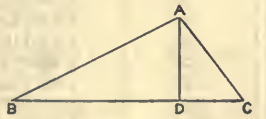
$$\therefore AD = \frac{AB}{2}\sqrt{3},$$

or $AD : AB : \sqrt{3} : 2$.

Hence the perpendicular is found by multiplying the half of the side by $\sqrt{3}$, and consequently when the perpendicular is given, we find the side by dividing twice the perpendicular by $\sqrt{3}$.

PROP. II.—*Having given the three sides of a triangle, to find the length of the perpendicular from any of the angles upon the opposite side.*

In the triangle ABC, let $BC = a$, $AC = b$, $AB = c$; find the length AD of the perpendicular from A or BC.



If s be taken to denote half the sum of the sides, it can be shewn that

$$AD = \frac{2}{a}\sqrt{s(s-a)(s-b)(s-c)}.$$

This result is deduced from some of the foregoing propositions by a somewhat intricate algebraic process, which we here omit. The formula itself is given, as it is essential in the practical rule of finding the area of a triangle when the three sides are given.

PROP. III.—*To divide a line into extreme and mean ratio.*

Let $AB = a$ be the given line, and let C be the point of division. Then $AB \cdot BC = AC^2$; it is required to find AC.

Let $AC = x$ = the greater of the two segments;

$\therefore a(a - x) = x^2$, or $a^2 - ax = x^2$;

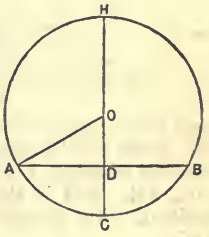
$\therefore x^2 + ax = a^2$,

$$x = \frac{-a \pm \sqrt{a^2 + 4a^2}}{2}$$

$$= -\frac{a}{2} \pm \frac{a}{2}\sqrt{5} = \frac{a}{2}\{\sqrt{5} - 1\}.$$

THE CIRCLE.

PROP. IV.—*Having given the height of an arc, and the radius of the circle, to find the length of the chord.*



Let DC, the height of the arc $ACB = h$, and radius of circle $= r$; to find the length l of the chord AB. In the right-angled triangle AOD, the hypotenuse $AO = r$, the perpendicular $OD = r - h$;

$\therefore AD^2 = r^2 - (r - h)^2 = 2rh - h^2$;

$\therefore AD = \sqrt{2rh - h^2}$;

$\therefore AB = l = 2\sqrt{2rh - h^2}$.

We might also have obtained AB thus:

$AD^2 = HD \cdot DC$ (Prop. XXIII., p. 620)

$= (2r - h)h = 2rh - h^2$,

$AD = \sqrt{2rh - h^2}$;

$\therefore l = 2\sqrt{2rh - h^2}$, as before.

Interpreting this formula, we have the following rule for determining the chord: Multiply twice the radius by the height; from the product subtract the square of the height, and take twice the square root of the remainder.

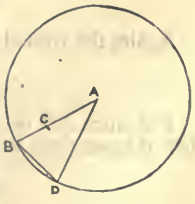
Remark.—It may here be noticed that, in the above formula, when

$h = 0$, the chord is zero,

and when $h = r$, the chord becomes the diameter.

PROP. V.—*To find the side of a regular decagon inscribed in a circle.*

Divide the radius AB in extreme and mean ratio (Prop. III., p. 633) at the point C; make the chord BD equal to AC, and join AD. It has already been shewn that the angle BAD at the centre of the circle is an angle of one-fifth of two right angles, or one-tenth of four; ten such angles can therefore be made round the centre, consequently the line BD is the side of a regular decagon inscribed in a circle.



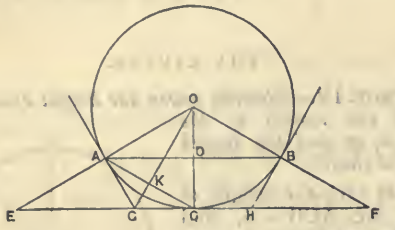
But $BD = AC$;

$\therefore$ side of regular decagon $= \frac{R}{2}(\sqrt{5} - 1)$ (6).

It is evident that the side of the regular hexagon inscribed within the circle is equal to the radius.

PROP. VI.—*Given the perimeter of a regular polygon inscribed within a circle, and the perimeter of a similar circumscribed polygon, to find the perimeters of the regular inscribed and circumscribed polygons of double the number of sides.*

Let AB = side of inscribed polygon; EF, the tangent through the middle point C of arc AB, meeting OA and OB produced in E and F; then



will EF = side of circumscribed figure. Join AC. AC is the side of figure inscribed, with double the number of sides. Through A and B draw tangents AG, BH. GH is the side of the figure circumscribed, with double the number of sides. Join OG.

Since OE is the radius of the circle circumscribing the polygon whose perimeter is P, and OC that of the circle circumscribing the similar polygon whose perimeter is p, we have

$$\frac{P}{p} = \frac{OE}{OC}.$$

But since OG bisects the angle EOC (Prop. VII. 5, p. 612), we have (*Euclid*, VI. 3),

$$\frac{OE}{OC} = \frac{EG}{GC};$$

$$\therefore \frac{P}{p} = \frac{EG}{GC};$$

$$\therefore \frac{P + p}{2p} = \frac{EG + GC}{2GC} = \frac{EC}{GH}.$$

Now GH is a side of the polygon whose perimeter is P′, and is contained in P′ the same number of times that EC is contained in P, or

$$\frac{EC}{GH} = \frac{P}{P'};$$

$$\therefore \frac{P + p}{2p} = \frac{P}{P'};$$

$$\therefore P' = \frac{2pP}{P + p} \quad \ldots \quad (1).$$

Again, the triangles ACD and GKC are similar;

$$\therefore \frac{AD}{AC} = \frac{KC}{CG}.$$

But since AD is contained in P the same number of times that AC is contained in p,

$$\frac{AD}{AC} = \frac{p}{p'};$$

and similarly,

$$\frac{KC}{CG} = \frac{p'}{P'};$$

$$\therefore \frac{p}{p'} = \frac{p'}{P'}; \quad \therefore p' = \sqrt{pP'};$$

$$\therefore p' = p\sqrt{\frac{2P}{P + p}} \quad \ldots \quad (2).$$

PROP. VII.—*To find an expression for the ratio of the circumference of a circle to the diameter.*

We shall take the diameter of the circle as given, and determine the perimeters of an inscribed and similarly circumscribed polygon. We shall then determine the perimeters of inscribed and circumscribed polygons of double the number of sides. Taking the last found perimeters as given, we will then determine the perimeters of polygons of double the number of sides by the same method, and so on. As the number of sides increases, it may be shewn that the perimeters approach nearer and nearer to the circumference; hence their successively determined values will be nearer and nearer approximations to the value of the circumference.

Taking the diameter of the circle as 1, we shall begin by inscribing and circumscribing a square, and finding their perimeters.

Here we have $p = 2\sqrt{2} = 2 \cdot 8284271$,

and $P = 4$.

Having found P and p, we find P′ and p';

thus $P' = \frac{2p + P}{P + p} = 3 \cdot 3137085$,

and $p' = \sqrt{p \times P'} = 3 \cdot 0614675$.

Then taking P′ and p' as given quantities, we put

$P = 3 \cdot 3137085$,

and $p = 3 \cdot 0614675$;

and find, by the same formulæ, for the polygon of 16 sides,

$P' = 3 \cdot 1825979$,

$p' = 3 \cdot 1214452$.

Continuing this process, the results will be found as in the following table:

Number of Sides.	Perimeter of Circumscribed Polygon.	Perimeter of Inscribed Polygon.
4	4·0000000	2·8284271
8	3·3137085	3·0614675
16	3·1825979	3·1214452
32	3·1517249	3·1365485
64	3·1441184	3·1403312
128	3·1422236	3·1412773
256	3·1417504	3·1415138
512	3·1416321	3·1415729
1024	3·1416025	3·1415877
2048	3·1415951	3·1415914
4096	3·1415933	3·1415923
8192	3·1415928	3·1415926

From the last two numbers of this table, we learn that the circumference of a circle whose diameter is unity, is *less* than

3·1415928,

and *greater* than 3·1415926.

It follows therefore that 3·1415927 represents the circumference to within a unit of

the seventh decimal place. It is usual to represent this number by the symbol π;

$\therefore$ circumference $= \pi \times$ diameter.

If we convert the expression for π into a series of continued fractions,* we shall find for it

$$\frac{3}{1}, \frac{22}{7}, \frac{333}{106}, \frac{355}{113}, \frac{103993}{33102}, \text{ \&c.}$$

Let C denote the circumference,
D the diameter,
r the radius.

We then have the following formulæ:

$$C = \pi D; \quad \therefore D = \frac{C}{\pi}.$$

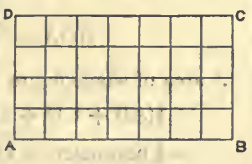
$$C = 2\pi r; \quad \therefore r = \frac{C}{2\pi} = \frac{D}{2}.$$

OF SURFACES.

The Rectangle.

PROP. VIII.—*To find the area of a rectangle, having given two adjacent sides.*

Thus, let it be required to find the area of the rectangle ABCD, of which the side AB is 7 feet, and BC 4 feet. If we divide AB into seven equal lengths, and BC into four, and through the points of division draw lines parallel to the sides; then it is clear that for every division of AB we have a row, and each row contains as many compartments as there are divisions in BC. But we have seven divisions in AB; hence we have seven rows and four compartments in each row, therefore there are in all



7×4, or 28 compartments,

but each compartment is 1 square foot.

$\therefore$ area $= 7 \times 4$ square feet, or 28 square feet.

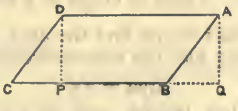
Hence, to find the area, we multiply one side by the adjacent one.

To find the area of a square, we multiply the side by itself.

Any Parallelogram.

PROP. IX.—*To find the area of any parallelogram.*

Let ABCD be the parallelogram. Drop DP and AQ perpendicular to CB. Then the parallelogram ADCB is equal in area to the rectangle ADPQ, since they stand on the same base AD, and between the same parallels AD and CB. But the area of ADCB is found by multiplying AD by DP; hence the area of the parallelogram is found by multiplying one side by the perpendicular on it from the opposite side.



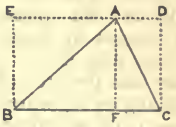
* See Munn's *Theory of Arithmetic.*

The Triangle.

PROP. X.—*To find the area of a triangle:*

First, When a side is given, and the perpendicular on it from the opposite angle.

Thus in the triangle ABC, let the base BC and the perpendicular AF from A on BC be given.



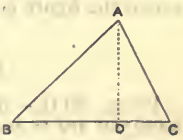
Then BC $\times$ AF denotes the area of the rectangle EBCD, but the given triangle is half of this;

$$\therefore \text{area of triangle} = \frac{BC \times AF}{2}.$$

Hence the area is found by multiplying the base by the perpendicular on it from the opposite angle, and taking the half of this product.

Second, When the three sides are given,

Let the three sides AB, BC, CA be given; then it has already been shewn (Prop. II., p. 633) how we may find the perpendicular AD upon BC. Then, by last proposition,



$$\text{area} = \frac{BC \times AD}{2}.$$

Let BC $= a$, CA $= b$, AB $= c$;

$$\therefore \text{area} = \frac{a}{2} \times AD.$$

But $AD = \frac{2}{a}\sqrt{s(s-a)(s-b)(s-c)}$. (See Prop. II., p. 633);

$$\therefore \text{area} = \frac{a}{2} \times \frac{2}{a}\sqrt{s(s-a)(s-b)(s-c)}$$

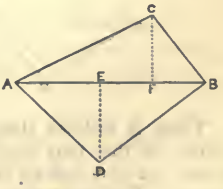
$$= \sqrt{s(s-a)(s-b)(s-c)}.$$

Hence to find the area of the triangle, when the three sides are given, we have the following rule: Add the three sides together; take half the sum. From half the sum subtract each side separately. Multiply half the sum and the three remainders together, and take the square root of the product.

In the case of the isosceles or equilateral triangle, this is very much simplified; thus for the area of the equilateral triangle, we take the fourth of the square of the side and multiply it by the $\sqrt{3}$.

PROP. XI.—*To find the area of a trapezoid.*

Let ACBD be the given figure. On AB drop the perpendiculars DE and CF; then the

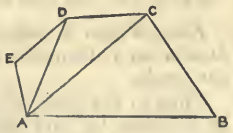


$$\text{area} = \frac{AB}{2} \times DE + \frac{AB}{2} \times CF$$

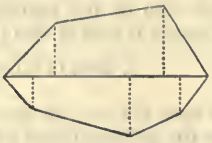
$$= \frac{AB}{2}\{DE + CF\} = AB \times \frac{DE + CF}{2};$$

therefore the area is found by multiplying the diagonal by half the sum of the perpendiculars on it.

PROP. XII.—*To find the area of any rectilineal figure.*



Thus, let it be required to find the area of the figure ABCDE. We divide this figure into triangles by drawing the lines AC, AD, and then we find the area of these triangles separately, and take their sum. Again, we may sometimes very conveniently find the area of the figure by drawing the longer diagonal, and dropping perpendiculars on this diagonal from the opposite angle; then we can find the areas of the triangles and trapezoids into which the figure is thus divided.

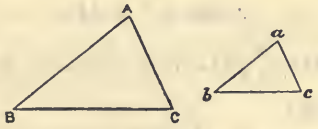


Similar Triangles.

PROP. XIII.—*It has been proved that similar triangles are to one another in area as the squares upon their like sides.*

That is, if ABC and *abc* are similar, we have

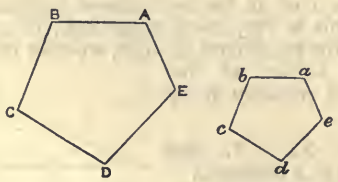
$$\frac{ABC}{abc} = \frac{AB^2}{ab^2} = \frac{BC^2}{bc^2} = \frac{AC^2}{ac^2};$$



thus, for example, if AB = *twice ab*, then ABC = *four* times *abc*.

And we have seen that the same relation holds good for similar figures of any number of sides; thus if ABCDE, *abcde* be two similar figures, we have

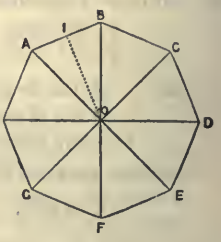
$$\frac{ABCDE}{abcde} = \frac{AB^2}{ab^2}.$$



Then it follows that if we know the area of either of the two figures, and the ratio of the sides, we can tell at once the area of the other figure. For example, if the area of *abcde* be 1 acre, and AB 5 times the length of *ab*; then the area of ABCD will be 25 acres. Or again, suppose a field to contain 1 acre, and the plan of this field is laid down to a scale of say 1 inch to 20 feet, we can at once tell how much paper the plan will cover; or conversely, if we know the size of the plan, we can as readily tell the size of the field.

Area of a Circle.

PROP. XIV.—*To find the area of a regular polygon of any number of sides.*



Let ABCD ... H be a regular polygon of any number of sides; to find its area. Joining O, the centre of the figure with each of the angles, we thus divide the figure into triangles, which are all equal to each other; then area of

$$ABO = \frac{AB}{2} \times OI,$$

$$BOC = \frac{BC}{2} \times OI,$$

$$COD = \frac{CD}{2} \times OI,$$

$$DOE = \frac{DE}{2} \times OI,$$

$$HOA = \frac{HA}{2} \times OI;$$

$\therefore$ area of whole figure

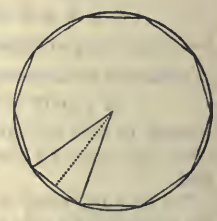
$= \frac{1}{2}(AB + CD + DE + \ldots HA) \times OI$

$= \frac{1}{2}$ perimeter $\times$ OI

$=$ perimeter $\times \frac{OI}{2}$

$=$ perimeter $\times \frac{1}{2}$ radius of inscribed circle.

Now if we consider the number of the sides of the polygon to be indefinitely increased, it follows that the area of the polygon will approach nearer and nearer to the area of the circle, and will ultimately become equal to it; and the perimeter of the polygon will be the circumference of the circle, and the radius of the inscribed circle will become the radius of the given circle; hence it follows that what has been proved for the polygon—namely,



area of polygon $= \frac{1}{2}$ perimeter $\times$ radius,

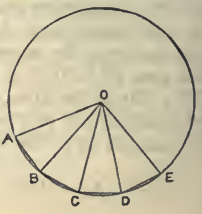
becomes for the circle,

area of circle $= \frac{1}{2}$ circumference $\times$ radius;

that is, we find the area of the circle by multiplying half the circumference by the radius, or

$$\text{area} = \pi r^2;$$

that is, the area is found by multiplying the square of the radius by $3\frac{1}{7}$.

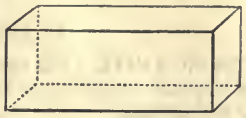


It also follows from this that the area of a sector of a circle OABCDE is found by multiplying half the arc by the radius.

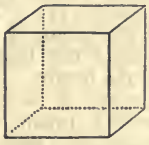
SURFACES OF SOLIDS.

The Parallelopiped—Cube.

The parallelopiped is a polyhedron, each of whose faces is a parallelogram; if the lateral edges are perpendicular to each other, it is a right-angled parallelopiped. Then the surface of the figure is evidently found by taking the sum of the six rectangular faces.

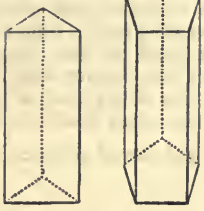


If the figure is a cube, we have for its total surface six times the surface of one face. Let a = the edge of the cube, then its surface = $6a^2$.



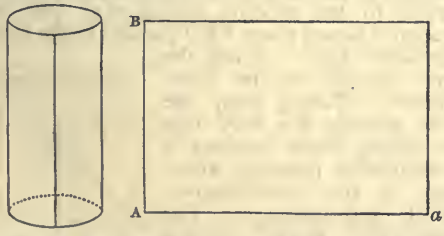
The Prism.

The surface of the prism is evidently found by taking the sum of the surfaces of its different faces. The lateral surface is made up of rectangles and the ends of triangles or polygons.



The Cylinder.

If we consider the cylinder composed of thin card-board, and that it is slit open along one of its generating lines; then if the surface be spread out, it will be of the form of a rectangle, one of



whose sides Aa is the circumference of the cylinder, and the adjacent side AB is the height of the cylinder; but the surface of this rectangle is found by multiplying Aa by AB; hence surface of cylinder

= Aa × AB = circumference × height.

This denotes the lateral surface only. We have for the total surface to add to this the surface of the two ends, which are circles, and consequently can be found.

The Pyramid.

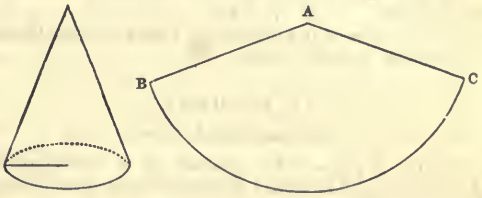
A *pyramid* is a polyhedron, bounded by a polygon and triangular faces. When the sides of the bounding polygon are equal, the pyramid is said to be regular.

The total surface of the pyramid will then be found by finding the area of the polygon, and also the areas of the triangular sides, taking their sum.

The Right Circular Cone.

A conical surface is a curved surface, generated by a moving straight line, which continually touches a given curve, and passes through a given fixed point not in the plane of the curve. The solid bounded by a conical surface is a *cone*. If the base is a circle, it is a circular cone; and when the vertex is in the straight line, passing through the centre perpendicular to the plane of the circle, it is called a *right circular cone*.

If we conceive the cone made of thin card-board, and slit open along one of its generating



lines, it is evident that the figure thus formed is the sector of a circle.

Now area of sector ABC

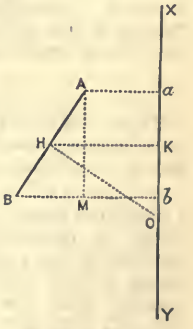
= ½ arc BC × AB;

∴ lateral surface of cone

= ½ circumference × slant height.

Hence the lateral surface of the cone is found by multiplying half the circumference of the base by the slant height. To find the total surface, we have to add to this the area of the circular base.

PROP. XV.—*The surface generated by a straight line* AB *revolving about an axis* XY *in its plane is equal to the projection ab of the line on the axis multiplied by the circumference of the circle, whose radius is the perpendicular* HO, *erected at the middle of the line, and terminated by the axis.*



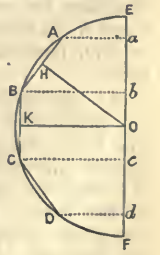
The surface generated by AB round XY is evidently that of the frustum of a cone—that is, it is the difference of two cones, one of which has Bb for the radius of its base, and the other Aa. Then this surface will evidently

= AB × cir., having HK as radius.

But AB × cir., having HK as radius = ab × cir., having HO as radius. Hence the proposition.

The Sphere.

Definition.—A *sphere* is the surface generated by the rotation of a semicircle, as ECF, about a diameter, as EF.



Let the arc AD be divided into any number of equal parts. The chords AB, BC, CD, &c., when revolving round EF, generate surfaces which we can determine; for surface by

AB = ab × cir. of which OH is radius,
BC = bc × cir. of which OH is radius,
CD = cd × cir. of which OH is radius.

Taking the sum, we have surface generated by
AB + BC + CD = ($ab + bc + cd$) × cir.,
of which OH is radius.

This being true, whatever may be the number of chords AB, BC, &c., let that number be indefinitely increased, therefore

surface of zone = ad × cir. of sphere.

Let s denote the surface of zone, whose altitude is h, the radius being r; $\therefore s = 2\pi rh$.

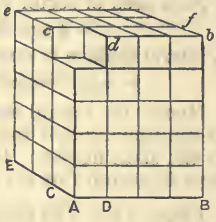
Let $h = 2r$, and we have for the total surface of the sphere $S = 4\pi r^2$,
or the surface of the sphere is equal to four times the area of a great circle.

OF VOLUMES.

The Parallelopiped—Cube.

PROP. XVI.—*The volume of a rectangular parallelopiped is equal to the product of its three dimensions.*

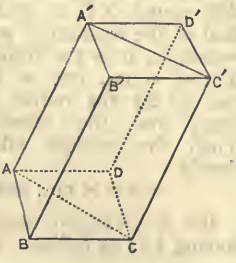
Thus let the side Bb in the figure contain 5 units, AB 4, and AE 3; then it is evident that we may consider the whole solid as being made up of *slices* AB, bf, cC, and we have one such slice for every unit in AE—that is, 3. Now in every slice we have as many *piles* as there are units in AB—that is, 4; and each pile has as many *cubes* as there are units in Bb, so that we have in the figure 3 slices, or 3 × 4 piles, or 3 × 4 × 5 cubes. The volume of the cube is evidently found by taking the cube of the side.



The Prism.

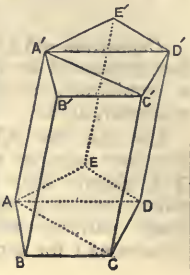
PROP. XVII.—*The volume of any prism is equal to the product of its base by its altitude.*

(1.) Let ABC — A′ be a triangular prism. This prism is equivalent to one-half of the parallelopiped ABCD — A′ constructed upon the edges AB, BC, BB′, and it has the same altitude. The volume of the parallelopiped is equal to its base multiplied by its altitude; therefore the volume of the triangular prism is equal to its base ABC, the half of BD, multiplied by its altitude.



(2.) Let ABCDE — A′ be any prism. It may be divided into triangular prisms by planes passed through a lateral edge AA′ and the several diagonals of the base. The volume of the given prism is the sum of the volumes of the triangular prisms, or the sum of their bases multiplied by their common altitude. But the sum of the bases is the base ABCD; therefore

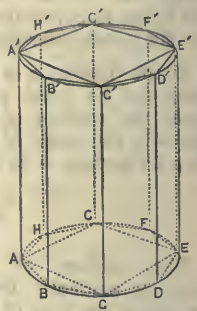
volume of prism = area of base × altitude.



The Cylinder.

PROP. XVIII.—*The volume of a right cylinder on circular base is equal to the product of the base by the altitude.*

Inscribe within the cylinder the right prism ABCD ... HA′... H′. The volume of this prism is equal to the area of the base multiplied by the height. Conceive the number of faces of the inscribed prism to augment continually, then the volume of the prism approaches nearer and nearer to that of the cylinder, and ultimately coincides with it; the area of the base of the prism approaches nearer and nearer to that of the base of the cylinder, and the height of the prism is always that of the cylinder; hence

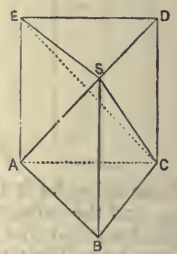


volume of cylinder = area of base × height.

The Pyramid.

PROP. XIX.—*To find the volume of a triangular pyramid.*

Let S—ABC be a triangular pyramid. Through one edge of the base, as AC, pass a plane ACDE parallel to the opposite lateral edge SB, and through S pass a plane SED parallel to the base; the prism ABC — E has the same altitude as the given pyramid. Taking away the given pyramid S — ABC from the prism, there remains a quadrangular pyramid, whose base is the parallelogram ACDE and vertex S. The plane SEC, passed through SE and SC, divides this pyramid into two triangular pyramids S — AEC and S — ECD, which are equivalent to each other, since their triangular bases AEC, ECD are halves of the parallelogram ACDE, and their common altitude is the perpendicular from S upon the plane ACDE. The pyramid S — ECD may be regarded as having ESD for its base, and its vertex at C, therefore it is equivalent to the given pyramid S — ABC; so also will the pyramid S — EAC be equal to S — ABC; therefore the given pyramid is equal to one-third of the whole prism, or



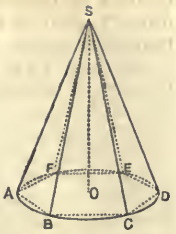
volume of pyramid = $\frac{1}{3}$ volume of prism.

The Cone.

PROP. XX.—*To find the volume of a cone.*

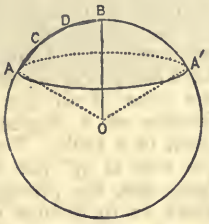
Inscribe within the cone SAD the regular pyramid SABCDEF; the volume of this pyramid is

measured by the area of its base multiplied by $\frac{1}{3}$ of its height SO. If now we double indefinitely the number of the faces of the pyramid, the volume of the pyramid approaches nearer and nearer to the volume of the cone, and ultimately coincides with it; the base of the polygon approaches nearer and nearer to the base of the cone, and ultimately coincides with it. The height of the pyramid is always the height of the cone; therefore the volume of a right cone on circular base is measured by the area of the base multiplied by a third of the height.



The Sphere.

It may be shewn that when a triangle revolves round an axis situated in its plane, and passing through the vertex without crossing its surface, the volume generated is equal to the surface generated by the base multiplied by one-third of the altitude. Hence it follows that the volume generated by a sector AOB of a circle turning round one of its sides OB is measured by the area which is generated by the arc AB, multiplied by one-third of the radius of the circle. Therefore, when the arc AB becomes a semicircle, the volume of the sphere is equal to its surface multiplied by one-third the radius. Let V denote the volume, S = surface of sphere, we have



$$V = S \cdot \frac{r}{3} = 4\pi r^2 \cdot \frac{r}{3}$$

$$= \frac{4\pi r^3}{3} = \frac{\pi d^3}{6}$$

Hence to find the volume of a sphere, we *multiply* four times the cube of the radius by 3½, and divide the product by 3.

CONSTRUCTION OF SCALES.

In practical geometry, scales of various kinds are used for the construction of figures. Scales are lines with divisions of various kinds marked upon them, according as they are to be used for measuring lines or angles. The name of *scales* is given to lines so divided, because the Latin word for ladder is *scala*, and the divisions are equidistant like the steps of a ladder. A line so divided is for the same reason said to be *graduated*, this word being derived from the Latin *gradus*, a step.

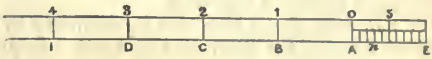
The *values* of the magnitudes of lines or angles are numbers representing the number of times that some unit of the same kind is contained in them.

The *unit of measure* for lines is some line of given length, as a foot, a yard, a mile, and so on.

The unit of measure for angles is the ninetieth part of a right angle.

The method of constructing a scale of equal parts is the following:

Lay off a number of equal divisions, AB, BC, CD, &c., and AE, and divide AE into ten equal parts. When a large division, as AB, represents



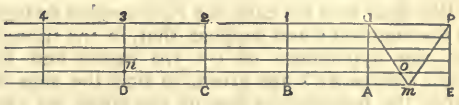
10, each of the small divisions in AE will represent 1. When each of the large divisions represents 100, each of the small divisions in AE represents 10. Hence, on the latter supposition, the distance from C to *n* is 230; and on the former supposition it is 23.

If the large divisions represent units, the small ones on AE represent tenths—that is, each of them is $\frac{1}{10}$, or ·1. On this supposition, the distance C*n* is 2·3.

To construct a plane diagonal scale.

1. A diagonal scale for two figures.

Draw five lines parallel to DE, and equidistant, and lay off the equal divisions AE, AB, BC, CD,

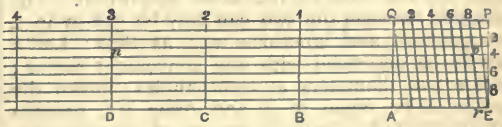


&c., and make EP, AQ, B1, C2, &c., perpendicular to DE. Find *m*, the middle of AE, and draw the lines Q*m*, *m*P.

The mode of using this scale is evident from the last. If the large divisions denote tens, then from *n* to *o* is evidently 34.

2. A diagonal scale for three figures.

Draw ten lines parallel to DE, and equidistant. Lay off the equal parts, AB, BC, CD, &c., and AE, and draw EP, AQ, B1, C2,... &c. perpendicular to DE. Divide QP, AE into 10 equal parts. Join the 1st, 2d, 3d,... divisions on QP with the 2d, 3d, 4th,... divisions on AE respectively.



If the divisions on AD each represent 100, each of those on QP will represent 10. Thus from 3 on AD to 8 on QP is 380; but by moving the points of the compasses down to the fourth line, and extending them from *n* to *o*, the number will be 384. For the distance of 8 on QP from Q is 80, and of *r* from A is 90; and hence that of *o* from the line AQ is 84.

When the divisions on AD denote tens, those on QP denote units; and from *n* to *o* would then represent 38$\frac{4}{10}$, or 38·4.

When the numbers representing the lengths of the sides of any figure would give lines of an inconvenient size taken from the scale, the numbers may be all multiplied or all divided by such a number as will adapt the lengths of the lines to the required dimensions of the figure.

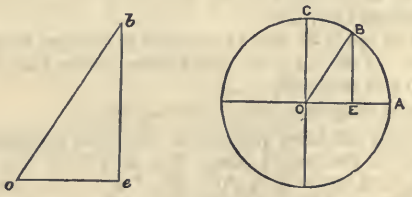
TRIGONOMETRY—LAND-SURVEYING.

Trigonometry signifies literally the art of measuring triangles, but with the progress of science the meaning of the word has been much extended. Trigonometry is divided into plane and spherical, according as it is directed to the investigation of plane or of spherical triangles.

We can only speak here of Trigonometry in the original sense of the term, and as applied to plane triangles.

The mensuration of triangles in the cases where only lines and areas enter into the calculation, is treated in the foregoing pages, and requires nothing beyond the simple operations of arithmetic. But where sides are to be found from angles, or angles from sides, an apparatus of trigonometrical tables is required; and for their use and their application to all the cases that occur, we must refer to larger treatises on the subject, such as *Practical Mathematics*, and *Mathematical Tables*, in Chambers's Educational Course. All that can be done here is to explain why tables should be necessary—a question that frequently occurs to beginners, but the answer to which is not always forthcoming.

We shall take the case of a right-angled triangle as the simplest; and suppose that, in the triangle *oeb*, the hypotenuse *ob* (= 370 yards) and the angle *boe* (= 57°) are given, to find the side *be*. From the numerical value of the angle, we cannot directly get the length of the side, because



the two things are of different natures; an angle is not any kind of length, but merely an amount of opening or divergence; and the angle and the side do not vary in the same proportion. The relation between the two can only be got at in a roundabout and laborious way, as thus: Let a circle be described with any convenient radius; draw two diameters at right angles; make the angle AOB equal to *o*, and draw BE perpendicular to OA. In the language of trigonometry, BE is the *sine* of the arc AB, or of the angle AOB, of which AB is the measure. For the purpose of calculation, the radius OB is either taken as unity with decimal subdivisions, or it is supposed to be divided into 10,000,000,000 equal parts; and the quadrant AC is divided into 90 equal parts called degrees. Supposing that AB contains 57 of those degrees, then AB is said to be an arc of 57°, and AOB, or *eob*, an angle of 57°. From the number of degrees in an arc or angle, we cannot directly deduce the sine, except in one or two particular cases. One of these is when the angle is one-third of a right angle, that is, 30°; the sine is then equal to one-half the radius. This is manifest on looking at a hexagon inscribed in a circle (p. 621), and supposing lines drawn from the centre to the extremities of a side and to its middle point. It might seem to the beginner that this one sine furnished a bridge of transition to any other sine; and that he had only to put 30° : 57° : : sine of 30° : sine of 57°. But the sines are not in proportion to the arcs; a little inspection makes it manifest that when an arc is doubled in size, the sine does not become double too. There are, however, theorems and processes which enable us from the sine of 30° to deduce the sine of any other angle. But the processes are long and intricate; and if the calculations had to be made for every individual triangle, trigonometry would be a laborious business indeed. The calculations of the different sines have, therefore, been made once for all, and the results recorded for subsequent use. Taking the radius at the number of units above mentioned, mathematicians have computed on the same scale the lengths of the sines of all arcs or angles from a minute fraction of a degree up to 90°, and arranged them in a table. Turning to this table, we find the sine of 57° put down as 8,386,706,000; and from this, the principle of similar triangles enables us to deduce the line we want. For the triangles OEB and *oeb* being similar,

OB (radius) : BE (sine) : : *ob* : *be*

or 10,000,000,000 : 8,386,706,000 : : 370 : answer.

As the working out of this would involve a long operation of multiplication and division, the practice is to use the logarithms of the numbers; which reduces the process to simple addition and subtraction. Accordingly, trigonometrical tables give the *logarithms* of the sines, as well as the sines themselves, which are called the *natural sines*. These tables contain also the logarithms of other lines connected with arcs (tangents, cosines, &c.), which are used in calculation in a similar way.

Land-surveying is the method of measuring and computing the area of any small portion of the earth's surface, as a field, a farm, an estate, or district of moderate extent. There are three distinct operations in the art of land-surveying, all of which require the surveyor to possess a competent knowledge of arithmetic, algebra, and geometry. In the *first* place, the several lines and angles must be measured; *secondly*, they must be protracted or laid down on paper, so as to form a plan or map of the district; and, *thirdly*, the whole area of the district must be computed on the principles above explained. For details of the various operations we must refer to the work on Practical Mathematics already named.

Landscape by Claude.

DRAWING—PAINTING—SCULPTURE.

AS a means of refining the taste, and opening up new and ever-varying sources of enjoyment, the art of drawing occupies an important place. The person who has acquired a knowledge of botany, feels a new pleasure in examining the parts of a hitherto unseen plant; he who has acquired a knowledge of geology, is interested in passing along a road the side of which displays a deep section of strata, or from which he may view various granitic elevations; he who has acquainted himself with the principles of machinery, experiences an enjoyment in contemplating the intricacies of some great engine which another knows nothing of; and in the same manner, he who has studied drawing, discovers a source of new and innocent gratification in the innumerable forms and tints of external nature. Things formerly passed with a careless eye and a vacant mind, then assume a character which arrests attention and awakens thought. Those faculties of the mind which perceive and appreciate the figure, colour, and arrangements of objects, and trace in all a natural and appropriate beauty, exist only in embryo until cultivated. When they are once called into vigorous exercise, a new association of our mysterious being with the physical world around us is practically established; and the value of existence becomes proportionally enhanced. Nor, while the art is being acquired with this view, may it be without some results of a more directly useful kind. In many situations—when wandering in our own, or roaming in foreign countries—we may see objects of which we should be glad to carry away some memorandum, and of which the slightest pencil-sketch would be sufficient to awaken a recollection at any other time. And yet, for want of a few elementary lessons in drawing, many of even those who travel for the purpose of informing the public, are unable to commemorate such objects, or, at the best, can give only a few rude scratches in outline, which a professional artist has afterwards to fashion into shape—a shape, of course, in which correct representation is not to be looked for. In this point of view, drawing takes its place, as a useful art, by the side of writing, being, like it, a means of description, and one which may occasionally be even more serviceable than that art, though certainly not capable of so general an application.

PENCIL-DRAWING.

Black-lead pencils for the purpose of drawing possess various degrees of hardness, indicated by letters stamped upon them—H, signifying hard; HB, hard and black; B, black; BB, blacker still; and so on—each additional letter signifying an increase of the quality of which the letter is the initial.

The best pencils for general use are the HB, B, and BB—the HB being used in the lighter parts of the drawing, especially in the distance, the B in the foreground, and the BB to give the strongest and most spirited touches.

The paper used should be rather of a soft texture, having but little size in its composition, and smooth, but not glazed.

A drawing-board is a useful, but not an indispensable auxiliary; any flat surface, if sufficiently smooth, will do tolerably well, such as the top of

a table, or the boards of a large book. The drawing-board may be made of any smooth-surfaced wood: common deal does very well when sufficiently seasoned. As to size, for ordinary purposes, one about twenty-four by eighteen inches will be large enough.

It is advisable to fasten the paper to the board, especially when it has been kept rolled up, so as to keep it flat. This is most conveniently done by inserting a small drawing-pin in each of the corners; but if these cannot be had, any small flat-headed tack will do.

A penknife to point the pencil, and a piece of day-old bread to erase or lighten portions of the drawing when required, complete the materials. India-rubber is sometimes used; but as it smears the lead, especially in the darker portions of the drawing, and destroys the surface of the paper, it is not to be recommended. If it is used at all, the part to be erased should first be rubbed with bread, so as to remove the greater portion of the lead, and then rubbed as little as possible.

The mode of holding the pencil in drawing differs a little from that of the pen in writing. The mid-finger should support the pencil on one side, and the thumb on the other, the forefinger pressing gently on the top between them: they should be a little curved, holding the pencil easily. The mode of holding a pen is only suited for lines sloping from right to left, and cramps the movement of the fingers in any other direction.

The first effort of the pupil should be to draw straight lines, beginning with the vertical or upright, then the horizontal; proceeding to the diagonals from right to left, and left to right.

They should be drawn at once from end to end, not in short pieces attached to each other; and of various lengths, from three to six or eight inches. When short, they may be drawn while resting on the wrist; but when long, they must be made from the elbow. In the first case, the fingers make the motion; in the second, the arm.

To educate the eye, it is of importance that besides making the lines straight, they should be of a certain given length; for example, the vertical, horizontal, and diagonal lines should be drawn equal in length to each other. This should be done by making a dot where the line is to begin, and another where it is to end.

The pupil should now proceed to draw definite regular forms, beginning with the square. This should be drawn by first making two dots, to represent the length of one of the sides, and by carefully placing other two equally distant. Proceed to draw the lines.

A parallelogram, with its length equal to twice or thrice its width, and an equilateral triangle, should next be attempted, and these, though perhaps not very attractive as subjects, are most valuable in training the eye, for it will be found that the only way to judge correctly the nature of any irregularly proportioned object, so as to be enabled to give a representation with due truthfulness, is to note how far it deviates from regular form, and render it accordingly.

After a course of practice in such elementary lessons, if sufficient facility is attained, it may be advisable to proceed to those of a picturesque description, beginning with some simple study, as exemplified in fig. 1. It will be found, however, that simple as any such copy may appear, there is much to be taken into consideration; the lines are broken and irregular, requiring a certain amount of practice before the hand can be trained

Fig. 1.

to represent them with freedom; and it is not enough that they should be exactly copied, or that every scratch and point is rendered; *they should be understood.*

Fig. 2 represents a new-built cottage. It will

Fig. 2.

be observed that its appearance is not in any way attractive as a picture; the lines are stiff and hard, and the whole is monotonous. Fig. 3 is more pleasing, and more picturesque; the lines

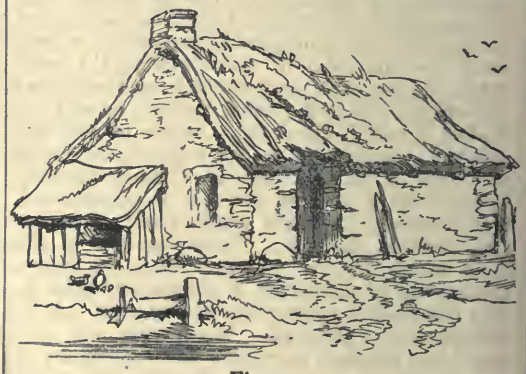


Fig. 3.

are more varied. It is the same cottage, but shewing the effects of age. The lines of the masonry are serrated, because in the course of time the lime gives way, and chinks are formed; the stones absorb moisture; these, expanded by the frost, break and crumble, especially at their exposed angles; hence the chinks become wider, and the outline more irregular.

In outlining, the line must be carefully varied in strength, otherwise it will appear hard. Those lines and portions of lines next to the light should be lighter than those away from it; thus giving variety to the general effect, and assisting the expression of character at the same time.

The system of dotting the spaces before drawing the lines, although essential when beginning to draw, may be dispensed with when the eye has been in some measure trained to judge of distances relatively. The system of *blocking*, or *sketching-in*, may then be resorted to. This consists in first drawing-in lightly, with a soft pencil, the leading features and general forms only of the subject. These, although mere indications, should be extremely correct, because the subsequent filling up and making out of parts depend entirely on their being properly allocated.

Before beginning to draw-in firmly, the preliminary sketching-in should be rubbed nearly out with bread-crumbs, leaving merely enough to guide the subsequent drawing; otherwise, the lines would give a confused appearance to the work.

When the subject is complicated by having a number of parts, the plan of division and subdivision should be resorted to, by finding the centre in the copy, and noting what occurs there; and again dividing the parts, and noting what occurs at each of the divisions, the most complicated subject becomes merely a collection of parts, each in itself simple enough, and, as a whole, merely a matter of time and patience.

LIGHT AND SHADE.

Those parts of a drawing that are exposed to the direct rays of the sun are termed the *lights*, and, as a whole, are termed the *light*. Those portions which, from their position, do not receive these rays, are termed *shadows*, and, collectively, are termed the *shade;* and it is quite common to speak of the relative amount of light or shade a drawing may possess.

Surfaces in light vary in brilliancy according to the angle they present to the sun's rays: those at right angles—that is, placed directly across—receive them in their fullest intensity; and those at an angle—that is, those that receive the rays sloping—obtain a weaker light in proportion to the angle they present. This may be seen by a very simple experiment. If a book be laid open flat on a table, and one of the leaves raised straight up at right angles, it will be observed that it receives the light much stronger than the flat page. If this leaf is laid gradually backward, sloping more and more, it will receive less and less light, until it becomes flat like the other, when, of course, they are illumined both alike. And if the page that originally lay flat, be gradually raised up, it will get darker and darker, until it reaches the same slope as the rays of light, when it then begins to be in positive shade, and will cast a shadow on the opposite page, which will be darker than the shaded side of the leaf, because the leaf exposed to the light throws back reflected light, and, to a certain extent, lights up the shaded leaf; but the cast shadow on the lighted leaf has no such reflection, and is consequently darker.

What is true in this case, is true in all. If the wall of a cottage is placed directly opposite the sun's rays, it is lighted up as high as it possibly can be; but if placed at an angle, it will be lighted only in proportion to the inclination of its surface.

Fig. 4 represents an octagonal block of stone. It will be observed that its peculiar form is expressed principally by the difference in illumination of the surface exposed to the light. In circular objects, such as the fragment of a pillar indicated in fig. 5, the same effect will be observed, the only difference being that the transition from light to shade is gradual. A vertical

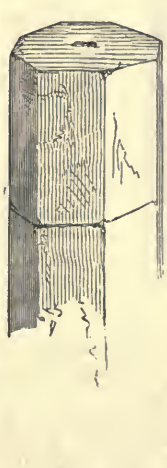


Fig. 4.

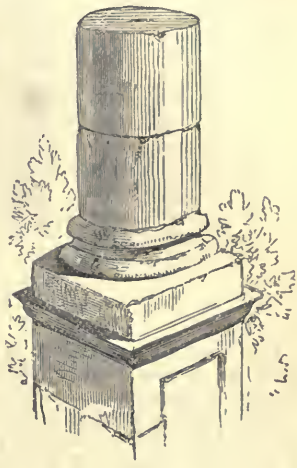


Fig. 5.

strip of light will be noticed on that part directly opposed to the sun's rays; this is gradually toned down as the surface recedes either towards the right or left. The gray tint on the left is useful in giving distinctness to the outline on that side; and that on the right in connecting the light with the shadow. The shadow will be observed to be equally varied and softened; it also has its strip, but of intensest shade: this is most decided on that part next the light, so as to form a distinct line. This is always the case with rounded forms. The most intense portion of the shadow begins at that part where the rays cease to reach the surface; the remaining portion of the shadow towards the right is illumined by reflected light, assisting still further the expression of the circular form. The cast shadow will be observed to be much darker than any portion of the pillar itself, and is useful in giving spirit and effect to the whole. The same is true of all cast shadows: they are generally small, and afford those piquant, sharp, dark touches so much valued in drawing.

Light has much to do with the textures in drawing, such as those of ground-walls and roofs. When a circular tower, as in fig. 6, is illumined, that portion immediately opposed to the rays exhibits scarcely any texture, however rough the wall may really be. The reason is obvious: the light penetrates every crevice, and any projections that may occur have no shadows; but as soon as the surface begins to round off from the light, the roughness begins to be seen. By the crevices beginning to receive less light, these become more and more obvious, till midway between the high light and the deep strip of

shading, when the indications become less marked, until they finally disappear in the shade.

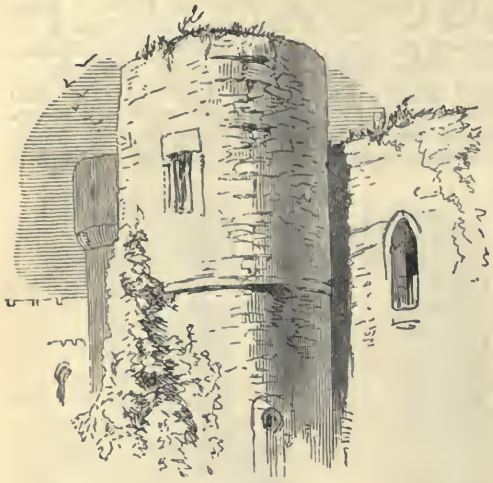


Fig. 6.

This gradation of texture is very important, as much so as gradation of light or shade. Uniformity of any quality is unpleasing.

In all tinting, whether in the lower lights or in the absolute shadows, the lines should be as soft as possible. There are no lines seen in nature; and when they are made too obvious in the drawing, they become offensive. The best way is to cut the point of the pencil somewhat like that of a chisel, and use the broad side for the tints; by using a sharp point, the lines become too clearly visible, and the effect is scratchy.

The lines should be zigzag, as in the annexed figure, and closely run together; and as some

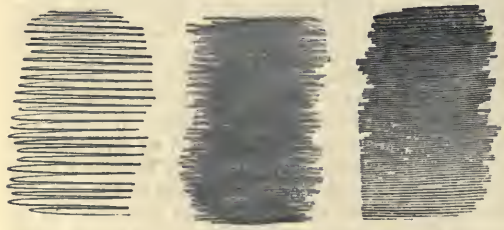


Fig. 7.

experience is required before this can be done with freedom, it is worth while to practise tinting by itself. The pupil should first try the tints flat, and then graduated, taking care, in working the pencil from side to side, to press equally, leaving no dots or marks at the ends of the lines. In making graduated tints, it is always best to begin at the darkest part, and allow the tint to lighten gradually, until it becomes so light as to be scarcely perceptible. By beginning thus at the darkest part, more command is obtained over the effect desired than by the reverse method. By beginning at the light, the pencil is apt to start rather abruptly, making an indication; and, besides, it is scarcely possible for a beginner to be sure that, in going over a certain space, the tint will be of the exact strength required when the gradation is concluded.

When the masses of tint are large, the point of the pencil should project about three inches from the finger; and when very light, as in skies, it should be held nearly at the end, so as to put as little of the weight of hand on it as possible.

VEGETATION.

It frequently occurs in drawings that vegetation of some kind forms a feature, requiring a distinctive mode of treatment and a training of the hand suited to the peculiarity of character. Thus, moss, grass, herbage, and trees require each a different style of touch.

With a view to acquiring facility in the representation of grass, it is advisable to practise a lesson such as that indicated in fig. 8. It simply consists in making a ring of touches, each resembling a blade of grass. These should be practised, first in one direction, then in the other, so as to give facility both ways; it is also useful to begin firmly, allowing the lines to become gradually fainter as the circle is completed.

This lesson should be practised until facility is attained; if once acquired, it will give a certain amount of readiness, that will render subsequent lessons comparatively easy.

Fig. 8.

When a large mass of grass occurs in any portion of a drawing, the outline should be expressed first; the centre is then to be filled up by short grassy touches branching from the outline, each touch ending in still shorter markings, and these softened off with oblong dots.

TREES.

The stems of trees are cylindrical, and of course are expressed by the characteristic light and shade peculiar to that form, as in the pillar, fig. 4. The bark of some is more or less corrugated, as in the fir, the oak, elm, ash, plane, and others. This is not indicated—at least, not to a very great extent—in the light, from the same reasons given in the remarks on fig. 6 in relation to rough cylindrical surfaces. It is seen most decided between the high light and the beginning of the shadow, which is a defined line. As a general rule, all those portions at right angles to the rays of light indicate texture least, and those at 45 degrees shew it strongest.

These corrugations or roughnesses are indicated by short lines, varying among themselves, as in fig. 9, and becoming shorter, and thinner, and more separated, as they approach the high light.

The stem or trunk is generally a little wider at the root than it is a few feet higher up, having so far a tapering effect; but after this, it continues in most cases the same thickness, until the branches begin to abstract a portion of its substance, when it becomes thinner in proportion. Each successive branch takes away a further portion, until it is so far diminished as to be lost among them.

Great care should always be taken to express the cylindrical character of the stem and branches throughout. This is best done by putting in, at

Fig. 9.

the first, the dark strip which runs down the heart or centre of the shadow in all cylindrical forms; and by gradually lightening the tints towards the outline on the shadow side, and adding a few touches, indicative of character, between it and the high light, the effect of roundness will be expressed.

The art of properly delineating foliage requires more training of the hand, and a more thorough appreciation of nature, than any other section of landscape drawing. If the hand is not sufficiently trained, its awkwardness betrays itself in every effort; and if the subject is not thoroughly understood, the mannered artificial style acquired, at once shews the want of the necessary information, by the unnatural appearance of the work; moreover, every tree, possessing distinct characteristic features, requires a special training of the hand suited to its expression: for example, the pupil may be able, after some experience, to represent a willow, but may be utterly unable to draw an oak. The fir, the chestnut, the alder, the ash, the elm, the plane, and other trees, have each features perfectly distinct from each other, and which should never be permitted to intermingle. The pupil should never allow the texture of the oak to mix with that of the elm, or that of the willow with the ash, and so with the others. Error in this respect is very common, as many seem to imagine that, by acquiring a certain style of scribbling, it will suit trees generally; and not only these, but grass and herbage. But, after all, there is little real difficulty; the training of the hand is easily acquired by ordinary patience; and the knowledge of the characteristics of nature thus acquired is a source of great pleasure.

The first lesson should be a simple cluster of leaves, as indicated at *a*, in fig. 10. It will be observed that in this, the leaves bend over on both sides from their own weight, and appear attached to the same twig. At *b*, there are three of these clusters attached; and at *c*, there are several of these supposed to be connected by the

Fig. 10.

same branch, forming a mass which presents the same characteristics as the simple cluster of leaves. It will be observed that each of the smaller clusters bends over according to its position, in the same way as each leaf bends over in the simple cluster; hence, it is useful, in sketching-in a mass of foliage, to outline it, as at *d*, which, it will be observed, very much resembles *a* in its character.

Care must also be taken to think of the twigs, and the leaves they support, with reference to the branches. At *f*, there is a serrated leafy outline; but the large bald centre does not suggest foliage; it means nothing. As this mistake is very common in beginning this branch of drawing, care must be taken to attach the leaves together, as at *a*.

In these examples, the foliage is supposed to be in the light, and seen against a light background: it is expressed by simple outline. But in drawing a tree, the foliage is sometimes seen light against a darker portion, and sometimes dark against a lighter. When the background is dark, that should be put in first, the lighter portions being indicated by leaving out the background. This requires some dexterity, as it is a somewhat difficult operation; but by using the side of the lead, and putting in the background with a broad touch, the abrupt indications left (as at *b*, fig. 11) give a

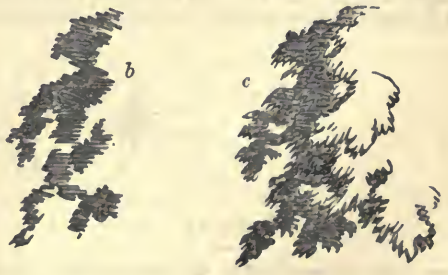


Fig. 11.

serrated appearance, which, with a few subsequent touches, is readily modelled into the required shape, as at *c*. When the leaves are seen against a lighter background, the process is simple, care being taken to keep the pencil blunt at the point, so as to secure a broad dark touch.

Before beginning to draw a tree, the pupil should notice to what species it belongs, as a

different touch is required for each. In some, the leaves are long and narrow, as in the ash and willow, and are represented by corresponding long touches; in others, they are shorter and broader, as in the elm and lime; the peculiar touch being carefully kept up throughout the whole tree—otherwise the mixture of elm and willow leaves on one tree will appear unnatural; yet the mistake is one a beginner is very apt to make.

The oak is represented by a concave instead of a convex touch, as at *a*, in fig. 12, in order to give

Fig. 12.

the picturesque crisp touch by which it is characterised. Care must also be taken to make the several clusters of leaves appear properly attached together, as at *b*.

PERSPECTIVE.

Perspective is the method by which objects are represented on any flat surface, as a sheet of paper, so that they suggest the true appearance of nature to the eye. It is the basis of the art of drawing, training the eye to discern the visual effects of nature, and giving facility and correctness in their representation.

It is impossible, within the limits of the present paper, to go deeply into the theory of this important subject. But the more salient practical points, sufficient for the purposes of the beginner, may be briefly explained.

Every one has noticed, that as objects retire from the eye, they appear to diminish. The reason of this may be found from the adjoining diagram (13). AB and CD represent two objects at different distances from the eye. Lines drawn

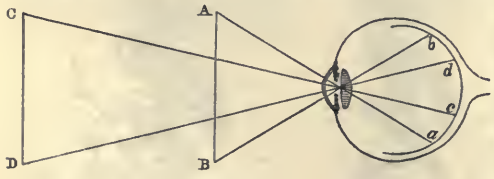


Fig. 13.

from their extremities to the retina shew the difference in magnitude of the pictures of them formed there; *cd* represents CD; and the space between *ab*, AB. It will be seen that AB has a picture nearly double in size of that formed by CD; that is, it would appear so to the eye.

It will be observed that the lines or rays proceeding to the eye from AB, slope more than those from CD; hence they are said to be at a greater angle than those of CD; and if CD were further removed, the lines would in proportion slope still less: hence, as objects recede from the eye, they are said to be seen under a less angle. If we look straight along a street, the horizontal lines of the buildings and pavement appear to contract and tend towards a point immediately opposite to the eye. Those below the level of the eye, as the lines of the pavement and base-lines of the buildings, tend upward, as AP, BP, fig. 14.

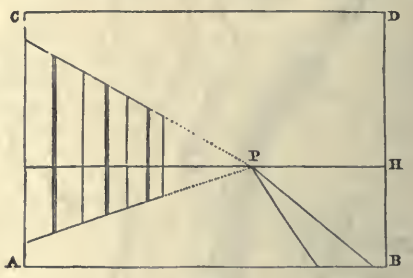


Fig. 14.

Those above the eye, as the horizontal portions of doors, windows, chimneys, &c. and the eaves of the buildings, tend downward, as CP. The upward and converging tendency may be very distinctly observed in the long receding lines of the rails on a railway. As a general rule, all level or horizontal lines appear to converge and terminate in the horizon, or horizontal line, as it is called in perspective, the particular point in which they terminate being determined by their relative position.

The same is true of lines that slope, as those of the roofs of buildings; these also converge: and it is necessary, in copying drawings, when such occur, to note the amount of convergence. Most students are apt to overlook this, and draw them strictly parallel, which is quite true of them as they really are, but not as they appear.

If a book, a box, or other rectangular object, be placed on a table, with two of the sides parallel with the position of the spectator, it will be noticed that the lines at right angles to him converge to a point immediately opposite the eye, as CF and DF to P, fig. 15. The object in this position is said to be in *parallel perspective*. A good idea of parallel perspective may be obtained by standing at the end of a rectangular room, with the back placed flat against one of the end-walls; the lines of side-walls at the roof and floor proceed at right angles from the spectator, and tend to a point immediately opposite to the eye, as in fig. 16.

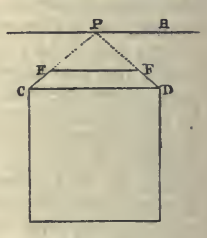


Fig. 15.

But if the back be placed in one of the corners of the room, the lines will not meet opposite to the eye, as before, but will converge to points in the horizontal line to the right and left of the position. These will all be inclined to the spectator, as in fig. 17, and hence are said to be in *angular perspective*.

It is not enough, however, merely to know what parallel and angular perspective are; they must be known in all their various effects, to be of

any practical utility. The pupil should familiarise himself with the various different appearances

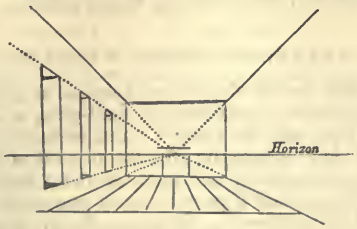


Fig. 16.

which a single object, as a box or a book, may be made to assume by being placed in different positions.

The relation between a perspective drawing and the perspective appearance of nature, may be

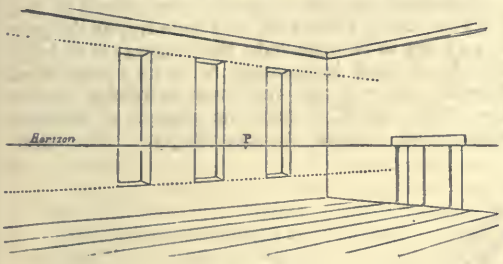


Fig. 17.

simply illustrated by placing a piece of slightly smoked glass in a vertical position; and with the eye kept strictly at the same point, by tracing, with the aid of any fine-pointed instrument, the outline of objects seen beyond, the result will be a correct perspective picture. If the tracing thus made be held in an angular position in reference to the eye, it will have a distorted effect; or if placed parallel to the spectator, but removed above, below, or aside from the eye, it will be impossible to see it correctly. In proportion as it is placed in its original position in reference to the eye, it will seem to become more true; but only when placed exactly in the same position as when the tracing was made, does it appear perfectly correct.

And so with all drawings—there is only one point from which they can appear with correctness; this is called the *point of sight* or *point of view*. It is that from which the drawing is made, and from which it should be viewed when finished.

To make use of the point of sight in perspective drawings, it is transferred to the plane of the picture in the following manner: Having decided or ascertained the distance of the eye from the drawing—equal to from one to one and a half times the width of the drawing, as the case may be—draw the horizontal line HH (fig. 18), where the horizon of the scene should occur. Mark the point on it immediately opposite the eye, and draw a vertical line, PE, equal to the distance; its extremity, E, will be the eye or point of sight transferred to the plane of the picture.

As a general rule, the angle produced at the point of sight by the lines coming from the bounds of the picture on the horizontal line, as H, E, should be equal to the number of degrees on the horizon contained in the picture. The horizon is divided into 360 degrees, and supposing the picture to include sixty of these, or one-sixth of the visible horizon, it would be necessary that the point of sight should be so far from the principal point, that

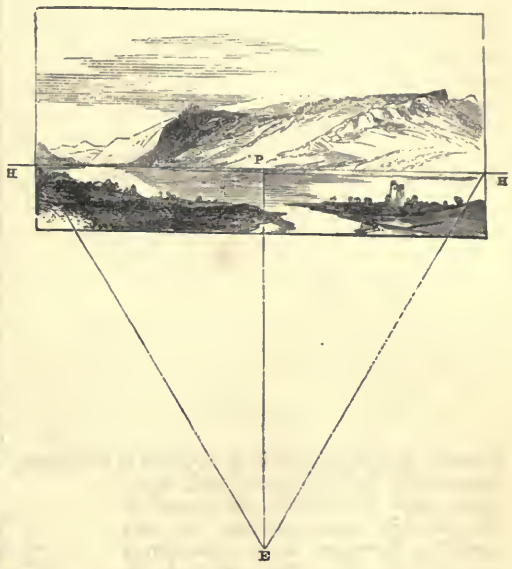


Fig. 18.

the angle formed there by the lines H, E, would contain the same number of degrees.

The point P has been erroneously termed the point of sight. The old masters termed it the *centre*, because the eye naturally chooses the point of sight opposite the centre in looking at a picture. However, as it is not absolutely necessary that it should be exactly so, the best modern authors term it the *principal point*.

It is optional to transfer the point of sight either above or below the horizontal line. In fig. 18, it is represented below. The choice of either position depends on convenience, or on the nature of the subject.

To draw Circles in Perspective.—The most convenient way for amateur practice is to *lot* a square, by dividing its sides into any convenient number of equal parts, as in fig. 19. This might be done on card-board, and kept by itself, to refer to when required. Then, by placing a square in the picture in the position of the circle required to be drawn perspectively, and lotting it, as in fig. 20, we proceed to note carefully where, in fig. 19, the circle comes in contact with the lines; and touching these points with the pencil, we draw the circle as seen in perspective. A map, or picture on a wall, may be represented perspectively in the same manner.

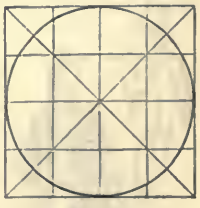


Fig. 19.

This is also a very good way to draw pointed Gothic windows, ellipses, or other figures: indeed, by having recourse to this very simple expedient, the artist might insure sufficient accuracy in the perspective representation of any object whatever;

for example, suppose a ground-plan drawn within the square in fig. 19, it could be very readily drawn within the perspective square in fig. 20. In the

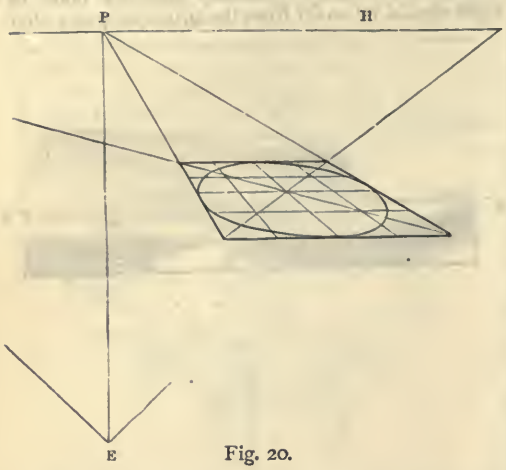


Fig. 20.

drawing of bridges, much annoyance is frequently experienced by beginners, and especially when the arches are varied in size, as they commonly are. By this operation, however, any inconvenience incurred by the other methods is avoided, because, although the arches may vary in size, by lotting them in the same proportion with the original drawing, as fig. 19, the mode of working in each case is the same; but in all the ordinary methods, every variation in the size of the arches entails a fresh operation.

Besides varying in size, arches very frequently vary in form. Some are pointed, others are elliptical; but by simply drawing the form geometrically on a separate piece of paper, and lotting it and the perspective space in the same manner, they are as easily represented as the ordinary circle.

To place the various Figures introduced into a Landscape in Perspective.—One should be drawn first, as at A, fig. 21; and by drawing lines from

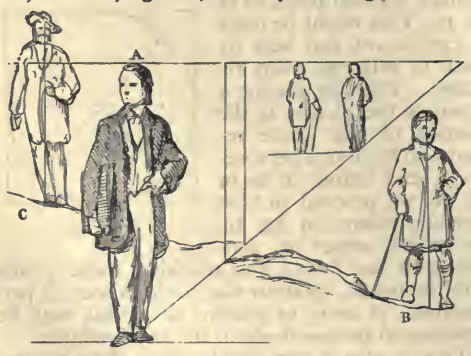


Fig. 21.

his head and feet to any point in the horizontal line, we obtain a scale of proportions for the various distances. Thus the figure on the height at C, and that on the declivity at B, have each their height given according to the scale.

SKETCHING FROM NATURE.

The first studies should be as simple as possible: an old cottage, a picturesque field-gate, a bridge, or such like, may be chosen; and in selecting the point of view, secure the greatest amount of variety in point of character and line. A direct front view should be avoided if possible, and one at an angle selected in preference; for example, in sketching objects such as those indicated in fig. 22, points of view should be taken so that they present a perspective appearance, as *b* and *d*, in preference to *a* and *c*, which, it will be observed, look stiff and formal. The materials used are the same as those in copying, with the addition of a sketching-stool, and a portfolio or sketch-book.

In order to imitate the perspective effects of the lines correctly, great care is necessary, as the eye is very apt to be deceived: the best way is to hold the sketch-book horizontally, with its upper edge between the eye and the lower extremity of the line to be copied, to note the amount of relative slope, and render it accordingly. The first

Fig. 22.

attempts should be nearly in outline, and the most striking characteristics and leading features only are to be attempted, leaving more complete finish to a subsequent period, when it may be done with the brush. Too much care cannot be taken to give truth. All essays at bold drawing or style should be avoided; for it will be found that it is only by a long course of careful study that real dexterity can be attained. As experience is gained, the pupil acquires confidence, and puts the proper touches in the right places, so as to bring out the effect, and express the characteristic features with less amount of labour.

In the management of extended views, the first point is to fix on the particular portion of the scene to be contained in the sketch: a good method of doing this is to cut an aperture in a piece of card-board, two or three inches long, of the same proportions as the sketch-book; then looking at the scene through this, and selecting a pleasing combination of objects—those occurring at the extremities should be noted, as well as those situated exactly in the centre: the sketch

may then be proceeded with. A still further assistance may be obtained by holding the sketch-book with its upper edge between the eye and certain parts of the landscape, taking care that it completely extends between the extremities of the portion to be sketched; then, by making dots all along the edge at the various distances where the objects occur, these may be made use of in placing them properly in their relative positions in the drawing. The horizon is artificially divided into 360 degrees; and in sketching, the amount inclosed may range from 45 to 60 or 70 degrees. If more is attempted to be taken in, the perspective at the sides is apt to appear too strong, amounting to distortion. When the subject is architectural, this is of still greater importance, as the distortion is more evident. If much is wished to be inclosed, it is better to take a more distant point of view.

After having decided on the point of view, and on the portion to be sketched, the whole should be lightly sketched in, without entering into detail, beginning with the leading lines which occur in the scene. These should be carefully compared with the original, before attempting anything further, as any error in this respect involves great confusion in putting in the details afterwards. Much will occur, in sketching from nature, that has not been experienced or thought of in imitating drawings; every scene has some new peculiarity. The variety of buildings, of vegetation, of hill-formation, of ground, of water and sky, is endless; but if previous experience is brought to bear in noting and copying these, it will be found not so impracticable as at first sight might appear.

ARRANGEMENT OR COMPOSITION.

There are certain general principles existing in all good works of art, which are necessary to their being so. It might be thought that this would be something superfluous—that any scene in nature, if transferred, would give equal pleasure. Now we have such transferred pictures in ordinary photographs; but it will be found that few give that satisfaction which would be expected; and when they do, they are careful selections from nature, reflecting credit on the taste of the photographer. Whether in nature or in art, certain laws of form, of colour, of light and shade, are essential to our deriving satisfaction from the scene. Variety is one of the first of these; everything that is formal or repeated becomes distasteful. A simple rustic paling, rudely made, with gaps and interruptions of bits of hedge, is more pleasing than one of the most perfect construction. An old cottage, rough and picturesque, gives a certain satisfaction, which no new building ever does. The winding, rutted footpath is more pleasing than the finest portion of a perfect road. And in works of art, this has particularly to be attended to. A little sameness may occur in nature, without creating any dissatisfied feeling, because, by a change of scene, the defect may be immediately remedied; but a work of art is a deliberate matter of choice, from which there is no such means of escape; everything, therefore, should be carefully studied.

Fig. 23.

The principal object should never be placed in the centre of the picture, as in fig. 23, but rather a little to one side, as in fig. 24. The sides of the

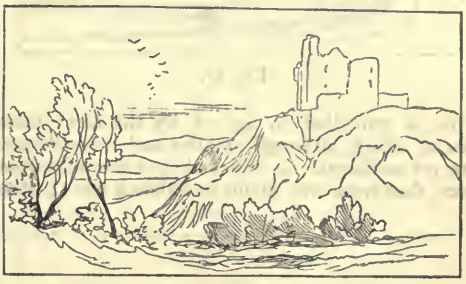


Fig. 24.

picture should also be different from each other, all repetition being offensive. Fig. 25, as contrasted with fig. 26, will make this very evident.

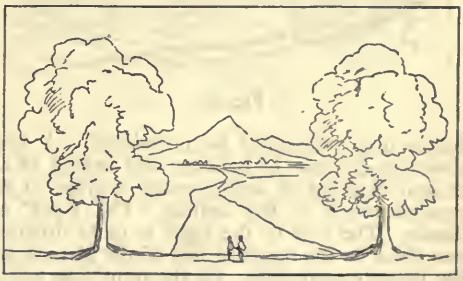


Fig. 25.

The horizontal character of the distance should not be repeated in the foreground, and *vice versâ*, as shewn in the preceding illustrations. Figures

Fig. 26.

introduced should also be kept away from the centre, and from below any prominent objects in a direct line above; thus, those in fig. 25 are

placed offensively below the peak of the distant hill.

While repetition is offensive, balance is necessary. In fig. 27 there is a vacuity on the side opposite to the tree, which appears unpleasing.

Fig. 27.

This is remedied in fig. 28, by the trees introduced, which, although smaller and more distant, are yet sufficient. It is not always essential, however, that trees are made to balance trees; other

Fig. 28.

objects may sometimes be introduced. A very admirable example of balance, and indeed of all the best qualities of arrangement, is given at the commencement of this article, 'The Ford,' by Claude. The tree to the right is quite different from those on the opposite side of the picture, yet they balance admirably. On the right side, everything is strong and boldly expressed; on the left, there is lightness and delicacy. The disposition of the cattle, as they cross the water, is also carefully studied with a view to variety; they seem to spread out as they approach the left, thus harmonising with the smaller parts on that side of the drawing.

GENERAL PRINCIPLES OF LIGHT AND SHADE.

The study of light and shade is most important in the art of drawing, as, besides giving feeling, it assists the expression of the objects introduced, and is the principal means of giving effect to the subject.

Although it is impossible to give any fixed rules for the relative proportion between the light and the shade of a picture, still, unless certain methods of arrangement be adopted, such as are found in the works of the great masters, there will be little likelihood of producing a satisfactory effect. The light and shade of a picture should be considered as a whole: in some, the light is nearly surrounded with shade. In the illustration last alluded to—'The Ford,' by Claude—this particular arrangement will be observed. The principal mass is the sky near the horizon. It will be noticed that the dark mass of the tree to the right is sharply contrasted with it; the shade then crosses to the left, becoming lighter and lighter as it approaches the sky, which is also a little deeper towards the upper portion of the picture. The general principle observed is, that the principal light is contrasted with the strongest dark, and that they radiate gradually from the point of contrast to the left, where they harmonise. By this mode of arrangement, the greatest softness is secured, with sufficient force to give spirit to the picture. The methods by which this is effected should be carefully noted. The dark mass of the tree to the right is connected with the mass of gray tint on the left by means of the dark shadow traversing the foreground, and the dark points of the cattle crossing the stream. The eye is led by the inclined tree to the principal mass of foliage; and this is softened by the light foliage of the willow introduced between it and the sky.

This picture also affords a fine illustration of what is termed breadth. This expression is applied to massiveness of effect, as opposed to conflicting lights and darks which distract the eye; at the same time, it must not be confounded with flatness and monotony. In the present example, it will be observed that there is but little repetition of tint. There are fine quiet gradations over the entire picture: the darks in the foreground are connected with the more distant tints, so that the eye can wander from the foreground to the distant hills without meeting with any harsh interruptions. It is by the preservation of this connection of all the parts of a drawing that breadth is attained, whether in the lights or in the shadows.

The expression *balance* is also well illustrated here—the dark to the right balances the mass of gray tint on the left; there is no repetition, because the one side is a perfect contrast to the other, both in form and tint. All repetition is offensive; and while arranging the effect of a drawing, in order to preserve balance, it should be done with a view to obtain the greatest amount of variety, giving a small portion of dark to balance a mass of middle tint: no precise rule, however, can be given in this respect; all must be left to the judgment. Softness of tint is very important in all drawings; this is best attained by studying to keep a gradation in each by itself, and among all collectively—giving sufficient decision when required, to prevent woolliness. Hardness of tint is produced by a monotonous cutting edge to any portion in a drawing, and is remedied by lightening some portions, leaving merely enough sharpness to preserve clearness.

PAINTING.

WATER-COLOUR PAINTING.

The mode of painting in water-colours differs from that of painting in oil, the principal difference being the vehicle, which is gum and water, and the employment to a greater extent of transparent colour. It possesses many advantages, the principal of which are, great clearness of

colour, and the quick drying of the pigments which is favourable to rapid execution. The clearness with which some tints are brought out, induces the artist to employ pigments derived from the animal and vegetable world for their richness and brilliancy, to keep up the tone of colour: these, however, are liable to be bleached by the light. The paper, also, is liable to become dingy, giving to the general effect a decayed appearance. Care should therefore be taken to use only those pigments which are known to be permanent, and to preserve the paper as much as possible from the effects of smoke and damp.

This method of painting is peculiarly adapted, from its convenience and rapidity of drying, for the purpose of sketching from nature: the finest effects of light and shade are so transient, that the greatest dexterity is required to secure them. The materials required consist of a board and paper, or a solid sketch-book, a set of moist colours, water-bottle and pans, and brushes. The board may be made either of deal or mahogany, and of any size according to convenience, taking care that it is one that will waste as little as possible of the paper, which is made of a certain size. To stretch the paper properly, it should be gently sponged with plenty of water, and permitted to expand and soften. In this state, laid flat, wrong side up, on a clean towel, the board should be placed on it, and the edges pasted or glued on its back. A very convenient kind of board is made with a frame and shifting panel, which may be had in the shops. The paper is simply laid on the frame, the panel laid above it and pressed into its place, and secured by a cross-bar behind. Unless, however, this is carefully managed, the paper will be found to swell and become bagged when moistened by the brush, causing considerable annoyance. Paper is prepared of various kinds—rough and smooth, white and tinted: for ordinary use, it should be stout, hard, and moderately rough. The best brushes are the sable, red and brown. Flat brushes of various sizes are used for large washes, and round ones for the smaller; in general, they should be used as large as can be managed with convenience, employing small ones only in finishing up the minute detail.

The following list of pigments, which may be considered permanent, will be found generally useful in landscapes: Yellow Ochre, Gamboge, Indian Yellow, Raw Sienna, Raw Umber, Madder Lake, Madder Brown, Light Red, Burnt Sienna, Burnt Umber, Vandyke Brown, Cobalt Blue, Indigo, Sepia, Lampblack, Chinese White.

Before trying to colour with these, the student should endeavour to become acquainted with their properties by experimenting on a piece of paper. Some pigments are transparent, some semi-transparent, and some opaque. For example, gamboge is transparent; Indian yellow, semi-transparent; and vermilion and chrome yellow, opaque. These different qualities render them useful for different purposes, to which the properties of each are suited. Rich transparent pigment—such as gamboge and Vandyke brown—are frequently of great use in foregrounds, but are dangerous anywhere else, as they are apt to destroy the aërial perspective from their strength; while they may be made to assist it, if judiciously used in their proper place. On the contrary, drier and more opaque pigments assist the effect of distance—yellow ochre, light red, cobalt, and French blue, for example.

But little progress can be expected unless the theory of colour, independent of paint, be understood. We would therefore draw attention to the following remarks. There are three primary colours—namely, *red*, *yellow*, and *blue*—and out of these all the various compound tints are formed. If we possessed these three in their purity as pigments, we would require nothing else; but this is not the case. By mixing the primaries one with another, the secondaries—orange, green, and purple—are produced. Red and yellow produce orange; yellow and blue, green; and red and blue, purple. By mixing all these together, black, or rather the absence of colour, is the result: thus, red added to green, or yellow to purple, or blue to orange, destroys them, and makes black. But if a small quantity only of any third primary is introduced into a combination of the remaining two, it simply lowers it, making it more gray: thus, red added in small quantity to green, breaks it, as it is called; that is, destroys its greenness in proportion to the amount introduced. And if a small quantity of green be added to red, the like effect will be produced; and so with the others. Contrast of colour may be effected by simply opposing one tint with another differing in any respect—as red with blue or yellow, with gray or green, with black or white; but the strongest effect will be obtained by green, as this is composed of the remaining primaries, blue and yellow, which, when combined, are so antagonistic as to destroy red if mixed with it, and so with the other primaries. The secondary colours, while they differ from each other, are not complete contrasts, because any two put side by side will contain a colour possessed equally by the other. For example, orange and green each contain yellow; purple and orange, red; and green and purple, blue; hence the best contrasts to each are the opposing primaries—as blue to orange, and yellow to purple. Light and dark tints are sometimes considered sources of contrast; for example, the dark browns of a foreground as contrasting with the light bluish tints of a distance; but this is not so much a difference of colour as of light and darkness, which should be considered by itself in arranging the light and shade. Brightness and dulness of tint should be studied in contrasts as a source of variety—as red with a greenish gray, or orange with a bluish gray. However, in considering colour, it should be first thought of merely as either primary or secondary; colour-tints should be examined as red, yellow, or blue, orange, green, or purple; then as weak or strong, as light or dark.

Besides the secondary colours, some make an addition of tertiaries; but these are not distinct colours, being merely the mixture of secondaries, as green with orange, which is equivalent to two parts of yellow with one of blue and one of red. Thus, we have the three primaries neutralising each other, making black; but the yellow predominating in quantity by one part, preserves itself. There is, consequently, a low-toned yellow, which is called citrine. In the same way, the other mixtures are called russet, which is a

low-toned red; and olive, a low-toned blue; but these are not separate colours, but merely modifications of the primaries, and cannot be considered otherwise. Browns are either low-toned yellows or orange; for instance, sepia and raw umber are low-toned yellows; burnt umber, a low-toned orange; as also Vandyke brown.

Colours are divided into warm and cold. When they partake of red, they are said to be warm, and cold when it is absent. Yellow may be said to occupy a medium position, and blue is decidedly cold. White and black are also cold in their effects, and cool tints by admixture with them. The warmest tint is red; the next, orange; and the lowest, as warm colour, red purple. The coldest tint is blue, green is less so, and purple the least of the cold tints. Harmony of colour consists in the connection between a variety of tints, so that they appear to blend gradually together, and contribute breadth to the general effect. The most harmonious effect is produced when one colour tones the whole picture, as occurs sometimes in nature, especially at sunset, when there is a slight haze in the atmosphere. In water-colour drawing, this is assisted by toning the paper before beginning to apply the colours, by washing it over with a warm tint, which serves to give tone of the same description to the entire drawing, by modifying all the subsequent tints passed over it. The first lessons should be merely with a view to acquire power and facility in handling the brush. For this purpose, simple sepia sketches are very useful; and it will be beneficial practice to draw as much as possible with the brush, with the least possible assistance from the lead-pencil, as, by doing so, boldness and decision of style are acquired.

As a general rule, the light tints should be put in first, passing them over all those portions to be occupied by the deeper tones; then, by gradually deepening them, the edges of the tints are preserved clear and distinct, without awkward joinings, which are sure to occur when the parts are attached otherwise. Smooth surfaces are represented by simple washes; those of a marked or rough description are indicated by touches with the point, or by dragging with the side of the brush. For example, the texture of foliage is brought out by drawing with the point of the brush in precisely the same manner as with the black-lead pencil; while the rough appearance of broken ground, or a rough wall, is effected by dragging the brush nearly dry rapidly over the paper. The light clouds, such as the cirrus, are brought out in the same manner, by dragging the brush lightly, with but little colour. When any lights occur which cannot be left out, they may be covered over and taken out when finishing, by applying the wet brush to the part, indicating the form of the light, and allowing it to lie till the part is softened: the moisture should then be removed by applying blotting-paper, which prevents its spreading; then by immediately rubbing with bread, the light will be sharply brought out. Gentle rubbing with the pocket-handkerchief suffices when the light required is not very bright, and india-rubber is required when it is wanted perfectly pure. Sometimes a part is put in too strong for the surrounding tints; in that case, if the part is slightly moistened, dried with blotting-paper, and then gently rubbed with fine crumbs of bread, it may be lightened or softened to any extent. It was mentioned that, in laying on the tints, the darkest should be applied last; and it will be necessary to do this in nearly every case. In the representation of foliage, the general tone is put in first, then the deeper portions and dark touches. By putting the darks first, they are apt to be destroyed; they certainly lose their sharpness. In colouring, the particular combinations of pigments required to represent any particular object depend so much on local circumstances, that no precise rule can be offered, every artist having a different method. In sketching, it will be found that as much depends on acuteness of perception in observing the varieties of colour, as on other qualifications. Many being aware that trees are green, think it enough to paint them so, without observing peculiarity of tone; but no two trees are alike in this respect—some are grayer, some colder, and some warmer than others. The green on the shaded portion of a tree is very different from that on the light; it is illumined chiefly by reflection from the sky, which, when clear, makes it very blue, as compared with the portions lit by the direct rays of the sun. The same is true of herbage generally, and should be carefully noticed in hill-scenery, where the grass on the shaded portions is much colder than the light. The green tint of a leaf when the light shines through, is very different from the effect when it shines on it: in the one case, the green is intensely yellow and transparent; in the other, it is comparatively dull and cold. And as a tree consists of a number of leaves placed variously in regard to the light, much variety will be observed; and in the simplest group of dock-leaves by the wayside there is variety of colour. As a general rule, when the sun is in front, the rays pierce through the leaves in every direction of the drawing, but *principally* when they occur between the eye and the sun. If we look at a grass-field in this way, we notice that that portion immediately in front between us and the sun is intensely rich in tint, being of transparent yellow green; but towards the right and left, it becomes gradually of a colder hue. The modifications of colour are so various, from the multitude of objects in every scene, that nothing but attentive observation can give any approach to truth. It is not enough to call earth brown, and paint it with Vandyke brown; nor the sky blue, and paint it with cobalt. Earth is infinitely varied; its gray masses, sometimes inclined to yellow or red, are illumined by the sun on one side, and by the blue sky on the other; an old rutted road presents a fine study in this respect. The tints of the sky are constantly changing—one time clear, at another, softened by intervening haze. The effect of the atmosphere in altering the local tints of objects as they recede, should be carefully noted, so as to keep the aërial perspective correctly. A tree is much colder in tint at a hundred yards' distance than when close at hand. Every increase of distance adds more blue atmosphere between the object and the spectator; so that, ultimately, it sometimes appears as nearly pure blue. Blue is not, however, always essential to the effect of distance; in hazy weather, especially at sunset, the distance may be indicated by low-toned yellow and ruddy tints; and intervening objects partake of the same hue. The mistake is very often made of giving a hazy effect

to sky, filling it with warm tints, and making the landscape of totally different character: it will always be found that the tints of the sky prevail over the landscape. In sketching, much attempt at high finish is thrown away. The effects of nature are so transient, that they should be seized with the greatest rapidity; the touches should be left sharp and clear; softness should be gained by putting touch within touch, leaving sometimes a little of the first at the edges. This will give finish as well as transparency. The washes should be thoroughly dry before others are placed over them, as the working-up and unequal mixing of the tints create muddiness. Variety of tint should also be a matter of solicitude, as nothing is less pleasing, and, indeed, less natural, than flatness and monotony. Ruddy and yellow tints should mix with green, and grays and browns occasionally, when they occur. Every legitimate means, consistent with truth, should be made to secure this; and by looking for variety in nature, it is surprising how much will appear that otherwise might entirely escape observation. In making finished drawings at leisure, the process may be somewhat different, if high tone and transparency are required. The paper should, first of all, be well toned with warm colour, as ochre and burnt sienna, making the tint stronger where strength and warmth are required in the drawing. It is also useful to blend in a variety of tints while the paper is wet, running them together as near as possible to the places where required. This should be afterwards washed with water, using a large flat brush to remove all superfluous colour; the remaining portion becomes incorporated with the paper, and does not work up into the subsequent tints. Each successive application of colour should be followed by a slight washing, which assists the atmospheric effect, and gives clearness of tint; the last washes alone may be left undisturbed. As a preparation for this process, the tints are put in stronger than nature, and reduced by washing to their proper strength. A soft sponge is sometimes used to wash away colour, and secure softness; but this is only in the sky and extreme distance.

OIL-PAINTING.

Oil-paintings are executed on a variety of materials, but principally on canvas stretched on a frame, or on panels of wood, either mahogany or oak. These are prepared with a smooth coating of paint, either white, or some lightish colour. The pigments are ground with fine nut, poppy, or linseed oil, and are ordinarily purchased in tubes in a state ready for use. In painting, a small portion of each pigment required is placed on a thin hard board called a palette, which is held in the left hand by passing the thumb through a hole at one extremity. The canvas or panel is placed on a stand, called an easel, and the colours are applied by means of brushes of fine hog and sable hair. The pigments are nearly the same as those employed in water-colour, the exceptions being sepia, gamboge, and others derived from the animal and vegetable kingdom, and the principal addition, fine white-lead called flake white. As these require to be thinned, so as to give facility in using them, some artists use a vehicle technically called medium. It should be remembered, however, that as little vehicle should be used as possible, too much oil giving ultimately a tawny hue to the picture, and too much varnish rendering it liable to crack. After the picture has thoroughly dried and hardened, it should be varnished, to prevent its being soiled, as it never can be cleaned without a certain amount of injury. No precise rules can be given for the mixing-up of the various tints—that must be acquired by experience; all that can be said is, that opaque pigments should be employed to represent dry opaque surfaces, and transparent ones for rich transparent textures. They may also be mixed as occasion requires. When a transparent colour is passed over a lighter one, the process is called glazing; and when an opaque one is passed thinly over any other tint, it is called scumbling—a process resorted to frequently in skies and the distances of landscape, and in painting the human figure.

As a general rule, the first painting should be as light and warm as possible, for if these qualities are once lost, they are very difficult to regain. The tints should also be well blended together, getting as much gradation and connection as possible. Much may be done after this, while the paint is still wet, in modelling the parts and in making out character; and it will be found that there is a certain clearness of tint in the first working which subsequent painting-over tends very little to improve; as much, therefore, should be done at once as can possibly be overtaken.

In glazing and scumbling, care should be taken to use as little vehicle as can be done with convenience, as it is liable to change and give an unpleasant yellowish tinge to the part where it is employed, while the other portions of the picture remain comparatively fresh. This has a very disagreeable effect, whether in landscape or portrait painting.

We would recommend the student to begin with the greatest attention to minuteness of detail, trusting to future experience for style as regards freedom and boldness. The early works of Wilkie were exceedingly minute in detail, and most elaborately studied, and those of Turner were models as simple, careful renderings of nature.

We do not think that much good is to be derived from a long-continued course of copying paintings. Much valuable time is wasted, as the student is unable fully to comprehend the works he is imitating. It is better to go to nature as soon as possible, and then, when difficulties occur, to refer to the great masters for their solution. Gradually, from time to time, he will be enabled to add more of their experience to his own, and it is thus that all great painters have studied, in many instances rising far higher in their profession than those they had studied from.

The student should endeavour, as early as possible, to make himself acquainted with the works of the great masters, both of ancient and modern times. Since the revival of art, painting has taken the character of schools, each possessing something peculiar to itself. These have each certain leaders, whose style has been adopted by their followers. The Florentine School was commenced by Leonardo da Vinci (born 1452, died 1519), whose picture of the Last Supper is celebrated throughout the world: he was famous for his power of design, and softness of light and shade, of which it may be said he was the first

who developed it with success; and Michael Angelo Buonarotti (1474–1563), whose works are characterised by severe grandeur of design; his style, however, is marred by excessive muscular development. The Roman School, headed by Raphael (1483–1520). The great characteristic of this school is idealisation, combined with correct drawing, and perfect development of the principles of composition. In this country, the Cartoons at Hampton Court are well known, and afford a good illustration. The Venetian School, headed by Giorgione (1477–1511) and Titian (1477–1576), is famed for its gorgeous colouring, and fineness of tone in light and shade. The works of Paul Veronese (1532–1588) and Tintoretto (1512–1594), belonging to this school, are conspicuous as examples for study. The School of Lombardy, headed by Correggio (1494–1534) and Parmigiano (1503–1540), is characterised by great beauty and softness of effect, resulting from general excellence of design, colour, and light and shade. The Bolognese School—commenced by the three Caracci (1555–1619), and embracing Guido (1574–1642), whose works are admirable examples for the student, Domenichino (1581–1641), and Guercino (1590–1666)—is characterised by great refinement and general excellence. The German School, led by Albert Dürer (1471–1528). The Flemish School, founded by Rubens (1577–1640)—whose works are admirable examples of colour and design; the drawing of his figures, however, is deficient in refinement—contains also Vandyke (1599–1641), of whose portraits we possess so many excellent examples in this country, and Teniers (1610–1694), famed for his representations of ordinary life, fine colour, and delicate execution. The Dutch School, of which the most prominent painter is Rembrandt (1606–1669), famed as the greatest master of light and shade, possesses generally but little in common with him, and is more distinguished for its pictures of ordinary life, called the *genre* style, worked out with great beauty of colour and minuteness of detail. The most prominent painters of the Spanish School are Velasquez (1599–1660)—who ranks in portraiture with Titian and Vandyke—and Murillo (1613–1685).

The principal masters of landscape in the old schools are Claude Gelée of Lorraine (1600–1682, Roman School), whose works are characterised by great refinement of taste, delicate colouring, and light and shade possessing the best qualities of art; he may be said to be the Raphael of landscape-painting. Cuyp (1606–1667, Dutch School), noted for excellence of colour and composition. Salvator Rosa (1615–1673), whose taste was for the wild, rugged, and romantic aspects of nature, and Gaspar Poussin (1613–1675), whose pictures are grand, possess fine tone of colour, and are remarkably true to nature. The works of Wouvermans, Jacob Ruysdael, and Hobbima, possess many points which might be studied with advantage.

The principal painters of cattle-pieces are Paul Potter—whose celebrated picture of a Bull, now in the Royal Museum at the Hague, is valued at £5000—and Nicholas Berghem, whose works are characterised by high finish and great delicacy of execution. The first great name in the English school is William Hogarth (1697–1764), whose powers as a satirist are well known. His works possess great technical excellence. Sir Joshua Reynolds (1723–1792), distinguished for his rich and mellow tone of colouring; but his works are characterised by a certain looseness of style, which should not be imitated. Benjamin West (1738–1820), the principal historic painter of the school at that time. James Barry and Henry Fuseli, whose works display much power of imagination, but are inferior in execution. The landscapes of Richard Wilson (1713–1782) have seldom been surpassed; and those of Thomas Gainsborough (1727–1788) are distinguished as fine examples of colour and natural style: he was equally distinguished in portraiture. The portraits of Sir Henry Raeburn and Sir Thomas Lawrence deserve especial study. The historic productions of Hilton are also very fine; and those of Etty, in several instances, are splendid examples of colour. The *genre* pictures by Wilkie are well known, and are characterised by fine colour and great delicacy of execution. The landscapes of the Nasmyths, of Constable, Calcott, Collins, Bonnington, and Turner, rival the best works of the old masters. Some of Turner's, indeed, may be said to excel them. More recently, the names of Mulready, Leslie, Ward, Maclise, Hunt, Rosetti, Millais, and Noel Paton in figure-painting, Stanfield in marine, Harding and Creswick in landscape, and Roberts in architecture, Sir J. W. Gordon in portrait, and Sir E. Landseer in animal painting, occupy a high position.

SCULPTURE.

The greater number of sculptures, ancient and modern, are executed in single blocks of white marble; a few are in bronze. A sculptor commences by drawing his design on paper; when satisfied with this, he proceeds to form a model of his proposed figure in moist clay, supporting it partly by irons and framework. Having, as he thinks, brought his model to perfection as respects attitude and surface, it is ready to form a copy to work from; but as it is a perishable material, he takes a cast from it in plaster, and this cast serves as a mould for a fac-simile model in plaster of Paris. The plaster-cast being hard and durable, it is used as the permanent copy by the different workmen. The first operative employed on it, by means of a machine, takes off the rougher parts of the marble, and gradually diminishes the block in the required directions. The next is an able assistant, who brings the figure still nearer in form to the copy; and it lastly passes under the hands of the sculptor, who gives that tasteful finish and spirit which the nature of the subject requires. Statues in bronze are cast in moulds taken from finished models.

Sculpture is practised in various ways—namely, in forming detached, insulated figures, technically called the round, or in representing objects more or less raised, without their being entirely detached from a background, termed relief. Various degrees of relief are defined, as *alto-rilievo*, when the object is nearly complete; *basso-rilievo*, when slightly raised; and *mezzo-rilievo*, when a medium is preserved between the extremes of high and low relief.

The finest works of sculpture are generally

acknowledged to be those of ancient Greece, and the period of highest perfection was during the administration of Pericles, about 440 years before the Christian era. In this age, Phidias flourished, the greatest sculptor of ancient or modern times, who raised his art to the highest standard of perfection. With him properly commenced the ideal style in sculpture, which embraces all that is noble and beautiful, and rejects all that is vulgar and degrading. The religion of the Greeks, which was idolising of deified heroes and heroines, offered the utmost scope for lofty conceptions. His master-pieces were the figures of Jupiter Olympius and Minerva. The only works of Phidias that have come down to our times are the sculptures which, under the title of the Elgin Marbles, are preserved in the British Museum. There is no doubt that these are the productions of this great artist—many of them, probably, from his own hand, and all executed immediately under his direct superintendence. These sculptures were brought from the Parthenon of Athens, and consist of the statues and groups which were placed on the pediments of the temple, of several metopes in alto-rilievo, and of a considerable portion of the frieze of the cella in basso-rilievo. Fig. 29 represents a statue of Theseus from the eastern

Fig. 29.

pediment. This figure, which is in good preservation, is of the highest excellence, and finished to the very perfection of art: the back,

Fig. 30.

especially, is allowed to be a master-piece. Fig. 30 represents one of the slabs from the Panathenaic frieze. 'The horses,' says Flaxman, 'appear to live and move, to roll their eyes, to gallop, prance, and curvet; the veins of their faces and legs seem distended with circulation; in them are distinguished the hardness and decision of bony forms, from the elasticity of tendon and the softness of flesh. The beholder is charmed with the deer-like lightness and elegance of their make; and though the relief is not above an inch from the background, and they are so much smaller than nature, we can scarcely suffer reason to persuade us that they are not alive.' On this frieze, a number of artists must have been employed, and, accordingly, differences of style and skill may be discovered.

Phidias taught a number of others, among whom Alcamenes of Attica, and Agoracritus of Paros, were his favourite pupils. Both these sculptors executed several works which attained a high reputation. A contemporary was the famed Myron of Eleutheræ in Bœotia, who represented highly finished athletic forms. His Runner, his Quoit-player, and his Pancratiasts are celebrated. His ideal of Hercules completed this class of forms. His Cow and his Sea-monster are famous among his animal forms. But one thing was wanting to this great sculptor—grace of expression; in this he was surpassed by a rival sculptor, who adopted the undulating line of beauty, and first expressed the sinews and veins with accuracy. He created the ideal of Apollo in the position of an archer, who has just shot the serpent Python—the figure indicating in its expression a placid satisfaction and assurance of victory.

After the ideal style of Phidias and his disciples, succeeded the period in Grecian art distinguished for the *beautiful*. Praxiteles and Scopas were the great leaders of this improved style, in which beauty was united with grace. The most celebrated works of Scopas are his furious Bacchante—the head bending backwards, uniting the highest beauty with Bacchanalian frenzy; his Cupid; and his Achilles, who is placed in a mournful attitude, contemplating, as if lamenting the loss of his friend Patroclus. The Venus of Dione (fig. 31) is also ascribed to this sculptor, the execution of which is very fine, and was pronounced by Canova to be the finest female statue he had seen in England—the only restorations are the left arm, the right hand, and the tip of the nose. Praxiteles, the most feeling of all sculptors, created the perfect ideals of Diana and of Bacchus; the latter being designed by him as a contrast to the Satyrs and Fauns, whose figures express rudeness and licentiousness. The figure of Bacchus was soft and tender, without being effeminate, and expressed perpetual gaiety and sport. He effected also the admired statue of a Satyr, and the ideal of Eros, or Cupid, which was that of a playful boy. Praxiteles was the

Fig. 31.

first to represent Venus entirely nude, thus giving to the world a new ideal of the goddess. His most celebrated works are his Venus of Cos and of Cnidos; the former covered from the hip downwards, the latter entirely naked, holding her garment with her left hand over the bath. The group of Niobe is also ascribed to this master.

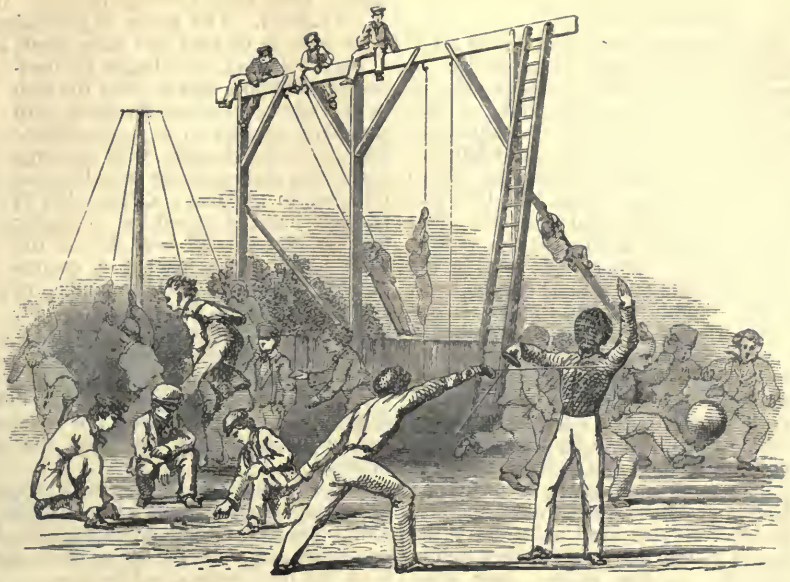
In this latter age appeared Lysippus of Sicyon, Euthycrates, Apollodorus, and others, among whom stand pre-eminent Agesander and Polydorus, of Rhodes, to whom have been attributed the celebrated group of Laocoon. A number of great works of this era were executed by Greek sculptors at Rome, to whom we are indebted for many busts of distinguished Romans.

Among the numerous ancient sculptures which, like those already mentioned, have survived until modern times, and been preserved in museums, may be mentioned the following as useful studies. The Dying Gladiator, a naked manly figure, reclining on his shield, his weapon broken, and expiring from a mortal wound in the side: the Three Graces, a group of female figures in different attitudes, calculated to shew the symmetry of the form in various positions: Antinous, the figure of a graceful youth, in a simple attitude, expressive of melancholy, and executed with great correctness of proportion: Adonis, a figure somewhat more slender and elegant: Venus Genetrix, a figure draped, and possessing a noble simplicity of expression; the drapery hanging in the most elegant folds, is in itself a study: Cleopatra meditating in a reclining position: Laocoon, a group of figures above referred to, consisting of a father and his two sons struggling in the folds of serpents, and strongly characteristic of the distraction and suffering which may be conceived to be endured in that dreadful situation: Hercules, a figure expressive of robust muscular strength.

After a lapse of nearly ten centuries, the art of sculpture was revived in Italy, and thence spread to France and other modern nations. Germany has produced various sculptors of eminence; among these may be mentioned Dannecker of Stuttgart, and Tieck and Rauch of Berlin. Dannecker executed, in pure white marble, a figure of Ariadne seated on a leopard, in an attitude of inexpressible elegance, and equal to the works of ancient art. It is contained in a private museum at Frankfort-on-the-Main. Thorwaldsen, a Danish sculptor, likewise produced many works of striking grandeur and beauty; not the least imposing of his designs is the colossal figure of a lion carved in the solid rock at Lucerne, in Switzerland. The animal is supposed to be dying from the effects of a wound from a spear, and reclining over a shield emblazoned with *fleurs-de-lis;* it is a monument emblematic of the fidelity of the Swiss guards who perished in defending their master, Louis XVI., on the 10th of August 1792, from the brutality of the Parisian mob.

Modern art has almost reached the ancient in the figure of Baily's Eve at the Fountain, which is conceived in a style of pure simplicity and grace, with somewhat more intellectuality in the features than is generally to be found in the Grecian sculpture of female figures. Within the last few years, America has produced a few good sculptors.

Laocoon.



The Gymnasium.

GYMNASTICS—OUT-OF-DOOR RECREATIONS.

GYMNASTICS.

THE love of out-of-door recreations is natural to youth, and the indulgence of it within reasonable limits is entirely beneficial. Young people ought to get a great deal of exercise, and they can scarcely be too much in the open air. Employments which give them air, exercise, and amusement all together, therefore, are suitable to their years, and they should be permitted and encouraged to indulge in them. Over-devotion to such pursuits, though, of course, to be discouraged, is better for young people than a stinted enjoyment of them; for it is seldom very injurious, and the latter, in all probability, indicates some neglect of the conditions necessary for accomplishing the first end of education—the bringing human beings to the age of manhood in soundness and vigour of body and mind. In this country, however, it is scarcely necessary to point out the advantages that are to be had out of sports which afford healthful exercise in the open air. In England, the love for such pastimes has always been a sort of passion, the young and the middle-aged being equally possessed with it; and in Scotland, while they have at no time been neglected, they have, during recent years, been growing greatly in favour. To persons of mature age, the indulgence, now and then at anyrate, in some open-air game, is only less important than it is to persons in early life; and the gravest need not feel themselves above occupations which invigorate the system, and give rest to the mind, by drawing it off from business cares. Before giving some account of the more popular of our out-of-door recreations, it will be well to give some directions for gymnastic exercises, the practice of which is favourable to proficiency in all out-of-door sports, and which, when pursued in youth, while the joints and muscles are flexible, do more than any mere pastime to develop the bodily powers, and lay the foundations of a sound bodily state.

GYMNASTIC EXERCISES.

Gymnastics are those exercises of the body and limbs which tend to invigorate and develop their powers.* The object of gymnastic exercises being to develop all the moving powers of the body, it is obvious that the greater the number of muscles concerned in any such exercises, the more useful it will be.

Gymnastic exercises are best performed in an open court or piece of ground, firm below, but without any stones to injure the feet or person; a grass-plot is most suitable. The fittings are a climbing-stand, vaulting-bar, leaping-poles, &c. The dress of the gymnast should consist of easy-fitting trousers, encircled with a belt or girth. The belt should pass round the loins, and not be too tight. The performances should be in the forenoon, or at least *before* any heavy meal.

* The term *gymnastic* is from a Greek word signifying *naked*, the athletæ or young persons who practised bodily exercises in the public arena or gymnasium of ancient Greece, being, for freedom of motion, nearly in a state of nudity. The more gentle kind of gymnastics for females are termed *calisthenics*, from words signifying elegant or graceful exercises.

Positions and Motions.

Fig. 1.

The body must be drilled in the art of standing and throwing out the limbs. In standing properly, the person should be erect, the head held up, and the face looking straight forward; the shoulders are to be square, with the chest fully exposed, so as slightly to curve the back; the legs closed; the heels in a line, and closed; the toes turned out; the arms hanging straight down; the elbows held in to the body; the hands open to the front; the little finger touching the legs; and the thumb flat to the forefinger. When perfected in the art of standing in this position, which is called *attention*, as shewn in fig. 1, the next thing is to be taught to march or walk, as in the case of a soldier on drill, the feet being alternately thrown out, and both brought together into position, at the order to halt.

Fig. 2.

The pupil next learns to bend the body and extend the arms. The first exercise of this kind is to carry the hands to the front, the fingers lightly touching at the points; now raise the arms, the hands still together, till they are held over the head, as in fig. 2.

The second motion is to learn to hold the arms out in front, the tips of the fingers touching, and returning to the position of fig. 1: this is to be done repeatedly. The third is to extend the hands separately, and raise them over the respective shoulders, the fingers pointing upwards. The fourth motion is to keep the arms and legs straight, and to bend the body forward, with the head down, and the tips of the fingers towards the ground. This somewhat difficult motion is represented in fig. 3.

Fig. 3.

A fifth motion is to resume the position of attention, allowing the arms to fall freely to their place, but still without bending the legs. These motions are trying to the pupil, and should be done gradually; the great object is to exercise the muscles bit by bit, and perfection is not desirable at first. Then follow other motions—as throwing the arms horizontally out in opposite directions, stretching them to the full extent forward, while the palms are in contact, &c. In these, it is of importance to exercise the left hand and arm fully more than the right, in order to make them equally active and strong.

Indian Club Exercises.

The pupil having advanced in simple personal exercises, is supposed to be somewhat strengthened; and to further the operation, he proceeds to the Indian club exercise. The main object is to expand the chest, and increase the power of the arms. For this end, many persons regularly exercise themselves with dumb-bells: these consist of heavy pieces of metal, one being held in each hand. The club exercise is an improvement on that of the dumb-bells. The club bears a resemblance to the bat for cricket, and varies in weight from two to twelve pounds. One is used in each hand. The mode of exercising with the clubs may be divided into three parts, as follows:

First Part.—1. Standing in the position of attention, slowly carry the club in the right hand round the head, until the hand arrives in a perpendicular line above the shoulder, with the large end of the club pointing in a diagonal direction to the rear; 2. The club in the left hand is raised in a similar manner, and carried over that in the right hand till it reaches a corresponding position; 3. The hands are carried slowly to the right and left, until they become in a true horizontal line with the shoulders, the large ends of the clubs still remaining to the rear; 4. The hands are brought slowly to the first position. Care must be taken not to stand with a hollow back during this and the succeeding practice.

Fig. 4.

Second Part.—1. Raise both hands to the front, approaching them close together, in horizontal line with the shoulders, the clubs being held perpendicular, with the large ends upwards; 2. With the body well poised forward, separate the hands, and carry them to the right and left line with the shoulders, the large ends of the clubs remaining upwards; 3. With the head well kept up, let the clubs turn over till they point in a diagonal direction to the rear, the hands still remaining out in a line with the shoulders; 4. With the arms extended, drop them slowly to the first position.

Fig. 5.

Third Part.—1. The club in the right hand is circled round upon the *right* of the body for a few revolutions of the circle, or until the word *halt* is given; 2. The one in the left hand is used in the same manner on the *left* of the body, until the word *halt* is given, when the recruit will remain perfectly steady in the first position; 3. With the body rather leaning forward, circle both clubs at the same time, on the right and left of the body, until ordered to halt.

Leaping—Vaulting.

The simplest kind of leaping is that of jumping on level ground from one point to another, with or without a run. The run adds momentum, and enables a person to leap considerably farther than without such an aid. 'In all kinds of leaping,' observes Walker in his *Manly Exercises*, 'it is of great importance to draw in and retain the breath at the moment of the greatest effort, as it gives the chest more solidity to support the rest of the members, impels the blood into the muscular parts, and increases their strength. The hands, also, should be shut, and the arms pendent. The extent of the leap in height, or horizontally, is proportioned to the power employed and the practice acquired. As it is performed with facility only in proportion to the strength exerted, and the elasticity and suppleness of the articulations and muscles of the lower extremities, much exercise is necessary to attain that degree of perfection which

lessens all obstacles, and supplies the means of clearing them without danger.

In leaping *without* a run, hold the legs and feet closed, bend the knees well up, hold forward the head, and throw out the hands. Skill in throwing forward the body with a jerk, thus doubled up, is only acquired by experience. Let great care be taken to descend with an inclination forward, and to fall on the fore-part of the feet, so as to touch the ground lightly, and by the spring or elasticity of the feet and limbs, to deaden the shock.

In leaping *with* a run, the run preceding the leap should never exceed ten paces; the rise into the air to take place at a distance from the cord equal to half the height of the cord from the ground. Skill should be attained in leaping from either foot, or from the spring of both feet. It is considered a good leap when five feet are cleared; a first-rate one is five and a half; and an extraordinary one, six feet—which few, however, ever reach. (These high leaps are usually taken sideways, one leg clearing the bar before the other.) For a man to leap his own height—that is, for a man of six feet to leap six feet high, or a man of five feet eight inches to leap five feet eight inches high—is usually considered the perfection or ultimatum of the high leap. It may be noticed, however, that, all things considered, the man of medium size (about five feet eight inches) is almost always the most successful at this species of exercise.

What is gained in height is lost in distance. To make a long leap, therefore, it is not necessary to go high. The measurement of long leaps is by marks on level and soft ground, and he who clears the greatest number of marks is the most proficient. As in high leaping, the body must be inclined forward, and the spring made from the balls of the toes. To clear nine feet without a run is considered a good leap, and ten feet a great leap.

Leaping from a high to a low situation is another useful exercise. To acquire proficiency in it, begin with moderate heights, and learn to fall softly on the balls of the toes, or fore-part of the feet. If the fall be upon the heels, the whole body is almost certain to be jarred, and the legs stove. Keep the body compact in the descent, with the hands well forward, so that, when alighting, the person may spring lightly up from a crooked or bent posture.

Vaulting is that kind of leaping in which the body is helped forward by a momentary leaning on an object by the hands. The art of vaulting may prove useful in many circumstances in life, as, for instance, in getting quickly over a paling, fence, or gate, to elude danger. Exercises are performed with vaulting-bars, of which an illustration is given in fig. 6; they are of various heights, and some are shaped like a horse with a saddle.

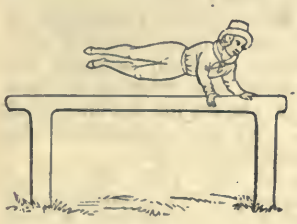


Fig. 6.

Vaulting is performed with or without a run. The spring, as usual, is from the toes; and resting the hands on the bar, the legs are raised, and, by a jerk, pitched over to the other side. The pupil should learn to vault in this manner, either towards the left or right. When perfect in the exercise, he learns to vault straight forward over the bar, between his hands, in which feat very great skill is necessary in doubling up the body and limbs during the spring. The methods of vaulting on and off horse-blocks are innumerable.

Leaping with a pole is a combination of simple leaping and vaulting, and is also a most useful and an elegant accomplishment. The pole should be smooth, light, and from seven to ten feet long. Held in the hands, as represented in fig. 7, the left hand below, and the right above, the pole is planted with its lower point on the ground, and

Fig. 7.

Fig. 8.

by a spring from the left foot, the body is impelled through the air to the desired distance.

In vaulting over a high object by means of a pole, two posts and a cross-cord, as in fig. 8, are usually employed. The leap is taken by a run; and care must be taken that the spring of the foot and the plant of the pole are in the direction of this preparatory run.

Walking—Running.

The art of walking with ease, firmness, and grace, forms a necessary part of gymnastic or drill exercises. Few persons walk well naturally; the constraint of dress, distortion from labour, or bad habits of some kind, generally contributing to give a slounge to the figure, and an awkwardness to all the motions.

To walk gracefully, the body must be erect, but not stiff, and the head held up in such a posture that the eyes are directed forward. The tendency of untaught walkers is to look towards the ground near the feet; but the eyes should not thus be cast downward, neither should the chest bend forward to throw out the back, making what are termed 'round shoulders;' on the contrary, the whole person must hold itself up, as if not afraid to look the world in the face, and the chest by all means be allowed to expand. Let the legs alone advance, bearing up the body. In setting down the feet, let the outer edge of the heel first touch the ground, and the sole of the foot bear and project the weight of the body. The length of step is of course to be determined by the length of limb. Reckoning from heel to heel, or toe to toe, the length of a military step at drill-march is thirty inches, which is considerably more than the length of ordinary steps in walking. The length of step at a moderate pace, of a man five feet nine inches high, is usually twenty-four inches; and this will be found a convenient length for most persons to acquire the habit of using.

The motion of the arms to and fro, in cadence

with the movements of the legs, greatly helps the locomotion, and is advantageous in exercising the muscles of the shoulders and expanding the chest. The motions of the arms, however, should be on a moderate scale, the hands not swinging through a greater space than eight or nine inches before and behind the leg.

Fig. 9.

Running is a rapid leaping kind of walk, the leap being from each foot alternately, and the motion being promoted by throwing forward the weight of the person. The following are Walker's definitions of running, which we illustrate by fig. 9: 'The upper part of the body is slightly inclined forward; the head slightly thrown backward, to counteract the gravity forward; the breast is freely projected; the shoulders are steady, to give a fixed point to the auxiliary muscles of respiration; the upper parts of the arms are kept near the sides; the elbows are bent, and each forms an acute angle; the hands are shut, with the nails turned inwards; and the whole arms move but slightly, in order that the muscles of respiration on the chest may be as little as possible disturbed, and follow only the impulse communicated by other parts.

'At every step the knees are stretched out, the legs kept as straight as possible, the feet almost graze the ground, the tread is neither with the mere balls of the toes nor with the whole sole of the foot, and the spring is made rapidly from one foot to the other, so that they pass each other with great velocity.

'During the whole time of running, long inspirations and slow expirations are of the greatest importance; and young persons cannot be too early accustomed to this practice. To facilitate respiration towards the end of the race, the upper part of the body may be leant a little forward.'

TRAINING—PEDESTRIAN FEATS.

The method of training in modern times for pedestrian feats and other laborious undertakings, does not differ materially from that pursued by the ancient Greeks. The great object is to increase the muscular strength, and to improve the free action of the lungs or wind of the person subjected to the process. The means principally adopted to accomplish the end in view are sweating, to take off the superfluous fat and humours; daily exercise, to strengthen the muscles and system generally; and a peculiar regimen to invigorate the body. To this we add the use of the bath, to remove impurities and promote a healthy action in the skin.

Prepared by training, and acting under certain precautions as to diet and rest, a person may perform very surprising feats of pedestrianism. He may, for instance, completely out-travel a horse, by walking for days continuously from thirty to forty miles, and yet be as fresh at the end of his journey as at the beginning. Without preparatory training, however, the most fatal injuries may be committed in attempting pedestrian feats. To attempt a heavy day's walking without previous training is, it may be said, sure to be injurious. This mistake is often committed by young men at the commencement of walking excursions. Begin, if out of training, with moderate distances, and increase the journey day by day. Be careful, too, on such excursions not to overeat, for, in travelling, you do not need more food than usual; and when the body is exhausted, the digestion is enfeebled, and the stomach scarcely able to deal with even your ordinary amount of food. The less of any kind of stimulating drink you take the better.

OUT-OF-DOOR RECREATIONS.

CRICKET.

This is a game of very ancient date. It has been supposed that it is identical with 'club-ball,' a game of the 14th century. For a hundred years, at anyrate, it has been a truly national game in England, and there its popularity is still on the increase. Within a comparatively recent period it has been introduced into Scotland and Ireland, and has been fairly naturalised in both countries. It has also established itself in Canada and the United States; and in the Australian colonies, to which our countrymen carried it, it is almost as much a favourite as it is at home. In Great Britain, there is now scarcely a town, village, or school that does not own its cricket-field, and our military authorities hold it in such estimation as a healthy recreation, that our soldiers are encouraged to give their leisure time to it. Among the points in its favour is, that it is, so to speak, a levelling game. Men of all ranks are to be found united in it; and though skill in the game is the only distinction acknowledged in the cricket-field, the association in the game of men of different position is found to be highly promotive of social good-feeling. Betting on cricket-matches prevails to some extent, but to a much less degree than in the case of any other game equally popular. While there are in London and in other large towns many cricket-clubs of influence and numerous membership, the Marylebone Cricket Club is to cricket what the Jockey Club is to horse-racing—not only the most important club, but the club which legislates for the game. There are enthusiasts who play cricket at all periods of the year; but the season proper lasts from spring to the latter part of autumn, the season during which, even in our climate, dry turf can reasonably be looked for.

Cricket is played in two distinct forms; one is called *Single Wicket*, and the other *Double Wicket*. The latter is the form generally adopted, the single-wicket game being only resorted to when a sufficient number of players for double wicket cannot be obtained. We shall accordingly describe the double-wicket game first.

The requirements for this game are—1st, a piece of level turf an acre or two in extent at the least; 2d, a sufficient number of players to form two sides of eleven each; 3d, two bats, two sets of wickets and bails, and a ball. Bats, balls, and stumps or wickets, and bails, are now so largely in use, and so well known, as to require no detailed description. When a match is to be played between two 'elevens,' the first thing to

be done is to 'pitch' the wickets. This is done by the umpires, of whom there are two, one appointed by either side, and who have absolute power to settle disputes arising in course of the game. *Wickets* consist of six wooden stumps, 27 inches high above the ground, and placed in the ground in sets of three, at a distance of 22 yards apart, directly opposite each other. On the top of each set of stumps are placed two small pieces of wood, called *bails*, usually 8 inches in length. At the distance of 4 feet in front of each wicket, and parallel to it, is a line drawn on the ground called the *popping-crease*. In a straight line with each wicket is a score on the ground called the *bowling-crease*. The bowling-crease should be 6 feet 8 inches in length (the stumps in the centre), and have a return crease at each end towards the bowler at right angles. The length of the popping-crease is unlimited, but it must not be shorter than the bowling-crease. Two scorers are chosen, one by each side, to mark the game. The rival sides next toss for first 'innings,' and the director of the side that is to go in first, places two of his men at the wickets as batsmen; while a bowler, wicket-keeper, long-stop, and fielders are placed in their several positions by the director of the opposite side. When these arrangements are satisfactorily made, and the markers or scorers are at their post, the umpires take their places, one at each wicket, and the game begins.

A bowler commences bowling. He bowls four successive balls, his object being to strike down the wicket; if he succeed, the batsman retires from the game, and another of his party takes his place. If, however, the ball is well struck by the batsman, he and his partner keep running to each other's wicket, and back again, until their opponents obtain possession of the ball; and one run is scored towards their game every time they change wickets. Should the ball be thrown up by any of their opponents, and one of the wickets put down before the batsman running for that wicket has reached the popping-crease, or, as it is usually termed, his 'ground,' he is out; or if, after the ball is struck, any of the opposite party catches it before it reaches the ground, the striker of the ball is out. The batsman may leave his ground to strike, and score any runs so obtained; but he is out, provided the wicket-keeper succeeds in touching his wickets with the ball before he regains his ground. When the player who commenced bowling has bowled four balls, the umpire at his wicket calls 'Over,' and the fieldsmen, wicket-keeper, and long-stop reverse their positions by crossing over to the opposite side of the ground. The same number of balls are then delivered from the other wicket, and so on alternately. When all the players belonging to the in-party are out, they change places with their opponents, and bowl and field to them until their innings are over. In single-day matches the largest score in the first innings decides the game; but in two or three day matches the largest aggregate number of runs in two innings gives the victory. The players who go in second, follow their innings if they have obtained 80 runs less in their first than their antagonists, or if they have obtained 60 runs less in the case of matches limited to one day's play. These are the principal features of the game.

As the decisions of each umpire are final at his own wicket, two persons should be selected who are distinguished for impartial judgment and knowledge of the laws of the game. The umpire at the striker's wicket should stand rather behind it, at the on-side, so as not to be in the way of the players; his duty is chiefly to decide whether the batsman is fairly stumped out or not. The umpire at the bowler's wicket should place himself in a direct line behind it, to see that the bowler delivers the ball fairly, and that the batsman does not stop it when delivered straight, with any part of his dress or person *before* the wicket. He is likewise to be first appealed to in all other doubtful points during the continuance of the game. The scorers should be placed in a line with cover-point, at some distance out in the field, so as not to be in the way of the players. Each party's score is to be kept distinct. Every striker's runs are to be marked separately to his name each innings; and when he is put out, the mode of putting out must be described as bowled, caught, &c. All overthrows and lost balls are to be scored to the striker, a lost ball reckoning six; and the wide balls, no balls, and byes that occur during an innings, are each to be placed in a separate line, and cast up with the runs of the strikers when the innings is finished.

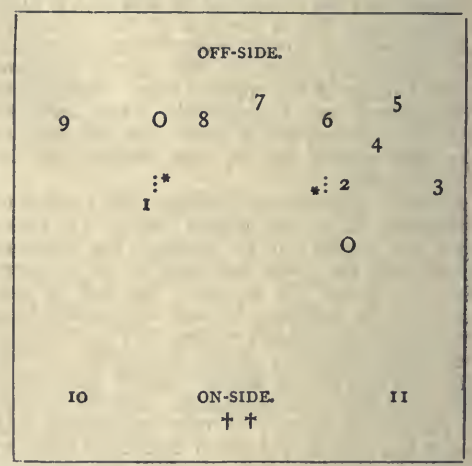
Skill in the bowler is of the utmost importance. He should not be too systematic, but vary his balls faster or slower, to take advantage of the peculiarities of the striker. Round-hand bowling, the style now almost universally adopted by 'swift' bowlers, is accomplished by delivering the ball with a turn of the wrist, so as to make it, as it were, twist from the hand to the wicket. The ball must be bowled, not thrown or jerked. The bowler must deliver it with one foot on the ground behind the bowling-crease, and within the return-crease. The batsman should stand with the right

Fig. 10.

foot sufficiently behind the popping-crease to be on his ground, and as near to the block-hole as

possible, without being himself before his wicket. The left foot should be placed lightly on the ground, and as much towards the bowler as an unconstrained attitude will permit. Before the ball is delivered, the bat should be placed in 'block' exactly opposite the middle stump; it should be grasped by the middle of the handle, with the hands almost close to each other; this method of holding it gives the player greater command, and renders his hitting considerably stronger than when one hand is placed at the point and the other at the shoulder. By keeping the left shoulder a little forward, in the direction of the bowler, and the left elbow well up, the batsman will avoid striking into the air. The bat may be gradually raised as the ball is delivered; the eye, at the same time, marking where it pitches. Runs for balls driven before wicket should depend upon the will of the striker, and those driven behind wicket upon the decision of his partner. This arrangement will frequently prevent either being run out. The bat should be kept on the outside of the opposite partner, and care taken not to run against him. The batsman, on commencing play, should ascertain of the bowler from which side of the wickets he intends to deliver the ball.

Each man on the side which is not batting, as well as the bowler, has a peculiar duty assigned to him. First, there is the wicket-keeper, upon whom much depends. He should not suffer the batsman to move from his ground without touching or striking his wicket with the ball, which is called 'stumping.' He should likewise see that the fieldsmen are in their proper places. He should stand with his left foot forward, and his hands should be ever ready for action. He may place himself at a distance of from half a yard to two yards behind the stumps, according to the strength of the bowling. In returning the ball to the bowler, he should deliver it so that the bowler may either catch it at once, or receive it at the first rebound. The *short-slip* should stand so as to reach within about two or three yards of the wicket-keeper; if the latter should go from the wicket after the ball, the short-slip should take his place until either the ball is thrown back or he returns. *Point* should place himself in a line with the popping-crease, from five to fifteen yards off the bat, according to the play. He ought to be a good catcher. *Mid-wicket* should stand on the off-side, about seven yards from the bowler's wicket. He should throw in the ball, about the height of the bails. If the bowler leaves his place, mid-wicket should take it till he returns; and when the ball is hit sharply and straight to the bowler, he should 'back up,' to prevent a run, sometimes made before the long-field reaches the ball. *Cover-point's* place is between the point and mid-wicket, but further out in the field, so that if the ball should be hit to them and missed, he will be in readiness to receive it. His position varies with the peculiarities of the bowler and batsman. *Leg* should stand rather behind the striker, in a diagonal line, about twelve or sixteen yards from the wicket. *Long-stop* should place himself behind the wicket-keeper, at a distance which must be varied according to the swiftness of the bowling. He should be able to throw in well, as it is not only the balls that pass the wicket-keeper, but such as are just tipped with the edge of the bat, that he will have to look to. He must also be attentive in backing-up. *Long-slip* must stand about the same distance from the wicket as the long-stop, in a diagonal line with the striker, between the point and the short-slip, to cover both. *Long field-off* should be placed on the off-side, between the mid-wicket man and the bowler, at a considerable distance in the field, so as to cover them. There remains the *long field-on*, whose place is at some distance wide of the bowler's wicket. It should be said that the positions of the fieldsmen must be varied according to the method of bowling adopted, and according to the peculiarities of the batsman, to meet whose play—for example, when he is a left-handed player—special arrangements often have to be made. Good fielding is so important in a match, that it should occupy the attention of the cricketer not less than batting or bowling. It may be of use to add the following diagram, representing the field during a cricket-match, with the proper position of the parties playing, also the technical names of these parties:



Names of parties indicated by the figures: **, Batsmen; 1, Bowler; 2, Wicket-keeper; 3, Long-stop; 4, Short-slip; 5, Long-slip; 6, Point; 7, Cover-point; 8, Mid-wicket; 9, Long Field-off; 10, Long Field-on; 11, Leg; OO, Umpires; ††, Scorers. This is the usual placing of the field-men, but bowlers make such alterations as they deem best to oppose the batsmen.

The part of the batsman, however, is the most interesting part of the game. His task consists in stopping or blocking some balls and hitting others, and it is the proper discrimination of which to do that marks the practised player.

The laws of cricket in general use are those of the Marylebone Club of London. Some of them have already been indicated. We subjoin the most important of the others.

If the bowler jerks or throws the ball, the umpire shall call 'No ball.' If the bowler toss the ball over the striker's head, or bowl it so wide that in the opinion of the umpire it shall not be fairly within the reach of the batsman, he shall adjudge one run to the party receiving the innings, either with or without an appeal, which shall be put down to the score of wide balls; such ball shall not be reckoned as one of the four balls; but if the batsman shall by any means bring himself within reach of the ball, the run shall not be adjudged. If the bowler deliver a 'no ball' or a 'wide ball,' the striker shall be allowed as many runs as he can get, and he shall not be put out except by running out. In the

event of no run being obtained by any other means, then one run shall be added to the score of 'no balls' or 'wide balls,' as the case may be. All runs obtained for 'wide balls' to be scored to 'wide balls.' The names of the bowlers who bowl 'wide balls' or 'no balls' to be placed on the score. If the ball shall first touch any part of the striker's dress or person—except his hands—the umpire shall call 'Leg bye.'

The striker is *out* (1) If either of the bails be bowled off, or if a stump be bowled out of the ground; (2) If the ball, from the stroke of the bat, or hand, but not the wrist, be held before it touch the ground, although it be hugged to the body of the catcher; (3) If in striking, or at any other time while the ball shall be in play, both his feet shall be over the popping-crease, and his wicket put down, except his bat be grounded within it; (4) If in striking at the ball he hit down his wicket; (5) If, under pretence of running or otherwise, either of the strikers prevents a ball from being caught; (6) If the ball be struck, and he wilfully strike it again; (7) If, in running, the wicket be struck down by a throw, or by the hand or arm (with ball in hand), before his bat (in hand) or some part of his person be grounded over the popping-crease. But if both the bails be off, a stump must be struck out of the ground; (8) If any part of the striker's dress knock down the wicket; (9) If the striker touch or take up the ball while in play, unless at the request of the opposite party; (10) If with any part of his person he stop the ball, which in the opinion of the umpire at the bowler's wicket shall have been pitched in a straight line from it to the striker's wicket, and would have hit it.

If the players have crossed each other, he that runs for the wicket which is put down is out. A ball being caught, no runs are reckoned. A striker being run out, that run which he and his partner were attempting shall not be reckoned. If a lost ball be called, the striker is allowed six runs; but if more than six shall have been run before 'Lost ball' shall have been called, then the striker shall have all which have been run. If any fieldsman stop the ball with his hat, the ball shall be considered dead, and the opposite party shall add five runs to their score; if any be run, they shall have five in all. The wicket-keeper shall not take the ball for the purpose of stumping until it has passed the wicket; he shall not move until the ball be out of the bowler's hand; he shall not by any noise incommode the striker; and if any part of his person be over or before the wicket, although the ball hit it, the striker shall not be out.

The umpires are the sole judges of fair or unfair play; and all disputes shall be determined by them, each at his own wicket; but in case of a catch which the umpire at the wicket bowled from cannot see sufficiently to decide upon, he may apply to the other umpire, whose opinion shall be conclusive. They shall allow two minutes for each striker to come in, and ten minutes between each innings. When the umpire shall call 'Play,' the party refusing to play shall lose the match. They are not to order a striker out unless appealed to by the adversaries. But if one of the bowler's feet be not on the ground behind the bowling-crease and within the return-crease when he shall deliver the ball, the umpire at his wicket, unasked, must call 'No ball.' If either of the strikers run a short run, the umpire must call 'One short.' After the delivery of four balls, the umpire must call 'Over,' but not until the ball shall be finally settled in the wicket-keeper's or bowler's hand; the ball shall then be considered dead; nevertheless, if an idea be entertained that either of the strikers is out, a question may be put previously to, but not after, the delivery of the next ball. The umpire must take especial care to call 'No ball' instantly upon delivery; 'Wide ball' as soon as it shall pass the striker.

In single wicket only three stumps are used, there being only one wicket and one batsman. Any number of persons can play, but in general there are five on each side. The game proceeds in much the same way, and, for the most part, under the same conditions as in double-wicket cricket. One of the out-side acts as bowler, and the others, the fielders, have each his appointed place. One is named the *leg-hit*, another the *long-stop*, another the *off-hit*, a fourth the *long field-on*, a fifth the *long field-off;* and their duties, as in the double-wicket game, are to catch the ball when either struck or missed by the batsman, and to do their best to put him out. The batsman, when he has struck the ball so far that he thinks he can make a run, runs to the bowling-crease, touches it with his bat, and then returns to the wicket; repeating his run, when he has made a good stroke, as often as he dare venture to do so. The distance between the wicket and the bowling-crease being the same as in double wicket, the batsman has twice the distance to run that must be run in the latter game; but this can be remedied by agreeing that the run should be to a point short of the bowling-crease, or the distance between the wicket and the bowling-crease may be shortened.

When there are less than five players on each side, two bounds should be placed, each twenty-two yards distant from the wicket, in a line with the off and the leg stumps. The ball must then be hit before the bounds to entitle the striker to a run. When the striker hits the ball, one of his feet must be on the ground, and behind the popping-crease; otherwise the umpire calls 'No hit.' If there are less than five players on a side, neither byes nor overthrows are allowed; nor can the striker be caught out behind the wicket, nor stumped out. The fieldsman must return the ball so that it shall cross the play between the wicket and the bowling-stump, or between the bowling-stump and the bounds; and the striker may run till the ball be so returned. After the striker shall have made one run, if he starts again he must touch the bowling-stump, and turn, before the ball shall cross the play to entitle him to another. For 'lost ball,' or for the ball being stopped with the hat of one of the fieldsmen, the striker is entitled to three runs. When there are more than four players, bounds are not set; all hits, byes, and overthrows are then allowed. The bowler is subject to the same laws as at double wicket.

An excellent work, *The Cricket Field* (Longman & Co. London), has been written on this game, which will be found extremely useful by those who desire to excel in it. *Cricket, its Theory and Practice*, by Captain Crawley, forms one of Chambers's *Useful Hand-Books*. We are also indebted to *The Boy's Own Book* (London: Lockwood), a standard treatise on sports and pastimes.

ROWING.

Next to cricket, there are few out-of-door amusements more popular with those who are able to indulge in it than boating. It is unfortunate that, as now practised, it involves considerable expense, and cannot usually be indulged in except by the well-to-do. The boats which are now in general use on rivers are very different from those which were used a century or two ago; they are of slim construction, being made long and narrow to insure speed, and considerable practice is required for their proper management. Rowing-clubs are to be found on most of our great

rivers, notably on the Thames and on the Tyne; but the universities of Oxford and Cambridge are now the places in Great Britain at which rowing is most enthusiastically cultivated. The boating contests between the colleges in either university are among the great events of the university year; and the yearly inter-university race, rowed on the Thames, affords more interest to the public, perhaps, than any other sporting incident of the year, except the Derby. Though no longer a popular amusement, in the sense of being an amusement for the people, rowing is every year growing in favour with those who have the means of practising it, and is attracting a greater number of votaries. It is scarcely, however, within the scope of this paper to go into details about a sport which is not an amusement of the many. Moreover, though, in boating, theory is useful, it is practice only which makes an oarsman, and practice soon shews both what must be avoided and what must be done. Details will be found in *Yachting and Rowing*—one of Chambers's *Useful Hand-Books*.

SWIMMING.

Of the utility of swimming, it is scarcely necessary to speak. Accidents on the water are far from unfrequent; and the power of swimming, even when possessed in a small degree, may enable a person, on such an accident happening, to save his own life or that of others. Swimming is also a bracing and healthful summer exercise, highly beneficial to the nervous system, and productive of muscular strength; and the power of indulging in it adds immensely to the pleasure and health-giving influence of a residence at the seaside.

The possibility of swimming depends upon the fact, that the human body, when the chest is inflated with air, is lighter than the water which it displaces. Salt water being of greater specific gravity than fresh water, supports the body better, and therefore is to be preferred, especially for beginners. To get into the mind the fact, that the human body, if properly placed so as to leave the mouth free for breathing, will float in water—to get confidence in the power of the water to support him, is the first, and, indeed, the main thing a person who would learn swimming has to do. Dr Franklin, who was himself a master of the art of swimming, has suggested an excellent plan for acquiring the necessary confidence. 'Choosing a place,' he says, 'where the water deepens gradually, walk coolly into it till it is up to your breast; then turn round your face to the shore, and throw an egg into the water between you and the shore; it will sink to the bottom, and be easily seen there if the water be clean. It must lie in the water so deep that you cannot reach to take it up but by diving for it. To encourage yourself, in order to do this, reflect that your progress will be from deep to shallow water, and that at any time you may, by bringing your legs under you, and standing on the bottom, raise your head far above the water; then plunge under it with your eyes open, throwing yourself toward the egg, and endeavouring, by the action of your hands and feet against the water, to get forward, till within reach of it. In this attempt you will find that the water buoys you up against your inclination; that it is not so easy to sink as you imagine, and that you cannot, but by active force, get down to the egg. Thus you feel the power of water to support you, and learn to confide in that power, while your endeavours to overcome it, and reach the egg, teach you the manner of acting on the water with your feet and hands, which action is afterward used in swimming to support your head higher above the water, or to go forward through it.' As to the supporting power of water, it may be well to say that a person throwing himself on his back in salt water, and extending his arms, may easily lie so as to keep his mouth and nostrils free for breathing; and, by a small motion of his hand, may prevent turning, if he should perceive any tendency to it.

In fresh water, however, if a man thus throw himself on his back, he cannot long continue in that position without proper action of his hands on the water. Struggling, or elevating the hands out of the water, will, either in fresh water or salt, instantly cause total immersion. The chest, moreover, must be kept as full of air as possible, for this has nearly the same effect as tying a bladder full of air around the neck would have.

Making way in the water—that is, swimming—depends upon the mechanical law, that every action is followed by a reaction in an opposite direction; the swimmer is driven forward by the resistance of the water to backward strokes which he gives it with his arms and legs. In swimming, the head and neck should be thrown back as far as possible, the breast held forward, and the back hollowed. At the beginning of a stroke, the hands are held horizontal, close to the breast, the palms downward, and so as to be slightly concave, the fingers close together; they are carried forward (care being taken to keep them in the water) as far as possible, and then swept to the side at a distance from, but as low as the hips; in bringing them back to the original position, the arms are drawn towards the sides, with the elbows upwards, and the wrists and hands hanging down. The legs, which should be moved simultaneously with the hands, are drawn up with the knees inwards, and the soles of the feet inclined outwards, and then thrown backward as widely apart from each other as possible.

Before breakfast and before noon are the best times for bathing, but delicate persons should not venture into the water before breakfast. To bathe when the stomach is full, or when one is exhausted, is bad, and may be dangerous. The bather, too, should be moderately warm, and he had better be hot than cold—though extremes are to be avoided. Bathing when one is very warm in very cold water has not rarely caused speedy death.

As cramp is one of the greatest dangers of the swimmer, it may be well to state that to give the part affected a sudden and violent shock, is the most likely means of getting rid of it; should this not succeed, a good swimmer, if he only keep his head, should be able to make the shore, or, at least, to keep afloat till help comes, without the help of the part affected, as by swimming or paddling on his back.

When a swimmer finds himself fatigued, there is relief, or, at anyrate, change to be obtained by swimming on the side, with which also great rapidity may be obtained. It is done in the following manner: Raise the left shoulder; thrust forward the right arm along the surface; hollow the palm,

grasping the water toward your breast, using the left hand alternately with the right; the thumb downward, in the manner of an oar, to push back the water towards the feet, striking out at the same time with the legs in the common method: the striking out of the legs always accompanying the stroke with the left hand.

If the swimmer, when out of his depth, allow his head to fall gently back till his face looks upward, and all the back part of his head is under water, he may suspend himself perpendicularly for any length of time in any attitude he likes best. This is known as balancing. If, while in this state, he spread his arms gradually in the water, extending them right and left, he will assume a slanting position. If now he bring his hands behind his head, his toes will appear, and he will lie at his ease on the surface for any time without the slightest motion either of hands or feet, not only in salt water, but in any water in which a man may swim. It is often convenient for the swimmer, when fatigued with swimming in the ordinary way, to swim on his back, which gives rest to the muscles which have been fatigued. One may swim or float on his back, either feet first or head first. In the former mode, you allow the head to fall back, as above stated, pressing the hands downward and backward, with the palms a little hollowed. The feet will immediately float on the surface, and then the hands may be used to press the water exactly as oars, propelling the body forward on the surface by continued strokes, the hands being raised edgewise, and passed gently along the sides, till they descend for another stroke. This mode of swimming on the back requires very little exertion, and may be continued for a great length of time. Moreover, the head may be raised so as to see what is before you, and the direction in which you are proceeding. There are many modes of swimming on the back, head first; some in which the hands are the moving power, others in which the force is derived from the legs, and some in which the legs and arms are both exerted. To practise one of these methods, that commonly called floating, throw your head gently back, as before, bringing your feet to the surface; let your arms lie in the water close to your sides, using the hands in the same manner as when sculling, with a swift pushing motion of the palms towards the feet, returning edgewise, thumbs first, by bending the arms; and pushing again towards the feet by straightening the arms close to the sides. This produces a very rapid progress through the water, and may be continued for some time. There are many modes of fancy or sportive swimming which are occasionally practised, but our space does not permit us to describe them. Hand-over-hand swimming may be mentioned; it is much used among savages, especially when they desire to swim rapidly; it requires, however, great exertion, and cannot be commended for ordinary use.

Diving is the art of descending rapidly in the water, and requires to be done with address. The best method consists in drawing in the breath, placing the two hands together as a cut-water in front, and then to plunge head foremost, causing the forehead to receive the force of the fall. In taking the water, the eyes, for safety, should be shut; but they may be opened when beneath the surface, when the body assumes the swimming attitude. Swimming below the water is so exceedingly easy, that it requires no directions.

SKATING.

This is a highly exhilarating and healthful pastime of the winter season, when rivers and ponds are frozen, and offer a clear surface of ice. The art of skating consists in poising the body on a sharp ridge of iron beneath the sole of the foot, and advancing on the ice in that position, one foot relieving another. As a very slender base will support any mass of matter kept in motion, skating is by no means a difficult art. For high proficiency in it, however, fine qualities are required. Skating, when finely done, deserves quite as much as fine dancing to be called the poetry of motion.

Skates with straps and buckles, though still in much use, are now giving way to less cumbrous kinds, such as the 'Achme,' and others, which

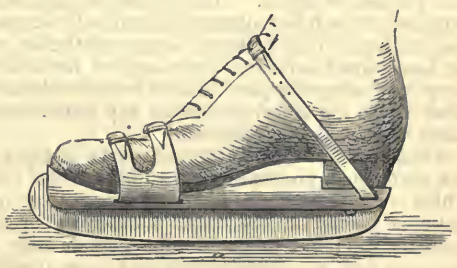


Fig. 11.—Skate attached to the Foot.

are fastened to the feet by ingeniously simple contrivances. The skates for both feet must be alike. The iron should not be deeper than three-quarters of an inch, and smooth or flat along its under edge. The iron should be a quarter of an inch thick. The edges should be smooth, free from rust, and sharply ground.

The following directions for beginners are taken chiefly from the work of Mr Walker:

'Either very rough or very smooth ice should be avoided. The person who for the first time attempts to skate must not trust to a stick. He may make a friend's hand his support, if he require one; but that should be soon relinquished, in order to balance himself. He should not let his feet get far apart, and keep his heels still nearer together. He must keep the ankle of the foot on the ice quite firm; not attempting to gain the edge of the skate by bending it, because the right mode of getting to either edge is by the inclination of the whole body in the direction required; and this inclination should be made fearlessly and decisively. The leg which is on the ice should be kept straight; for though the knee must be somewhat bent at the time of striking, it must be straightened as quickly as possible, without any jerk. The leg which is off the ice should also be kept straight, though not stiff, having an easy but slight play, the toe pointing downward, and the heel within from six to twelve inches of the other. The learner must not look down at the ice, nor at his feet, to see how they perform. He may at first incline his body a little forward for safety, but he should hold his head up, and see where he goes; his person erect, and his face rather elevated than otherwise. Once off, he must bring both feet

up together, and strike again, as soon as he finds himself steady enough, rarely allowing both feet to be on the ice together.

'The first impulse is to be gained by pressing the inside edge of one skate against the ice, and advancing with the opposite foot. To effect this, the beginner must bring the feet nearly together, turn the left somewhat out, place the right a little in advance, and at right angles with it, lean forward with the right shoulder, and at the same time move the right foot onward, and press sharply, or strike the ice with the inside edge of the left skate—care being taken instantly to throw the weight on the right foot. While thus in motion, the skater must bring up the left foot nearly to a level with the other, and may for the present proceed a short way on both feet. He must next place the left foot in advance in its turn, bring the left shoulder forward, inclining to that side, strike from the inside edge of the right skate, and proceed as before. This motion has only to be repeated on each foot alternately, gradually keeping the foot from which he struck longer off the ice, till he has gained sufficient command of himself to keep it off altogether, and is able to strike directly from one to the other, without at any time having them both on the ice together.'

Thus accomplished in the rudiments of the art, the skater may proceed to learn the *forward roll*, which is the first step to figure-skating. 'The impulse is gained in the same manner as for the ordinary run; but to get on the outside edge of the right foot, the moment that foot is in motion, the skater must advance the left shoulder, throw the right arm back, look over the right shoulder, and incline the whole person boldly and decisively on that side, keeping the left foot suspended behind. As he proceeds, he must bring the left foot past the inside of the right with a slight jerk, which produces an opposing balance of the body; the right foot must quickly press, first on the outside of the heel, then on the inside, or its toe; the left foot must be placed down in front before it is removed more than about eight or ten inches from the other foot; and by striking outside to the left, giving at the same moment a strong push with the inside of the right toe, the skater passes from right to left, inclining to the left side in the same manner as he did to the right. He then continues to change from left to right, and from right to left, in the same manner. At first he should not remain long upon one leg, nor scruple occasionally to put the other down to assist; and throughout he must keep himself erect, leaning most on the heel.'

Having attained this proficiency, there will be little difficulty in describing any figure formed by a combination of circles or semicircles. The figure 8 is a favourite among clever skaters, and also the figure 3, both forward and reversed.

Skating on ice of doubtful strength is accompanied with great danger, as in an instant the skater may find himself sunk to the neck in water, and be drowned before assistance can be rendered. Much of this danger may be obviated by wearing a *safety-cape*, which is a loose cape, of some waterproof fabric, inflated with air. Every skater should use a cape of this kind while pursuing his amusement on the ice. Skating is one of those out-of-door recreations in which ladies now largely indulge, and in the vicinity of many of our larger towns, 'artificial ponds,' a few inches in depth, offer attractions for skaters of both sexes.

CURLING.

Curling is a game of great antiquity and popularity in Scotland. It is a winter game, played on the ice; and when the rivers and ponds are frozen, usually supersedes all other out-of-door amusements, except skating. As the ice requires to be much thicker than for skating, ponds are formed in many places so shallow, that the whole water in them becomes in a very short time a frozen mass, capable of bearing any weight.

The game is played by a party forming rival sides, each individual being possessed of two circular hard stones, of about nine inches in diameter, flat and smooth on the under side, and on the upper having a handle fixed to the stone. Each player is likewise armed with a broom to sweep the ice, in order to accelerate, when necessary, the progress of the stones; and goloshes are often worn to prevent the feet from slipping. An open space of ice, of from thirty to forty yards in length, and eight or nine feet across, called the *rink*, being cleared, and a mark or *tee*, in the centre of four concentric circles, drawn at

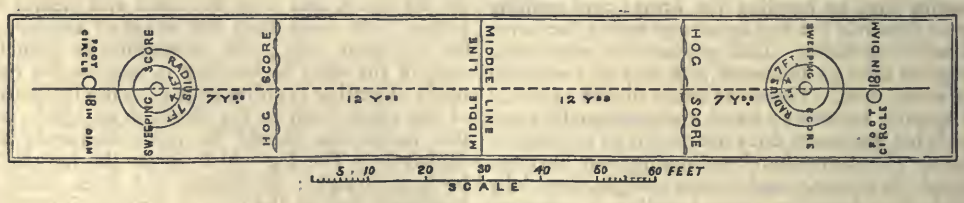


Fig. 12.—The Rink.

each end of the rink, being made to play to, the contest takes place by each person hurling or causing his stones to slide towards the opposite end of the rink. A certain number being the game, the object of each side is to have the greatest number of stones nearest the tee; and all play from end to end alternately till this is ascertained. To hurl these stones with precision, in this species of sport, is somewhat difficult; much depending on the keenness of the frost, the tone of the ice, and the 'truth' of the stone. The ice, however, should be neither too keen nor too dull. Frequently, after the best players have placed their stones in a cluster round the tee, one rapid shot from an antagonist will disperse the whole in all directions round. Occasionally, it also happens, especially on dull ice, that, in hurling, the stones come far short of the mark; but if they do not get beyond a line called the *hog score*—a line drawn across the ice, at the distance, from

the tee, of one-sixth of the length of the rink—they are dragged aside, and are not counted. A more than usually extensive match is called a *bonspiel*, which is usually contested by two neighbouring parishes or clubs.

The following are the chief technical terms used in curling:

Bonspiel—another name for a match, *usually* played by two parishes, or clubs.

Rink—the piece of ice used by two sets of players; a good-sized lake may contain many rinks.

Hog—a score made across the ice one-sixth part of the rink from the tee.

Tee—the point at each end of the rink to be played for.

Brough—several concentric circles, varying from one to fourteen feet in diameter, drawn round each tee.

Howe ice.—When it is desirable that a stone should be driven straight up the centre, the skip requests the player to keep 'howe ice.'

Inwick—another name for an angle or cannon taken *inwards* to the tee, by one stone against another.

Guard.—A stone is said to guard when it lies in a line between the player and the tee, with another stone *within* it; a guard may also lie on any other part of the ice beyond the hog score, on a similar principle.

Soled.—When a stone is neatly and levelly delivered from the hand along the ice, it is said to be well 'soled.'

Crampets or *cramps*—an apparatus shod with steel spikes, worn on the feet, or attached to the ice at each end, to prevent slipping.

Skip—the title given to the director of the play on each side.

The Grand Caledonian Curling Club, formed in 1838, is a sort of centre for the 'brotherhood of the rink' throughout Scotland. A grand match is competed for between players of the North and South of the Forth, on a large sheet of water, usually in the county of Stirling, and the scene on the loch on such an occasion is probably unrivalled for enthusiasm and picturesque effect. The following are the principal rules of the game:

The length of the rink to be forty-two yards; unless otherwise settled by agreement. [It is advisable that rinks have double tees at each end, the one at least two yards behind the other, the whole four to be as nearly as possible in the same line. The stones are to be delivered from the outer tee, and played towards the inner; this saves the ice from being injured around the tee played up to.] The rink to be changed in all cases when, from the springing of water, the majority of players cannot make up. The number of shots in a game, if not otherwise mutually fixed upon, to be twenty-one. [A game more frequently consists of thirteen shots, or even of seven, than of any others, when an hour or two's practice only is intended; but this is a matter of private arrangement.] Every rink to be composed of four players a side, each with two stones, unless otherwise mutually agreed upon. Every player to deliver both his stones alternately with an opponent, before any other of the same side or party play one. Parties to draw cuts which shall fill the ice at the first end; after which the winning party at the last end or game of that day's play shall do so. No stone to be counted which does not lie within the outer circle from the tee, unless it be previously otherwise mutually agreed upon. Measurements to be taken from the centre of the tee to that part of the stone which is nearest it.

All curling-stones to be of a circular shape. No stone must be changed throughout the game, unless it happen to be broken, and then the largest fragment to count, without any necessity of playing with it more. If a stone rolls and stops upon its side or top, it shall not be counted, but put off the ice. Should the handle quit the stone in the delivery, the player must keep hold of it, otherwise he will not be entitled to replay the shot. In double-soled stones, the side commenced with shall not, under forfeit of the match, be changed, unless by mutual agreement, during the progress of the game. [Double-soled stones are those in which the handle can be shifted from one side to another; one side being slightly concave for keen ice, and the other convex for dull ice.]

Parties, before beginning to play, to take different sides of the rink, which they are to keep throughout the game. The skips alone to stand about the tee. No measuring of shots allowable previous to the termination of the end. Disputed shots to be determined by the skips; or, if they disagree, by some neutral person chosen by them.

The skips have the exclusive regulation and direction of the game; they are the last to play on each side. The players may give their advice, but cannot control their director; nor are they upon any pretext to address themselves to the person about to play. Each skip, when his own play comes, shall name one of his party to take charge for him. Every player to follow implicitly the direction given him.

GOLF.

The game of golf is believed to be peculiar to Scotland, though most likely derived from Germany; the term *golf* being from the German word *kolbe*, or the Dutch *kolf*, a club. The popular pronunciation of the Scotch word is *goff*, or *gowf*. Strutt, in his *Sports and Pastimes of the People of England*, observes of golf, that it is probably the most ancient of games played with the ball that require the assistance of a club or bat. 'In the northern part of the kingdom,' he says, 'golf is much practised. It answers to a rustic pastime of the Romans which they played with a ball of leather stuffed with feathers [of which materials the golf-ball was composed till within a recent period]. During the reign of Edward III., the Latin name *cambuca* was applied to this pastime, and it derived the denomination, no doubt, from the crooked club or bat with which it was played.' Golf-balls are now made of gutta-percha: they are first cast in a mould, then hammered to give them consistency, and finally painted with several coats of white paint.

It seems to be quite uncertain at what period the game of golf was introduced into Scotland; but it may be fairly presumed that this amusement (as well as football and archery) was practised to a considerable extent in the reign of King James I. Charles I. was much attached to the amusement of golfing, and on his visit to Scotland in 1641, was engaged in it on Leith Links when intimation was brought to him of the rebellion in Ireland. The Duke of York, afterwards James II., also delighted in the game.

Golf is one of the principal national Scottish pastimes. It is a favourite amusement with all classes who are fortunate enough to reside near *links*. Links, or, as they are termed south of the Tweed, downs, are indispensable for the pursuit of this recreation, and it may be stated, as a rule,

that wherever links occur in Scotland, there also occurs golf.

A series of small round holes, of four inches diameter, are cut in the turf, at distances of from one to three or four hundred yards from each other, according to the nature of the ground; and the rival players, who are provided each with a set of clubs and balls, commence at the first hole, and strike off their balls in the direction of the second. In playing from hole to hole, he who succeeds in *holing* in fewer strokes than his opponent, wins that hole; but if both players hole their balls in the same number of strokes, the hole is halved. From the second they drive towards the third hole; and so on till the round is finished—that is to say, till they arrive at the hole from which they started. It may be almost needless to add that he who has won the greatest number of holes in the round, wins the round or match. And further, a match may consist of several rounds, so that the winner of the greatest number of rounds is the gainer of the match. Sometimes, too, when players are very equally matched, neither party has, at the close of a day's play, gained an advantage; every round has been halved, or each party has won an equal number of rounds, hence the match itself is halved, and remains to be played another day.

If the skill of one player is superior to that of his opponent, the former gives odds to the latter, to equalise their play. Thus, A possesses an advantage over B. They start to play a round, and the round consists of eight holes. If the difference of their skill be not very

Fig. 13.—'Striking off.'

Fig. 14.—'Putting.'

great, A possibly allows B two strokes on the round, which, for example's sake, affects B's chances thus: B agrees to take his strokes between the first and second, and third and fourth holes, and off they go; A puts his ball into the second hole in five strokes, and B in the same number. Now, were they playing on even terms, the hole would be halved, but here B's extra stroke does him service; so, having been allowed one off, he wins the hole. If A had holed his ball in five, and B in six strokes, the hole would have been halved, B's extra stroke allowed, equalising the reckoning. They strike off towards the third hole, which A wins; so here they are all even. On the next hole, B has his second and last extra stroke, which probably makes him the winner of the hole. For the rest of the round they play on equal terms; B is one ahead, and, say, five holes yet to play. If he can succeed in halving several holes, and keeping his advantage, he may win the round, but he possibly drives his ball into some *hazard*—such as sand or whinbushes—from which he is only extricated after expending one or more strokes in the operation, and loses at least that hole, if not the match.

The game is played by two persons, or by four (two of a side), playing alternately, or it may be played by three or more persons each playing his own ball. The *tee*, which is a small pinch of sand upon which the ball is placed to present a fair stroke in playing off from each hole, must be not less than four, and not more than six club-lengths from the first hole, and may be either in front of or to the side of it; and after the balls are struck off, the ball lying farthest from the hole to which the parties are playing, is played first. The balls must not be changed before the hole is played out. All loose impediments within twelve inches of the ball may be removed when the ball lies on grass—but so as not to move the ball—or from the *putting-green* or table-land on which the hole is placed, which is considered not to exceed twenty yards from the hole. When the ball lies in a *bunker*, or otherwise on sand, however, it is not permitted to remove or touch the sand or other obstacle with the club before playing. A ball must not be touched or moved except in playing, and there are penalties for touching, or moving, or stopping the course of a ball. But whatever happens to a ball by accident,

irrespective of the player, must be submitted to, being considered a *rub of the green.* If a ball is *lost,* the owner loses the hole. Such are the principal conditions of the game.

As so much depends upon the golfer's clubs, we will here give their names, and endeavour to explain the circumstances under which the more important ones come into play. They are named as follows: The play-club, long-spoon, mid-spoon, short-spoon, baffing-spoon, driving-putter, putter, sand-iron, cleek, and niblick: the last three have iron heads, the others are of wood. In some links, several of these clubs may be, and usually are, dispensed with, and the number reduced to six or seven; but in greens such as St Andrews, Musselburgh, Prestwick, and some others, they all come into requisition more or less.

The play-club, or driver, is for swiping off the tee and is further used throughout the green if the ball is lying fair, and the distance more than a full drive between the ball and the hole you are approaching.

The long-spoon comes into play when the ball lies in a hollow, or a declivity, or on slightly rough *grassy* ground; it derives its name from having the face scooped, so as to allow of its getting under the ball, and driving it forth a longish distance, if well struck. This club is useful, too, for elevating a ball, and driving it over hazards, such as bunkers, whins, &c.

The short-spoon is a very useful club, and is frequently in the golfer's hands during the course of the day. It is used for playing either good-lying or bad-lying balls when within a hundred yards or so from the hole; this is termed playing the 'short game.' Much depends on this short game; and many a far, and even sure driver through the green has been beaten by the indifferent swiper but deadly short-game player.

The putter (*u* as in 'but') is a short-shafted, stiff club, with a flattish head, and square face; it is used when the ball arrives within close proximity to the hole, generally within thirty yards, and is usually considered the best club for 'holing out' the ball. *To be a good putter,* is what all golfers aim at, and comparatively few ever attain. Long and showy driving is of much commoner occurrence than 'deadly' putting, and one who can gain a full stroke on his opponent between two far-distant holes, frequently loses his advantage by missing a 'put' within a yard of the hole!

The sand-iron comes into play when the ball lies in a 'bunker,' or sand-pit. It is a short, thick-shafted, stiff weapon, with an iron head, hollowed out in the centre, and somewhat sloped backward. On its lower edge, it is straight and sharp, which allows of its digging under the ball, and pitching it out of 'grief' on to grass. When a ball lies in whins or other hazards of a similar nature, in roads amongst 'metal,' or over the head in long deer-grass or bents, the iron is the best club for freeing it from such impediments, and is, therefore, the one generally used. It is well adapted for lofting balls over hazards.

The cleek is not so thick in the shaft, and is rather longer than the sand-iron; it is used chiefly for driving balls out, or lofting them over, certain hazards that happen to lie between the ball and hole near the putting green; it is also useful for putting where the ground is rough. The iron head of the cleek is straight in the face, and slopes backward.

The niblick is of very important service when the ball lies in a cart-rut, horse-shoe print in sand, or any round or deep hollow not altogether beyond the player's reach, and not well suited for the iron. The head is very small and heavy, about one half the size of that of the sand-iron, and is shaped into a hollow about the size of a crown-piece, with the iron sloping slightly backward. This peculiarity of shape enables the player to raise his ball out of difficulties from which no other club could extricate it, and ought invariably, where there are bunkers and roads, to form one of every golfer's set.

Wherever golf is played to any extent there are sure to be *professionals,* and into the hands of one of these the tyro wishing to learn the game should commit himself. This will insure him learning the game in one-tenth part the time it would otherwise take him, will insure for him a good style to begin with, which, unless he wilfully changes it, is never likely to forsake him; and besides will act as a check upon his attempting too much at first. If the novice attempts to teach himself, from merely observing others play, the chances are that he will acquire an erroneous style and false ideas that may cling to him. Should it be impracticable to obtain the services of a professional, the learner may consider himself fortunate if he is taken in hand by some friend who knows and practises the game well. Should he lack the services of both professional and friend, his difficulties are much increased, but may be lessened by attending to the following directions. Practise with short clubs at first, as they insure the steadiest play. Wear shoes with strong nails, to insure a firm footing on the grass; and if your hands are tender, wear an old pair of kid gloves, of not too tight a fit.

The true method of handling the club will be seen at a glance in the subjoined figure. Let the

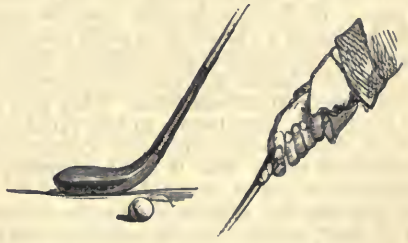


Fig. 15.

wrists be free, and grasp your club with moderate pressure, but *not tightly;* in striking, or swiping, as it is called, the eye must never for a single instant wander from the ball, and the club should be swung with moderate speed over the right shoulder, and brought down quickly to the ball —three-fourths of a circle being described by the action. This mode of handling and swinging should be practised before attempting to strike a ball. Never exert your whole strength in delivering a swipe; golf is a game of skill and nice art, not one of brute force, and if too much force be used, the chances are that you

founder your ball, and either top it or drive it a comparatively short distance. The easier a stroke is taken, the greater the chance of hitting the ball correctly; the mere swing of the club will drive a ball a long distance, and with more certainty of the beginner's keeping the right direction than if much force had been applied. In standing to the ball, the feet should be moderately well apart (about a foot and a half is sufficient), and the left foot should be nearly opposite the ball, at a distance varying with the clubs used; for instance, in using the ordinary driving-club, two feet and a half is a good distance between foot and ball. Be careful not to exceed this distance, nor be much within the mark, as the player is apt, when standing too far from his ball, to fall *in* to it, and run the chance of making a bad shot. When standing too near, the ball is often '*heeled*,' or struck with that part of the club-head nearest the shaft. When this is the case, the ball flies off to the right. When standing too far, the ball is apt to be 'drawn' or 'hooked'—that is to say, struck with the point or 'toe' of the club, in which case the ball flies in to the left. These remarks apply only to driving through the green.

Having grasped your club, straddled to your ball, and swung your club as in the foregoing directions, do not be disconcerted if you miss the ball. Nearly every beginner 'misses the globe' the first shot, and tops his ball the second, and you may even congratulate yourself if you do not miss twice running! Probably you will take a dozen strokes to hole your ball, which a good player would have done in five. But avoid pressing, don't be puffed up by your occasional successes, attend to your putting, never take your eye off the ball when about to swipe, and keep cool, and in a very few months you may be able to hole in five too, with an occasional 'steal' in four.

Golf is becoming more popular every day amongst all classes of the Scottish community. Boys and old men enjoy its fascinations with equal zest, and both gain health and strength by the exercise and easy muscular exertion brought into play. If the day be fine, and the match equally balanced, we know of no other out-of-door game whose attractions are equal to this our favourite one. Ladies' golf-clubs are now becoming established on various links. They play at a set of short holes, from twenty to fifty yards apart, and have their medals and other competitions. The principal ladies' club is at St Andrews, the headquarters of golf in Scotland.

The manufacture of balls used to be a distinct trade by itself, and that of clubs another, but now most club-makers also make balls. The price of a ball is 1s., and a club 4s. 6d.: irons are rather dearer.

The following are the chief golfing centres in Scotland: Aberdeen; St Andrews, Fife; Bruntsfield, Edinburgh; Burntisland, Fife; Cupar, Fife; Glasgow; Greenock; Leven, Fife; Monifieth and Carnoustie, Forfar; Montrose, Forfar; Musselburgh, Mid-Lothian; North Berwick, Gullane, Aberlady, and Dunbar, East Lothian; Perth; Prestwick, Ayrshire; and Lanark. The game has likewise its votaries in England at Blackheath and Wimbledon; at Bideford, Manchester; Alnmouth, Northumberland; and Hoylake, Cheshire; and in Ireland at the Curragh Camp; in several provinces of India; at the Cape of Good Hope, Australia, &c. Fuller information will be found in *Gymnastics, Golf, and Curling*, one of Chambers's *Useful Hand-Books*.

CROQUET.

This is one of the most prevalent of all summer recreations, and is yearly growing in popularity. It was introduced about twenty years ago; but though of so modern date, it is uncertain by whom it was introduced, or whence it derived its name. It bears some resemblance to the old game of pall-mall, which was popular in England in the days of the Stuart kings, and it has been supposed to be a revival of this game with modifications. The game of pall-mall is still played at Montpellier in France. Beyond the fact that mallets and balls are used in both, the two games, however, have little in common. One of the chief advantages of croquet, and perhaps the main cause of its popularity, is, that it is a game which persons of both sexes can play at together, and the changes made in the laws of the game of late years have tended to enhance this advantage, by making the superior strength of men-players of less avail than formerly.

The implements used in croquet are mallets, balls, pegs (formerly called sticks or posts), and hoops. To these are sometimes added a cage or a pair of tunnels, or both; but the tunnels were never in general use; and in the game, as now played by skilled players, hoops only are used. The game is played on level turf or grass, which should be kept as smooth as possible by machine mowing and rolling. The dimensions of a *croquet-ground* should not, if possible, be less than 20 yards by 15; 40 yards by 30 are the best dimensions for skilled players. The disadvantage of a too limited croquet-ground simply is, that it makes the game too easy. A croquet-ground should have a well-defined boundary; for example, a raised walk or a trench.

Of the mallets used in croquet, there is a great variety. At first, light mallets were used, with handles from 2 feet 9 inches to 3 feet 5 inches in length (the shape of the head being most commonly that of a dice-box); but experience shewed that the mallet should be at least as heavy as the two balls which, in play, might have to be moved by it, and heavy mallets are now universally used. In the game, as now played, there is no restriction as to the dimensions or weight of the mallet. The balls used are made of beech or boxwood; but the latter material is preferred. A full set of croquet balls consists of eight, painted in whole or in part, blue, pink, black, yellow, brown, orange, green, and red, to distinguish them, and point out the order of the play. The pegs or sticks are about 2 feet long, 18 inches being above the ground, and not less than 1½ inch in diameter. Two pegs are required—one the starting-peg, which is also the winning-peg, the other the turning-peg. The hoops, which are made of round iron or steel wire, half an inch thick, should be 15 inches or upwards long in the legs, and they should be at least 12 inches above ground while they are fixed. A square top is considered better than an arched one. They should not be more than six inches in width, inside measurement; and for match-play, much narrower hoops are used. When the game was first introduced, nine or ten hoops were used; now, among

skilled players, the number is usually eight, seven, or even six. Perhaps, however, the nine-hoop game is still the most prevalent. The clips, which are often used for marking the game, are discs of tin marked with the colours of the balls, and are placed on the hoop or peg which is next in order for the ball of the corresponding colour. Marking-boards similar to those used in playing pool are also employed in marking.

The game was originally played by eight players, four on each side, each taking one ball; but a four-ball game is now considered best, and that best when it is played by two players, each taking two balls. The hoops being set according to a plan or pattern agreed upon (which varies with the number of hoops used), the game, when there are four or more players, commences by the choosing of sides. The choice of lead and of balls is determined by lot in the first game; but, in succeeding games, the lead is alternate, the sides keeping the same balls. The object of each side is to be first in carrying all its balls through the course—that is, through the hoops in order to the turning-peg, and again through the hoops in order to the winning-peg; and in doing this each player is allowed to give assistance to his partner, to use for his purposes his partner's and his enemies' balls, and is liable to obstruction at the hands of the enemy. The starting-spot is usually a mallet's length in front of the starting-peg, but this varies with the setting of the hoops adopted. Formerly, if a player at commencing missed the first hoop, his turn was over; but his ball was not 'in play,' not liable to molestation from hostile players, or entitled to assistance from his friends; now, however, a ball is in play as soon as it has been struck, and may *roquet* or be *roqueted*, whether it has passed through a hoop or not. If the ball be moved, a stroke is considered to have been taken, unless when it is moved accidentally; and if, after being accidentally moved, it is struck without being replaced, the stroke is foul. To roquet (pronounced rokay) is to hit with one's ball another ball for the first time in one's turn, or for the first time after making a point; and it is out of the power of making roquet that the difficulty and interest of the game mainly arise; for a roquet gives the right, and indeed imposes the duty, of taking *croquet* (krokay). This is done by placing the striker's ball in contact with the one roqueted, the striker then hitting his own ball. He must, in taking croquet, move the roqueted ball, but he may do so as gently or violently as he pleases, and he may hit so as to send the balls in whatever direction he thinks proper. As, after taking croquet, he continues his turn, his object will be to use the enemy's ball so as to promote his own game and that of his partners, and to impede that of the other side. As he can roquet every ball, friendly or hostile, once after the commencement of his turn, and get a renewal of the right to do so after making a new point, it will be obvious that the power of roqueting, followed by taking croquet, gives a skilful player an immense power of making way himself, helping his partners, and discomfiting his opponents.

In taking croquet, formerly what was called tight croquet was a favourite stroke; the striker putting his foot on his own ball, so as to keep it from moving, and then striking it with force, so as to send the enemy's ball to a great distance; but now this stroke is not permitted. The strokes made in taking croquet are—(1) The stop stroke, in which the striker's ball goes only a short distance, the other ball going much farther, which is made by giving a sharp tap; (2) The rolling or following stroke, in which both balls go about the same distance, in taking which the mallet must be brought down steadily, and made to dwell on or follow the striker's ball; (3) The passing stroke, which sends the striker's ball beyond the other, and is made by dwelling on or following the striker's ball more than in a rolling stroke, so that it receives an additional impetus after the other ball is out of contact with it; (4) The take-off, in which the balls are so laid and struck that the striker's ball receives nearly the whole force of the blow, the other scarcely moving; and (5) The splitting stroke—the most important of all—which makes the balls fly off from each other at an angle, the manner of effecting which is difficult of description, and varies according as it is desired to send the one ball or the other to the greater distance. The stroke for running hoops or making a roquet should be a sharp tap, the mallet being allowed to follow the ball as little as possible; and it is best to hold the mallet with both hands, swinging it across the body from right to left, and to give the stroke principally from the shoulder.

A ball is deemed to have run its hoop when a straight-edge placed against the wires on the side from which it was played does not touch it; and a ball driven partly through its hoop cannot run it at the next stroke, if a straight-edge placed against the wires on the non-playing side touch it. If a ball in course of play is driven through its hoop, or against the turning-peg by any other ball, the point counts for it. A ball that has made all its points in order except the winning-post, is called a rover. A rover may be pegged out of the game—that is, driven against the winning-peg—by any fair stroke of either side; the player who pegs out a rover by a roquet, however, losing the remainder of his turn. Another change made in the game, is what is called the dead-boundary law. If a striker, in taking croquet, send his own ball or his opponent's off the ground (and if a ball touch the boundary-line it is deemed to be off the ground), he loses the remainder of his turn of play, unless in the same stroke he make a roquet.

TENNIS AND LAWN TENNIS.

Tennis is a game of great antiquity, belongs to the class of ball-games, and finds its analogies in the *sphairisis* of the Greeks, and the *pila* of the Romans. Under the name of *paume*, a name given to it from the ball being at that time struck with the palm of the hand, it is noticed in the Arthurian romances, and in the earlier records of the dark ages. In the 15th century, it was in great vogue in France among all classes, from the monarch to the meanest of his subjects; and about this time the use of a heavy glove to protect the hand in striking the ball was introduced, and a further improvement was subsequently effected by the adoption of the *racket*. The game in England kept pace with its progress in France, and during the 16th, 17th, and 18th centuries, was generally practised under the name of *tennis*. Many modifications have been introduced, but the legitimate descendant of the paume and tennis of former days is the present game of rackets.

'Rackets' is played in a court 96 or 97 feet long, by 33 or 34 feet wide, and surrounded by walls sufficiently high to prevent the balls from being lost. The players are either two in number, or four divided into two parties. The player or party 'in' *serves* the ball against the head-wall of the court, so as to rebound over a line drawn at a certain distance; it is returned by means of the racket by the player or party 'out,' who must make it rebound from the wall to the other side of the line; and the game is thus carried on till one player fails to strike the ball or cause it to rebound properly. If the player 'in' fails, he changes places with the player 'out;' if the latter fails, the former scores a point. The part of the court on which the player or party in is placed is called the 'service' side; the other, the 'hazard' side. A similar game played without the racket is called *fives*, *hand-tennis*, or *hand-ball*.

Lawn Tennis, a modified form of the old game of tennis, has recently become a popular pastime alike for ladies and gentlemen. The ground on which it is played is a strip of turf (sometimes asphalt), 78 feet in length by 30 in width at the extremities. Across the centre extends a net five feet high, stretched from poles 24 feet asunder. Lines are drawn marking the boundaries, and dividing each of the portions of ground separated by the net lengthwise into a right court and a left court. Any number of players may join; but the best game is played by two or four persons. The player who begins, stands just on the back boundary of the right court on his side, and must strike the ball with his racket so that it shall fall over the net into the nearer part of the right court diagonally opposite him. His opponent there is bound to strike back the ball after the first rebound. It is then returned again by the first player, either before it touches the ground ('volleyed') or after the first rebound; and the first player continues to play till he fails to return the ball, sends it without the boundaries, or commits some of the other 'faults' recognised by the rules; when his opponent takes his turn.

CYCLING.

Cycling is a popular and healthful recreation, which has largely gained ground in this country in recent years. This exhilarating exercise has the recommendation of being entirely taken in the open air; and all the muscles of the body are exercised in a more thorough way than can even be said of riding or walking. In moderation, it has secured the recommendation of the medical faculty; and besides its recreative uses, the tricycle especially is sometimes used for such utilitarian purposes as parcel or letter delivery, and by many country doctors or clergymen.

Both bicycle and tricycle are gradual growths from earlier and much less effective machines. Improvements have been made from time to time, yet the balance of evidence as to priority of invention, according to Mr Charles Spencer, author of *Bicycles and Tricycles, Past and Present*, goes to show that Scotland may claim the bicycle; others say Germany is the birthplace of the two-wheel machine. The important crank action was first of all English and Scotch, but afterwards brought into practical use by the French, and still further perfected by the English. The first bicycle ever made in Scotland is said to have been that of Gavin Dalzell, of Lesmahagow, Lanarkshire, in 1836, who had also in use a kind of wooden tricycle.

The immediate predecessor of the bicycle in this country was the Dandy, or Hobby-horse, in use about the beginning of the century, on which the rider used to sit and paddle himself along, with feet on the ground. Through the ridicule of the caricaturists, and for other reasons, it speedily fell into disuse. We have to come to comparatively recent times for its practical development. In 1862, M. Michaux of Paris introduced the crank action into machines made of iron, and during the 1867 Exhibition, the riding of these machines had become fairly popular. To Mr Charles Spencer, gymnast, belongs the honour of introducing the bicycle to London in 1868, where it attracted considerable attention, and a velocipede school was afterwards started for the training of young velocipedists. A journey made to Brighton served to draw attention to the new machine, and the bicycle was in a fair way of becoming popular.

The success of the bicycle led to the invention and improvement of a machine which should have the advantages, without the danger, of the bicycle. After many failures had been recorded, the 'Coventry Tricycle' appeared in 1877; Starley Brothers appeared with the 'Salvo,' and now the manufacture of machines for cycling has grown to meet a steadily increasing demand. The tricycle has enabled ladies to take part in this recreation.

There is a cyclists' union, to which any rider, amateur or professional, is eligible on payment of one shilling. The Cyclists' Touring Club, founded in 1878, had increased from 7000 to 12,000 members in 1883. In 1881, no fewer than 225 race meetings had been held throughout the country. An extensive literature has grown up in connection with cycling.

The law as to cycling forbids riding upon any footway, pavement, or causeway set apart for foot passengers; insists upon the carrying of a lamp while riding between sunset and sunrise; the sounding of a bell or whistle in passing carts, carriages, or horses, or in passing through the streets of a town; and the dismounting where any horse is restive and frightened. Two or more bicyclists shall not ride abreast when passing or meeting any vehicle or horseman.

An amateur bicyclist has been known to ride over 20 miles in an hour, while a professional can beat this record; a tricyclist has been known to do one mile in three minutes five seconds. The speed is conditioned a good deal by the state of the roads, the style of machine, the absence of a head wind, and the practice of the rider. To the cyclist who travels for recreation, mere swiftness is not the main object, however. 'There is a real pleasure,' says Dr Richardson, 'when the roads are good, in skimming along on a bright day. Time passes quickly, and the eye collects all that is interesting without dwelling upon objects too long, as in walking; and without losing sight of them too rapidly as in a railway carriage. This keeps the brain active without wearying it on the one hand, or confusing it on the other; and when the mind goes well, all is well.' It is interesting also to have this writer's testimony to the fact, that, 'Tricycling for girls or young women is one of the most harmless of useful recreations, and is equally good for men and boys of all ages.'

Chess.

INDOOR AMUSEMENTS.

CHESS.

THE origin of this, the most purely intellectual of all games of skill, has been much disputed; but thus much may now be considered as certain, that under the Sanscrit name of *Chaturanga*, a game essentially the same as modern chess was played in Hindustan at least two thousand years ago. In its gradual diffusion through the world in succeeding ages, the game has undergone many alterations and modifications, both in nature and in name; but marked traces of its early Asiatic origin and descent are still discerned by the learned in its nomenclature and other characteristics. From Hindustan, chess spread into Persia, and thence into Arabia. The Arabs, it would appear, in the eighth century introduced the game into Spain and the rest of Western Europe; and in England, chess-play seems to have been known prior to the Norman Conquest. Into Constantinople, and probably some other cities of Eastern Europe, the game may have been imported from Persia at a period earlier than its conveyance by the Moors into Spain.

The original Hindu game was played on a board of sixty-four squares, as now, but by *four persons*, two being allied against two, as in whist. Hence the name *Chaturanga*, from *chatur*, 'four,' and *anga*, 'a member' or 'component part.' The name *Shatranj*, used by the Persians and Arabs, is a corruption of the Sanscrit. The English, French, and other European names are derived from the Persian term *shah*, 'king.' *Check*, the warning when the king is in danger, is but another form of *shah;* in fact, 'king' is sometimes used for 'check;' and in German, *schach* is both the name of the game and the term of warning. The term *rook* is said to be derived from the Persian *rokh*, a corruption of the Hindu *rath* or *roth*, an armed chariot; but it has also been derived from the Italian *rocca*, a bishop's staff. *Pawn* is said to be from *peon*, an attendant, or foot-soldier.

The books written upon chess would form a library. Of works on the antiquities of the subject, we may mention Dr D. Forbes's *History of Chess* (London, 1860). The best modern practical works on the art of chess-play are the *Chess-player's Hand-book*, and *Chess Praxis*, by Staunton; Morphy's *Games at Chess*, edited by Lowenthal; Jaenisch's *Treatise on the Openings*, translated by Walker; and Horwitz and Kling's *Collection of End-games.*

The Chess-board—Pieces and their Moves—Principles of the Game.

The game of chess is played upon a square board marked out into sixty-four square divisions, which are coloured alternately black and white, in order the more clearly to determine and denote the respective movements of the several pieces. In placing the board for play, each player must always have a *white* corner square nearest to his right hand. There are two sets of pieces of opposite colours, of sixteen men each, and of various powers according to their rank. These sets of men are arrayed opposite to each other, and attack, defend, and capture like hostile forces on a battle-field. The diagram on next page will best explain the name, form, and place of each man at the commencement of the game.

The superior officers occupying the first row on each side are called *pieces;* the inferior men, all alike in power, standing on the row immediately in front of the pieces, are called *pawns.* Their moves and powers, along with the peculiar terms

used in chess, may be briefly described as follows:

A *pawn*, at his *first* move, may advance either one or two squares straightforward; but after having once moved, he can only advance a single square at a time. In capturing* an adverse piece, however, a pawn moves one square diagonally either right or left; but the pawn never moves backward. On arriving at an eighth square, or the extreme line of the board, a pawn may be exchanged for any piece his owner chooses to call for; so that a player may have several queens on the board at once. If, on moving two squares, a pawn pass by an adverse pawn which has arrived at the fifth line, the advanced adverse pawn may take the other *in passing* in exactly the same manner as if the latter had moved but one square.

A bishop moves any number of squares diagonally, but diagonally only; therefore a bishop can never leave the colour of the square he is first placed upon.

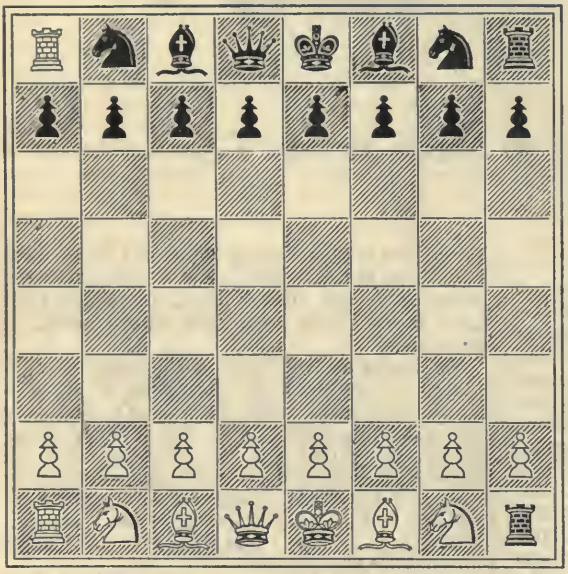


Fig. 1.

A knight moves two squares at once, but so as always to change the colour of his square—that is, he moves one square forward or backward, and one diagonally. On account of this crooked movement, he can leap over or between any surrounding pieces; and, as there is no covering his attack, a knight's check—unless he can be taken—always compels the king to move.

The rook, or castle, moves over any number of squares, forward, backward, or sidewise, but in straight lines only.

The queen is by far the most powerful of the pieces, and moves over any number of squares, either in straight lines or diagonals, forward, backward, or sidewise; so that her action is a union of that of the rook and bishop. At starting, the queen always stands on a square of her own colour.

The king is the most important piece on the board, as the game depends upon his safety or constraint. He moves only one square at once, in any direction, except when he *castles*—a term to be explained presently. The king cannot be taken; but when any other piece attacks him, he is said to be in *check*, and must either move out of check or interpose some one of his subjects, unless the checking adverse piece can be captured. When there is no means of rescuing the king from such check, he is said to be checkmated, and the game is over. Of course, the two kings can never meet, or occupy adjacent squares, as they would be in check to each other. *Double-check* is when a piece, by being moved, not only gives check itself, but also discovers a previously masked attack from another.

Castling is a privilege allowed to the king once in a game. The move is performed either with the king's rook or queen's rook—in the former case, the king is moved to the king's knight's square, and the king's rook is placed on the adjoining bishop's square: in the latter case, the king is played to the queen's bishop's square, and the queen's rook is played to the queen's square. But the king cannot castle after having once moved, nor at a moment when he is actually in check, nor with a rook that has moved, nor when he passes over a square attacked or checked by an adverse piece, nor when any piece stands between him and the rook with which he would castle, nor when, in the act of castling, either the king or rook would have to capture an adverse piece.

A *drawn* game results from neither player being able to checkmate the other: thus, a king left alone on each side must of course produce a draw, as do also a king with a bishop, or a knight, against a king. If one player be left with force enough to checkmate the other, but has not skill to accomplish the mate within fifty moves on each side, the game is drawn, by the laws of chess: as, for instance, if the end of the game leave one side with king, bishop, and knight, and the other side with king only, the game might probably be drawn between unskilful players.

Stalemate, or the not being able to move either the king or any other piece, also constitutes a drawn game.

Odds is a term applied to the advantage which a stronger player should give to a weaker: thus, the removal of a rook or knight from the better player's forces may be fair odds; or if the players are more nearly matched, the one may give a pawn. When the odds of a pawn are given, it is always understood to be the king's bishop's pawn.

Gambit is a technical word implying the sacrifice of a pawn early in the game, for the purpose of taking up an attacking position with the pieces.

Supposing the worth of a pawn to be represented by unity, the following is a tolerable average estimate of the comparative value of the pieces: Pawn 1, bishop 3, knight 3, king 4, rook 5, queen 9.

*Taking is always performed by lifting the captured man from the board, and placing the captor on his square. The pawn is the only man whose mode of taking differs from his ordinary move.

The chess-men being placed, the parties begin the engagement by moving alternately; each aiming to gain a numerical superiority by capturing his opponent's men, as well as such advantages of position as may conduce to victory.

The rows of squares running straight up and down the board are called *files*, those running from side to side are called *lines*, and those running obliquely across are termed *diagonals*.

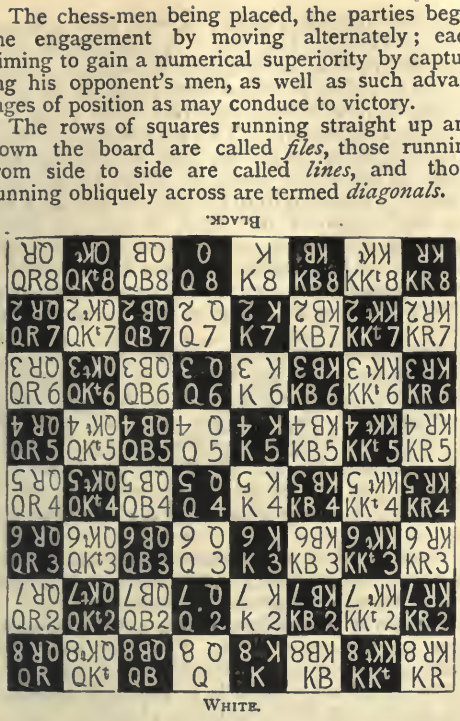


Fig. 2.

The accompanying diagram will shew at once to the learner how each square is named; and by its aid he will speedily be enabled either to play over printed games, or to record his own. The playing over the following short game will serve him as a little initiatory practice:

WHITE.	BLACK.
1. King's Pawn two.	1. King's Pawn two.
2. King's Bishop to Queen's Bishop's 4th.	2. King's Bishop to Q Bp's 4th.
3. Queen to King's Rook's 5th.	3. King's Knight to K Bp's 3d.
4. Queen takes King's Bishop's Pawn, giving Black checkmate.	

The foregoing brief mode of giving a checkmate is called the *Scholar's mate*, and is often practised upon young and unwary players. Any contractions used, such as 'K' for king, 'B' for bishop, &c. will readily be understood by the use of the diagrams.

On the Best Mode of Playing each Piece, and the General Conduct of the Game.

1. *On the King.*—It is generally disastrous to have to move the king about the board early in the game. As a general rule, castle in good time: this secures the king's position, and brings the rooks into play. Castling with the king's rook is usually much safer than with the queen's rook; for in the latter case the king is too far from the corner, which is at the same time very much exposed. Next to the king's rook's or knight's square, the king's bishop's 2d is the best place for the king in the early part of the game. Beware carefully of leaving your king to be checked by a knight or other piece which will at the same time attack another of your men. Avoid giving useless checks, such as your opponent may easily or advantageously cover; but a check which will compel your adversary to move his king early in the game is very advantageous, as it deprives him of the power of castling. After castling, it is usually dangerous to move up the pawns which cover the king, except to play the king's rook's pawn, which not only serves to prevent certain attacks from the hostile pieces, but also provides a most valuable outlet for the king in case of danger. When a knight checks your king, play him, if possible, on to the same diagonal with the knight, with one vacant square between them, because so placed the knight cannot check him again in less than three moves. When the board is clear of the more powerful pieces, the king becomes a very strong and attacking agent in the warfare; and when each player has only a few pawns, with or without a minor piece, he who makes the best use of his king will commonly win the game.

2. *On the Queen.*—As the queen is by far the most powerful and valuable of all the pieces, great care should be taken in playing her. It is seldom good play to move her far from home in the early part of the game, as she becomes in such case a target for the hostile pieces. Great caution should be used, too, in placing her on the same file, or on the same diagonal, with the king, lest some rook or bishop be able to 'pin' her. The queen should not be used to attack or to defend any piece or pawn when the same object can be effected with a subordinate officer. Towards the end of a game, it is frequently good play to give up the queen for the adverse two rooks; but this exchange is disadvantageous if made before your game is well developed. In the course of a game, the following are usually found advantageous squares for the queen to occupy: The Q 3d, Q Kt 3d, K R 5th, and K Kt 3d—which situations the student will do well to find and notice by means of our last diagram.

3. *On the Rook.*—Endeavour to bring your rooks into early co-operation, as their power by mutual support is greatly augmented. Nothing is more common than to see players leave their queen's knight and rook useless at home until the game is decided against them. Avoid this error; and after castling with the K rook, take an early opportunity to play the queen's rook to the king's or queen's square. If any file on the board happen to be quite open, it is an excellent thing to seize the command of it with a rook; and when the board is somewhat thinned, the being able to play a rook to your 7th line will often prove an advantage sufficient to decide the game. If, therefore, you have lodged a rook in your adversary's 2d line, and he should offer one of his rooks in exchange, you will do much better probably to support the offensive castle with his brother than to make the offered change. Seek to double your own rooks, and to prevent your opponent's doing the same. In exchanging, a rook and two pawns will mostly be found a fair compensation for the loss of two minor pieces. The queens and rooks are termed major or superior pieces; the bishops and knights, minor or inferior pieces.

4. *On the Bishop.*—Early in the game, the king's bishop is slightly more valuable than the queen's, as he attacks the adverse K B pawn, which is the usual focus for battery. The K 3d, K B 4th, Q 3d, and Q B 4th, are respectively excellent posts for the two bishops to occupy.

The power also which the bishops possess of 'pinning' the adverse knights and rooks on the same diagonals with the king or queen, ought never to be lost sight of. Two bishops are generally to be preferred to two knights, either in attack or defence: the former, too, aided by their king, have power to give checkmate on a clear board; the latter have not. Do not, unless compelled, play your Q pawn one square before deploying your king's bishop, as you thereby shut in a very attacking officer.

5. *On the Knight.*—The knights should come early into the field, and their bishop's 3d squares are commonly the best seats for them. They should not often be moved to the rook's files, as they are then deprived of half their power, and liable to be captured at great disadvantage. The knight at the K B 3d threatens to advance to the K Kt's 5th, attacking the adverse K B pawn, and this assault not unfrequently proves very serious, because the K bishop and queen so often command the same point. When your opponent has moved the Q Kt to B 3d, you will often do well to prevent a further incursion of this Kt by playing your Q B pawn one. If you can plant a knight in your adversary's game, and support him with a pawn on each side, you will find him worth full as much as a rook, provided no hostile pawn be able to dislodge him. When the board is bare, and the king on each side is left with a few pawns, a single knight is to be preferred to a single bishop, as he can attack squares of both colours.

6. *On the Pawn.*—The judicious play of the pawns is of the utmost importance in chess. Not only does their value depend on their prospect of becoming superior pieces, but their united strength—as a chain or hedge of attack and defence—is so great, that the loss of one pawn, like one link gone from a chain, is sufficient to lose the game between first-rate players. Seek to drive away or keep back your opponent's pieces with your pawns; and if he gives you an opportunity, plant your K pawn and Q pawn at the fourth squares, for by so doing you occupy the centre of the board, which is an immense advantage. Having your K P and Q P so placed, do not hastily advance either of them: they are stronger at the 4th than on the 5th line, and should not be pushed on until an onward movement is forced. It is generally bad play to exchange a centre pawn for a side pawn, and good to exchange a side pawn for a central one. A doubled pawn—that is, two on the same file—is most frequently a disadvantage: do not, however, be overmuch afraid of such a position, as it is not a very serious detriment. To double a rook's pawn on to the knight's file is often an advantage rather than otherwise, but a knight's pawn doubled on the rook's file is generally lost. As the union of pawns constitutes their great strength, beware of having one isolated; and for the same reason, if you have two bodies of pawns, unite any other with them on the side on which they are strongest. It is not safe to castle on a side where you have already pushed up the pawns, as they are wanted, for a time at least, to fortify their monarch. If you are a pawn minus, do not lightly change off all the minor pieces, for your chance of drawing would be thereby diminished. Carefully avoid having any two of your pieces 'forked' by an adverse pawn. Beware of moving the king's bishop's pawn one square, as this move exposes your king, blocks in your K 'knight, and is almost always bad play. A pawn which is not opposed in front or on either side by an adverse pawn is called a *passed pawn*, and is of great value, as it will often cost the enemy a piece to prevent his queening. Two passed pawns abreast and unattacked on the 6th line, will win against a rook or any minor piece, the kings being out of reach. To refrain from castling on the same side as your opponent has done, in order to attack him with your pawns, is seldom safe policy, especially if he has castled with the king's rook. If your opponent has an isolated pawn, make it an object to bring so many of your pieces to bear upon it as may occasion him its loss. The king and one pawn at the end of a game will often not win against the adverse king alone: this, however, depends on the relative positions and play of the two kings. A single rook's pawn will never win if the adverse king can come up in time to oppose it.* Towards the end of a game, remember that by giving up a piece for a pawn which is running to queen, you may often draw a game otherwise lost.

In the conduct of the game, and in the practice of chess, the following rules, precepts, and hints will be found very generally useful:

Play forth your minor pieces early, and castle your king in good time. You may sometimes delay castling with advantage, but not often.

Do not expect to be able to establish an enduring attack with half your forces at home.

Seek to let your style of play be attacking; and remember the gaining or losing of time in your measures is the element of winning or losing the game.

Never touch a piece without moving it, nor suffer yourself or your opponent to infringe any other of the laws of the game.

You will find that the opening springing from your playing 1st King's pawn two, and then your King's Knight to the Bishop's 3d, when first player, is one of the best that you can adopt; but do not adhere to any one opening only.

If you wish to adopt a purely defensive opening, you may play 1st king's pawn one, and follow up with Q P 2, and Q B P 2.

Next to playing with good players, nothing will conduce to improvement more than looking on at two expert players whilst they play. Wanting these advantages, it is best to play over openings of games, and actually played games, from chess-books or journals.

To prevent blunders and oversights, always endeavour to perceive the motive of your adversary's move before you play; and look often round the board, to see that you are not losing sight of any better move than the one you intended, or that you are not suffering yourself to be tempted by a bait cunningly laid.

The Laws of Chess.

The following are the principal rules of the game as now played in chess-clubs throughout Great Britain:

1. If any error have been committed in the placing of the board or men, either player may insist on its being

* Not even with the aid of a bishop, if the bishop is of the colour that does not command the square on which the R pawn queens.

rectified, if he discover it before playing his fourth move, but not after.

2. A move once made, by your having moved a piece and left hold of it, cannot be retracted.

3. If you touch a piece, you must play that piece; but as long as you retain your hold, you can play it where you like. If you touch a piece that cannot move, your opponent may compel you to play your king, unless the king be unable to move. When you touch your pieces for the mere purpose of adjusting them, you are bound to say so.

4. If you make a false move, your opponent may either cause you to retract it and move your king, or he may claim that the false move shall stand, or that you shall make a legal move with the same piece, at his pleasure.

5. If you touch one of your opponent's men, he may compel you to take that man; or if that be impossible, to move your king, provided he can move without going into check.

6. If, on the king being checked, due notice is not given, the player whose king is attacked is not bound to notice it.

7. In every fresh game, except when one is drawn, the players have the first move alternately.

8. Drawn games counting as no games at all, the player who had the first move in a drawn game is also entitled to it in the next. (This absurd regulation is fast becoming obsolete; and it is now a common agreement, in playing a series of games, that the move shall invariably alternate.)

9. A player who gives the odds of a piece, is entitled to the first move.

10. The time for consideration of a move is not limited; but a player leaving a game unfinished without his opponent's permission, loses such game.

11. When at the end of a game one player is left with just sufficient superiority of force to win—such as a king and rook against king, king and two bishops, or king, knight, and bishop against king—he who has the greater force must give checkmate within fifty moves on each side, or else the game is adjudged to be drawn. (This law is framed to prevent unskilful players from wearying their opponents by persisting in the attempt to accomplish what they are too untutored to effect; and it is perfectly just, since the allotted number of moves is amply large enough and to spare).

12. In case of any dispute about the laws, both players are to agree as to an umpire, whose decision is to be considered final.

DRAUGHTS.

Draughts is a game played with a checkered board and men, of much less antiquity than chess, of which perhaps it may be considered a degenerate descendant. In France it is called *les dames*, from having been a favourite game with ladies; and in Scotland this signification is preserved in the term *dam-brod*, the name universally applied by the common people to the draught-board.

Draughts is played on a chess-board, or a board checkered precisely in the same manner, with thirty-two white and thirty-two black squares. The board, however, is placed before the players differently: in chess there must be a white square in the right-hand corner, but in draughts the right-hand corner must be black—that is, supposing you to play on the white squares. The following figure is a representation of a draught-board, numbered for the sake of illustration, and placed as it should be in playing.

The game is played by two persons, who sit opposite to each other. Each has a set of twelve men, the two sets being of different colours, for the sake of distinction. The men are generally round and flat pieces of wood; one set white, and the other black; those of the neatest kind are turned out of boxwood and ebony.

The men may be placed either on the white or black squares, but the whole must be put on one colour only. It is customary in England to place all upon the white, and to have, as above, a black square on the right. In Scotland the black are played upon, when there is consequently a white square to the right. We go upon the supposition that the play is on the white squares, and have numbered them in the above figure accordingly.

The movements in draughts are very simple: a man can move only one square at a time, and diagonally, never straight forward or sidewise. If an enemy's man stand in the way, no move can take place, unless there be a vacant square beyond into which the piece can be lifted. In this case,

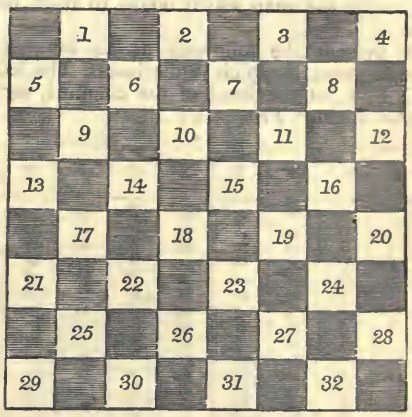


Fig. 3.

the man leaped over is taken; he is removed from the board.

The grand object of the game is to clear the board of the enemy's men, or to hem them in so that they cannot move; and whichever party does so first gains the victory. As no piece can move more than one step diagonally at a time, there can be no taking till the two antagonists come to close quarters; and the pushing them cautiously into each other's neighbourhood is the principal art in the game.

When the men on either side have cleared their way by taking, or found an open path to the opposite side of the board, they become invested with a new power of movement: on reaching the first row of squares on the opposite side, the piece is entitled to be *crowned*, which is done by placing a man on the top of it, and then the man may move backward or forward, but always diagonally, and one square at a time, as before. This power of moving and taking either forward or backward, renders it of consequence to get men crowned. When two or three on either side have been crowned, the game becomes more interesting, and may speedily be determined.

Immediately after crowning, great art is shewn in blocking up one or more of your adversary's men, by the aid of which to accomplish a series of decisive moves. For instance, supposing you have detained your adversary's piece at 4, while he has others situated on 25 and 26—and

supposing you have pieces on 12 and 19, with a crowned man at 14, you may, by giving him your 12 and 19, exchange two pieces for three, which is commonly equivalent to winning the game. Again, supposing you have pieces on 13, 22, 30, and a crowned one on 26, and your adversary a piece on 5, with others scattered in the direction of 16, 8, 7, you may, by successively pushing before him your pieces on 13 and 22, gain a formidable exchange.

In beginning to play, much depends on having the first move; and the rule is, that in playing several games each party takes the first move alternately.

If a player touch one of his men, he must play it. If a player omit to take a man when it is in his power to do so, his adversary can *huff* or *blow* him—that is, either take the man, or insist upon his own man being taken. The practice is at once to lift the man which ought to have taken yours.

We present the following as an example of playing a game, in which White loses. The letters N, C, F, T, at the head of the columns, signify *Number, Colour, From, To:*

N	C	F	T	N	C	F	T
1	B	11	15	28	W	30	25
2	W	22	18	29	B	29	22
3	B	15	22	30	W	26	17
4	W	25	18	31	B	11	15
5	B	8	11	32	W	20	16
6	W	29	25	33	B	15	18
7	B	4	8	34	W	24	20
8	W	25	22	35	B	18	27
9	B	12	16	36	W	31	24
10	W	24	20	37	B	14	18
11	B	10	15	38	W	16	11
12	W	27	24	39	B	7	16
13	B	16	19	40	W	20	11
14	W	23	16	41	B	18	23
15	B	15	19	42	W	11	8
16	W	24	15	43	B	23	27
17	B	9	14	44	W	8	4
18	W	18	9	45	B	27	31
19	B	11	25	46	W	4	8
20	W	32	27	47	B	31	27
21	B	5	14	48	W	24	20
22	W	27	23	49	B	27	23
23	B	6	10	50	W	8	11
24	W	16	12	51	B	23	18
25	B	8	11	52	W	11	8
26	W	28	24	53	B	18	15
27	B	25	29	&c.	W	loses.	

It is not considered fair for a bystander to advise what motions should be taken, or for a player to wait longer than five minutes between each move. The draught-player, therefore, must act with much more promptitude and decision than the chess-player, and the game is such that a single false step may lead to ruin. It is only after long experience in figuring in the mind what will be the result of particular movements that proficiency in it is attained.

BACKGAMMON.

Backgammon is the modern name of a game of considerable antiquity in England. It was formerly called 'the tables.' Strutt traces the term to the Ang.-Saxon '*bac* and *gamen*—that is, back-game—so denominated because the performance consists in the two players bringing their men back from their antagonist's tables into their own; or because the pieces are sometimes taken up and obliged to go back—that is, re-enter at the table they came from.' Wedgewood explains it by Danish *bakke*, a tray, and *gammen*, a game. Whatever be the etymology of the term, the game has been long established in the country; and, as a fireside amusement of a decorous and exciting nature, is a favourite among clergymen, squires, farmers, and retired professional persons.

Backgammon is played with an apparatus consisting of a board or tables, men or pieces, dice and dice-boxes. The introduction of dice into the game, and their constant use in determining moves, makes backgammon essentially a game of chance.

The backgammon board consists of two parts or tables, generally united by a hinge in the middle, by which they can be shut up as a box. Each table has twelve points, six at each end. These points are coloured white and black alternately; but this variation of colour has no reference to the game, and its use is to make the points more easily counted.

The game is played by two persons, and with 30 pieces or men; each player has 15 men, one set of 15 being black, and the other white. In beginning the game, the men are placed on certain points on the tables, as shewn in the following figure.

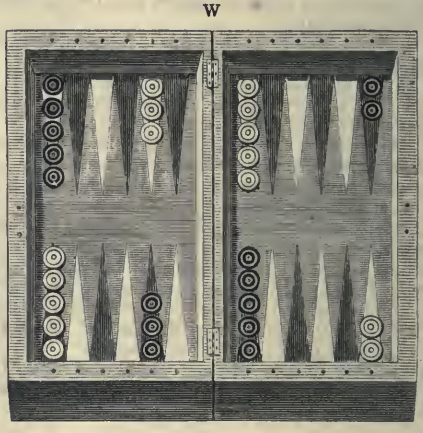


Fig. 4.—The Backgammon Table.

Two dice and two dice-boxes are used in the game. The dice are common to both; but each player uses his own dice-box, and the throws are alternate.

Each die is a perfect cube, marked on its sides with dots from 1 to 6. The 1 is called *ace;* the two, *deuce;* the three, *tre* or *trois;* the four, *quatre;* the five, *cinque;* and the six, *size.* At every throw the two dice are employed; consequently, a person may throw from two up to twelve—that is, two *aces* up to two *sizes.*

If a player throw *doublets*, or both dice of one number, double the number of dots is reckoned; thus, by a throw of two aces, the player does not count two, but four.

The numbers thrown or accidentally turned up by the dice, bear a reference to the points on the tables. In order to understand this connection between the dice and the men, the learner must observe how the men are placed on the points, and the rules by which their shifting from one to another is governed.

The tables are here spread out as if two persons were seated, and about to begin to play. The player owning the white men is seated at W, the player owning the black men at B. We shall call the one White, and the other Black. White counts round from the ace-point of Black, and Black counts round from the ace-point of White. The ace-points are those which have two men upon them in opposite corners of the same table.

The grand object of the game is for each player to get all his men played round into the table containing the aces, the men being removed from point to point according to the throws of the dice.

The number upon each die turned up in throwing may be reckoned by itself, or it may be taken along with the number on the other die. Thus, if quatre be thrown by one die, and size by the other, a man can be advanced four points, and another six points; or one man can be advanced ten points, always providing that a point is open to permit this movement. No point can be moved to if covered by two men belonging to the adversary. If covered by only one man, which is called a *blot*, then that man can be hit, and be removed from the point, and placed on the bar between the tables, his place being taken by the man who has won it.

The removal of a man to the bars throws a player considerably behind in the game, because the man must remain out of the play till the dice turn up a number corresponding to an open point on the adversary's table. Being fortunate enough to get an open point by this means, the man must be entered and wrought round from thence in the ordinary way. The frequent occurrence of this hitting of a blot gives an adversary a great advantage, and allows him to win the gammon.

There are two kinds of victory—winning the hit, and winning the gammon. The person who has played all his men round into his own table, and by fortunate throws of the dice has borne or played the men off the point first, wins the *hit*.

If you can bear all away, so as to clear your table before the adversary has brought all his men home to his own table, you win the *gammon*. Two hits are reckoned equal to one gammon in playing matches. To win two games out of three is called winning the *rub*, as at whist.

Fig. 5.—Billiards.

BILLIARDS.

It seems doubtful whether we are indebted for the invention of this elegant game to France or Italy; but it is certain that it was imported hither from the former country. As it is mentioned in Shakspeare, it must have been known, at all events by name, to Englishmen as early as the 16th century. The rectangular slate-table, however, with its resilient sides, covered with green cloth, and furnished with the six brass-bound pockets, the three ivory balls, and that long array of cues with leathern tops, so familiar now-a-days to almost every eye, are paraphernalia of quite modern production. For two centuries billiards was played with only two balls; the third or red ball was imported from France; and after its importation, the red winning hazard—that is to say, the holing of the red ball—was at first almost the sole object of players. The cushions also, now universally constructed of india-rubber, were up to a recent date lined with felt. In no game are knowledge and manual dexterity so combined as in billiards, nor can the spectacle of first-rate play be appreciated, or the difficulties which it overcomes be understood, except by those who have a scientific as well as practical acquaintance with the game.

A billiard-table varies in size, but it is generally about twelve feet long and six feet wide. It is covered with fine green cloth, and set round with cushions, to keep the balls upon the table and make them rebound. The six holes or pockets

are placed at the four corners and in the middle, opposite to each other, to hold the balls, which, when played into them, are called 'hazards.' The cues are long smooth sticks, with one end thick, and the other pointed; and the small end is covered with leather. The maces—slender sticks with a club at one end, adapted for pushing—are rarely taken in hand except by tyros and ladies, the butt-end of the cue, when the point cannot conveniently be used, being commonly employed instead. The three balls are of ivory, ranging from an inch to an inch and a half in diameter, and two of them are white, and one is red. One of the former has a spot upon it; and when two persons are playing, he who uses the spot ball is called Spot, and he who uses the plain ball, Plain. The cue is held in the right hand, and supported,

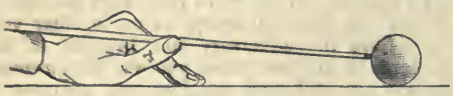


Fig. 6.—Bridge.

in playing, by the forefinger and thumb of the left so placed as to form a 'bridge;' and the ball is struck with the point of the cue, which is chalked, to prevent its slipping. On a certain mark ('spot') on the cloth, at the distance of about a foot from one end of the table, and exactly in its centre, the red ball is placed before commencing the game. At the other or lower end, and at the distance of about two feet from it, a line is drawn across the table, and the space within this line is called *baulk*. From the centre of this line a semicircle is described between it and the lower end, of about 20 inches diameter, from within which every ball 'in hand' must be played. A ball is said to be 'in hand' when it is off the table. The object of the player is, by striking his own ball against the red ball or his adversary's, to drive either it or them into the pockets, or else to make a 'cannon'—that is to say, to strike both balls with his own. It is well, however, to avoid as far as possible pocketing your adversary's ball, as it then remains 'in hand,' that is to say, is no longer on the table till it is his turn to play. The score is usually recorded by a third person, by means of a marking-board. The game of billiards proper (two white balls and the red) can be played by two, three, or four persons; but it is most commonly played by two, and the ordinary game is that called *Carambole*, which was introduced from France at the same time with the third or red ball. The technical term 'cannoning' may perhaps have arisen from 'caramboling,' which was the old word for striking both balls with your own. The method of play and the rules of the game are generally as follows:

1. The limit of the game is properly 21, though it is sometimes made 24, 50, 63, 100, or more, as may be agreed upon before commencing. The shorter games were probably used when billiard-tables were rarer, so that persons waiting for the use of them might sooner have their turn; 50, or '50 up,' as it is called, is now the most usual limit.

2. For the lead and choice of balls, the players *string*—that is to say, placing their balls within the semicircle, they strike them against the furthermost cushion, in order to see which will return nearest the cushion next to them: the owner of the ball so placed, provided it does not strike the other ball, has then the option; but after the first match, the winner of each game leads.

3. The red ball on the spot at the upper end is replaced there on being put into a pocket, knocked off the table, or when the balls are 'broken' (see 19) after a foul stroke; but should any ball be on the spot, or so near to it as to prevent the red being placed there without touching the ball, the red must be placed in the centre of the table.

4. The points of the game are these: 1 for a miss, 2 for a cannon, 2 for a white hazard, 3 for a red hazard, and 3 for 'running a coo;' but the miss and the coo count for the adversary.

5. A white winning hazard is made when you play at the white ball and pocket it; a white losing hazard, when you pocket your own ball off the white. These names of 'winning' and 'losing' were used in the old game of billiards with two balls, but their meaning is now reversed; it now being commonly a *dis*advantage to make a winning hazard; and *vice versâ*.

6. A red winning hazard is when you pocket the red; a red losing hazard, when you pocket your own ball off the red.

7. A cannon is when your ball strikes the other two.

8. A miss is when your ball strikes no other.

9. A coo is when your ball goes into a pocket, or jumps off the table without striking another.

10. A four-stroke is made by playing at the white, making a cannon, and pocketing your own or adversary's ball; or by pocketing his and your own without the cannon, or by playing at the red, making a cannon, and pocketing your opponent's ball.

11. A five-stroke is made by playing at the red, making a cannon, and pocketing your own or the red; or by pocketing the red and your adversary's ball without the cannon; or by pocketing your own and adversary's ball off the red; or by playing at the white, making a cannon, and pocketing the red; or by playing at the white, and pocketing your own and the red.

12. A six-stroke is made by playing at the red, and pocketing it and your own; or by striking the white first, making a cannon, and pocketing your own and adversary's ball.

13. A seven-stroke is made by playing at the red, making a cannon, and pocketing your own and adversary's ball; or by playing at the white first, making a cannon, and pocketing your own or adversary's and the red; or by striking the white, and pocketing all the balls without a cannon.

14. An eight-stroke is made by playing at the red ball, making a cannon, and pocketing your own and the red; or by striking the red, and pocketing all the balls without the cannon.

15. A nine-stroke is made when you cannon by striking the white first, and pocket all the balls.

16. A ten-stroke is made when you cannon by playing at the red first, and pocket all the balls. This is the greatest number that can be made.

17. If the striker, in making a cannon or hazard, should by accident touch either of the balls with his cue, hand, or otherwise, the adversary can, if he thinks proper, claim the stroke as foul, and have the balls broken; in which case, the points made by such stroke are not scored, and the person claiming the foul stroke leads off.

18. Foul strokes are made as follows—namely, by touching any ball while rolling; by moving another ball in any way while taking aim or in the act of striking; by pushing the balls together when playing with the *butt* of the cue; by playing with both feet off the floor, unless permission is asked and granted; by playing at a ball before it has done rolling; or by playing with the wrong ball: in this last case, should a hazard or cannon be made, the adversary can have the balls broken and lead off; or should no score be made by such stroke, he can take his choice of balls and play.

19. In 'breaking' the balls, you take them all off the table, place the red on the spot, and both parties play from the baulk as at commencing.

20. If the balls have been changed, and it cannot be ascertained by whom, the game must be played out with them as they then are; or even if two strokes have been made before the mistake is discovered, it must still be played out in the same way.

21. Should the striker, in making a cannon or hazard, knock his own or either of the other balls off the table, he cannot score the points made by such stroke, and the opponent plays, but the balls are not broken.

22. If a ball stops on the edge of a pocket, and afterwards falls in, either through the shaking of the room, or table, or by any other accident, it must be replaced as near the original place as possible.

23. Should the striker, when in hand (i. e., when his ball is off the table), play at a ball in baulk, his adversary has the option of scoring a miss, or of having the balls replaced, and the stroke played again, or of breaking the balls.

24. If the striker's ball touch another, he must play, and should he make a cannon or hazard, the adversary can claim it as foul, or he can allow points to be scored and the person to play on; but should the striker not score, it is at the option of the opponent to break them or not.

25. Should the marker, whilst marking for the players, by accident touch either of the balls, while rolling or not, it must be put as near as possible to the place it would have otherwise occupied.

26. If the last player should alter the direction of the ball while rolling, with cue, hand, or otherwise, the striker may place it where he thinks proper.

27. A line-ball is when either the white or red is exactly on the line of the baulk, in which case it cannot be played at by a person whose ball is in hand, it being considered in baulk.

28. If the red ball has been put into a pocket, it must not be placed on the spot till the other balls have done rolling, as the stroke is not finished till the balls stop.

29. If the striker should touch his ball by accident when taking aim, it is not a stroke, and the ball is to be replaced; but should he touch it in the act of striking, then it is a stroke.

30. If either of the balls lodges on a cushion, it is off the table, and should a cannon or hazard have been made, it does not score, and the ball must be placed on the spot, or played from the baulk, according to whether it is red or white.

31. Any person refusing to play the game out after he has played one stroke, loses it.

32. In a match of four, each person is at liberty to offer his partner advice.

33. All disputes in the game to be decided by the marker or other referee, but no person has a right to interfere until appealed to by one or both players.

34. It is called a love-game when no score has been made by the loser.

As evidence of what may be done in the way of swift and sure performance by masters of this game, we may mention that two of them (one of whom was the celebrated Kentfield) actually played thirty games of '24 up'—that is to say, supposing they were well-contested matches, they scored about 700 *each*—within an hour.

The American Game.

This game is played with four balls, two white, one dark-red, and one light-red. At the commencement of the game, the dark-red is placed on the spot in the centre of the upper half of the table, and the light-red in a similar position at the lower or baulk end, and is considered in baulk, and consequently cannot be played at when the striker's ball is in hand. The baulk is considered to be all the space within the line, not the semicircle merely. The players string for the lead, the winner having choice. Whoever leads must give a miss—which does not count—anywhere behind the *red* ball, or, failing to leave it behind, has the option of putting it on the winning and losing spot at the end of the table. The opponent must then either play at the white ball, or give a miss—which does count—for should he strike either of the reds, the adversary could either have it played over again, or score a miss, and have the advantage of the position of the balls. The game consists of cannons and winning hazards; losing hazards score against the player making them, either two or three, besides the loss of whatever he may have made. If the player makes two and loses his own ball, he loses two—that is, if he strikes the white ball first; but if he strikes the red ball first, he loses three. The points of the game are two for a cannon, if made off the white on either of the red balls; three, if off the two red balls; and five if off all; and for hazards—two for the white, three for either of the reds, and eight if all are holed—consequently, it is possible to make thirteen by one stroke. If a foul stroke is made, the balls must remain as they have run, and not be broken and placed on the spots—as in the three-ball game. If the striker's ball touches another, he cannot score. The red balls, when holed, must always be placed on their respective spots, where they are put at the beginning of the game; but in case the spot happens to be occupied by another ball, it must be held in hand till the balls are removed, and then spotted after the balls have done running. If the striker's ball goes over the table after making a score, it counts against him the same as the losing hazard.

Game of Pool.

The only other game played upon a billiard-table which it seems necessary for us to notice, is that called Pool. It is quite different from the games above described, nor does a good player at these always distinguish himself at pool. Pool is the game chiefly pursued at all the public billiard-rooms, and is the sole profession of many persons who might otherwise employ themselves to more advantage, if not to greater profit, since the requisites for forming a first-rate player are really high—namely, steadiness of hand and eye, imperturbable temper, and exact dynamical calculation. At pool, each player has three 'lives,' one of which he loses when he pockets his own ball, or is pocketed by another. When all his 'lives' are lost he is 'dead,' and, unless he 'stars,' retires. Thus, the game continues until two players only are left, when he who remains in last secures the whole of the pool or stakes, or perhaps divides with the other player. Pool may be played by any number of persons—when played between two only, it is called 'single pool,' and is nothing else than the old game at billiards played before the introduction of the red ball—and after various methods, such as playing at the last player, playing at the nearest ball, and playing at any ball whatever. The most common is that of playing at the last player, the rules of which game are

to be found, as well as those of billiards, upon the walls of every room where it is played.

The best billiard-tables, furnished with slate bed and india-rubber cushions, cost from £70 to £80, or even more.

Bagatelle.

The large and inconvenient size of billiard-tables has led to the introduction of bagatelle-tables—so named from their comparatively small size. A bagatelle-table is usually about seven feet long and twenty-one inches broad; it is lined with cloth. The game is played with balls and a cue or mace. The balls are small ivory spheres, and the game mostly consists in striking one or more into holes at one end of the board. To perform this and other feats, some skill and experience are required, and the game is far from unamusing in a cheerful parlour circle. Of late years, bagatelle-tables have become very common in the houses of the middle-classes; they possess the recommendation of being purchasable at a small expense. *Parlour-billiard* tables are now much used, the game being exactly billiards in miniature. They are made so as to be quickly and easily put up and taken down, and removed at pleasure.

GAMES WITH CARDS.

Playing-cards are small oblong pieces of pasteboard, on which divers figures are impressed in two principal colours—red and black. Fifty-two cards form a *pack*, or complete set for playing any game. The pack consists of four *suits* or kinds of cards, thirteen in each, distinguishable by their respective marks. The suits are *hearts*, *diamonds*, *clubs*, and *spades*. Hearts and diamonds are red; clubs and spades are black. The thirteen in each suit consist of ten cards, distinguishable by spots or pips, from one to ten; and three cards, ordinarily called *court-cards*, from being impressed with certain figures having a semblance of court-costume—one of these is the *king*, another the *queen*, and a third the *knave* or *jack*.

On the origin of playing-cards and the signification of the different markings, we extract the following from a writer in *Chambers's Journal* (September 12, 1857): 'In the chess of Hindustan, *Chaturaji*—the four rajahs or kings—the ingenious Sir William Jones discovers the germ of that which delighted the heart of Mrs Sarah Battle more than ten centuries afterwards. In what manner, and at what precise time, coloured cards took the place of carved figures, and the whist-table elbowed out the chess-board, is not known; but a pack of Hindustanee cards in the possession of the Royal Asiatic Society, and presented to Captain Cromline Smith in 1815 by a high-caste Brahmin, were declared by the donor to be actually one thousand years old! "Nor," quoth the Brahmin, "can any of us now play at them, for they are not like our modern cards at all." Neither, indeed, do they bear any remarkable resemblance to our own, the pack consisting of no less than eight suits of divers colours, the kings being mounted upon elephants, and the viziers, or second honours, upon horses, tigers, and bulls.

'In the Chinese dictionary called *Ching-toye-tung*, it is asserted that dotted cards were invented in the reign of Seun-ho, 1120 A.D., and devised for the amusement of his numerous wives: there are thirty cards in each of these packs, three suits of nine cards each, and three single cards superior to all the others. The name of one of the suits is *Kew-ko-wan*—that is to say, nine ten thousands of kwan, strings of beads, shells, or money; and the titles of the other two are equally concise and sensible. These cards, however, have an advantage over those of Hindustan in being oblong instead of circular; both, however, are remarkable for being emblematic in a very high degree; some of the Hindu packs illustrating the ten avatars or incarnations of the deity Vishnu; and the so-called "paper-tickets" of the Chinese typifying the stars, the human virtues, and, indeed, almost anything you please. Cards do not appear to have been known in Europe until towards the end of the fourteenth century. "In the year 1379," writes Carelluyzo, "was brought into Viterbo the game at cards, which comes from the country of the Saracens, and is with them called *naib*;" whence afterwards, perhaps, Jackanapes, Jack of Cards. In 1393, this entry occurs in the accounts of the treasurer of Charles VI. of France: "Given to Jacquemin Gringonneur, painter, for three packs of cards, gilt and coloured, and variously ornamented for the amusement of the king, fifty-six sols of Paris."

'Card-making grew to be a regular trade in Germany soon after this, where it, as well as card-painting, seems to have been for some time carried on exclusively by females; the wood-engraving of cards, however, did not begin until some time afterwards. The pips were then very prettily imagined, the suits consisting of hearts, bells, acorns, and leaves. The place of her majesty the queen was filled by a knight or superior officer; and it is to Italy, and not to Germany or France, that the glory of giving *place aux dames* at all must be conceded. . . . . The signs upon Italian cards, which seem to have been the first imported into England, were cups, swords, money, and clubs. . . . The French, from whom we derive our ordinary suits of diamond, heart, spade, and club—carreau, cœur, pique, and trèfle—were continually changing their court-cards, and representing on them all sorts of historical characters. In the earlier periods, their kings were Charlemagne, Cæsar, Alexander, and David, or Solomon, Augustus, Clovis, and Constantine; about all of whom and their followers, Père Daniel has the most ingenious information to offer. Troops, says he, however brave and numerous, require to have prudent and experienced generals. The *trèfle*, a clover plant which abounds in the meadows of France, denotes that a chief ought always to encamp his army in a place where he may obtain forage for his cavalry; *piques* and *carreaux* signify magazines of arms which ought ever to be well stored—the *carreau* being a sort of heavy arrow shot from a cross-bow, and which was so called from its head being squared (*carré*); *cœurs*, hearts, signified courage of both commanders and soldiers; and so on to any amount.'

With the entire pack of fifty-two cards, or with only a portion of it, there have been innumerable games, and there are so still; to notice the whole of these, however, would occupy too much of our space, and we propose to confine our explanations to what are considered respectable and harmlessly amusing games.

WHIST.

This, which is by far the best of card-games, is believed to be of English origin. Probably it is a development of the game of *trump* (or, more properly, *triumph*), which was played in England at least as early as the time of Henry VIII., and is mentioned in a sermon delivered by Latimer on the Sunday before Christmas 1529. The game of trump is also mentioned by Shakspeare punning on the word triumph (see Douce's *Illustrations*, and *Antony and Cleopatra*, act iv. scene 12). The game of whist is not mentioned by Shakspeare, nor by any writer of the Elizabethan era.

The earliest mention of *whist* (or, more properly, *whisk*) is in the poems of Taylor the Water-poet (1621). In the first edition of Cotton's *Compleat Gamester* (1674), whist has no place; but it is added in the second edition (1680) as a game 'commonly known in England.' Cotton says that 'the game of whist is so called from the silence that is to be observed in the play;' and this derivation of the word has been generally accepted, and was adopted by Dr Johnson, to the extent of explaining whist to be a game requiring silence. But if the original name of the game was whisk, Cotton's derivation fails. The derivation from an interjection signifying silence seems to have been taken for granted somewhat hastily.

The game was formerly played nine-up (that is, a score of nine made game). A change to ten-up took place apparently in the first quarter of the 18th century. Whist played ten-up is called *long whist*. About 1785, the experiment of dividing the game into half was tried, and *short whist* (in which five makes game) was the result. The short game soon came into favour; and in 1864, the supremacy of short whist was acknowledged by nearly all the London and by many country clubs, the clubs adopting as their standard the laws of short whist as framed by committees of the Arlington and Portland clubs.

The game of whist is played by four persons, two being partners against the other two. The partners sit opposite to each other. The partnership is determined by cutting. The lowest two are partners against the highest two, and the lowest has the deal and the choice of seats and cards. In cutting, the ace is reckoned lowest. The players must all cut from the same pack. Should a player expose more than one card, he must cut again. Each player has a right to shuffle the pack once before each deal, the dealer having the privilege of a final shuffle. The shuffling being concluded, the player to the dealer's right cuts the pack. The dealer having reunited the packets, is bound to deal the cards one at a time, to the players in rotation, beginning with the player to his left. He turns up the bottom card (called the trump card). If a misdeal takes place, the deal passes. The deal being completed, the players sort their cards, and the player to the dealer's left (or leader) plays a card face upwards on the table. The other players follow in rotation, being bound to follow suit if they can. When all have played, the trick is complete. It is then gathered and turned over by the winning side. The highest card wins the trick. The ace is highest in playing; and the other cards reckon in the order, king, queen, knave, ten, &c. down to the deuce, or two, which is lowest. If any player cannot follow suit (i. e., has none of the suit led), he may play any card he pleases. If he plays a card of the suit turned up (called trumps), he wins the trick, unless another player also, having none of the suit led, plays a higher trump. The player who wins the trick becomes the leader for the next trick, and so on till the whole hand (consisting of 13 tricks) is played out. The turn-up card is left on the table till it is the dealer's turn to play to the first trick, when he should take it up. The player should be extremely careful to follow suit when he can, as not doing so involves a serious penalty. To play a card of a different suit while the player has a card of the suit led, is called a revoke. Any player may demand to see the last trick played, and no more.

After scoring, the mode of which will be presently described, the player to the last dealer's left deals in his turn; and in subsequent deals, each player deals in turn, the rotation going to the left.

After the hand is played out, the scoring is thus performed: the side who win more than six tricks reckon one for each trick above six; and the side who either separately or conjointly hold more than two of the following cards, ace, king, queen, and knave of trumps (called honours), reckon as follow: If they hold any three honours, they score two (that being the excess of their honours over their opponents'); and similarly, if they hold four honours, they score four. At short whist, players who have in previous deals scored four, cannot score honours. The same at long whist with players who are at nine. The side who thus in one hand or in a succession of hands first reach five at short whist, or ten at long, score the game. In scoring, the penalty of a revoke takes precedence of all other scores; tricks score next; honours last. Honours cannot be scored unless claimed before the trump card of the following deal is turned up; if called at the end of the hand, they can be scored at any time during the game. For a revoke, the adversaries may either take three tricks from the revoking player, and add them to their own, or deduct three points from his score, or add three to their own score. And in no case can a revoking player win the game by the result of the hand during which he revoked; the utmost he can score is four.

A game at short whist is called a single, if the adversaries have already scored three or four; a double, if they have scored one or two; a treble, if they have scored nothing. A game at long whist is a single, if the opponents have scored five or more; a double, if they have scored less. There is no treble at long whist.

A rubber consists of the best of two games out of three. If the same players win two consecutive games, the third is not played. The winners of the rubber win in points the value of the games they have won, and where the rubber has consisted of three games, the value of the loser's game is deducted. And whether two or three games are played, two points are added for the rubber at short whist; one point for the rubber at long. Thus, if at short whist A B (partners) win a single and a double, they win three points on the games, and they add two for the rubber, making five points. Had A B won the same, but C D (their opponents) won a treble, they would have to deduct three points, the value of the opponents'

game, and would only win two points. Long whist is now seldom played.

Whist is a mixed game of chance and skill. The chance resides in the holding honours, and the fortune of having high cards dealt in the hand. The skill consists in the application of such knowledge as shall, in the long-run, turn the chances of the cards in the player's favour. At the commencement of the hand, the first lead presents a problem of almost pure chance; but as the hand proceeds, observation of the fall of the cards, inference therefrom, memory and judgment come in, so that towards the end of the hand we are often presented with a problem of almost pure skill. It is these ever-varying gradations of skill and chance that give the game its chief interest as a scientific pastime.

In order to become a skilful player, it is necessary to bear in mind that the game is not one of any given player's hand against the other three, but a combination of two against two. In order that two partners shall play their hands to the best advantage, they must strive, as much as possible, to play the two hands as though they were one. To this end, it is advisable that they should pursue some uniform system of play, in order that each partner shall understand the plans of the other, and so be placed in the most favourable position to assist him in carrying them out. The experience of the last hundred years has developed a system of play tending to this result. Of this we proceed to give an epitome.

The first, or, as it is commonly called, the *original* lead should be from the player's strongest suit. A strong suit is one that contains either a large number of cards (four or more) or several high cards. The suit containing the largest number of cards (numerical strength) is the one to be mostly preferred. The object aimed at in opening with the strongest suit is to exhaust the cards of that suit from the other hands. When this object is accomplished, the cards of the suit which remain in the leader's hand (called long cards) obtain a value which does not intrinsically belong to them. They often become of great service, for when led, they either compel the adversary to trump, or they make tricks. And when trumps are all out, the player who has the lead makes as many tricks as he has long cards.

On the other side, by opening weak suits, there is considerable risk of sacrificing your partner's strength, and of leaving long cards with the opponents.

Some players are prone to lead single cards, but experience shews that weak leads, as a rule, do more harm than good. Sometimes a trick or two is made by playing a trumping game; but the chances are that such tactics sacrifice your partner's hand, and clear the suit for the adversaries.

The proper card of the strong suit to lead is, as a rule, the lowest. The intention is for the third player to play his highest, and so to assist in clearing his partner's strong suit—that is, in giving him the command of that suit. Moreover, if the leader keeps the best cards of his suit in his own hand, he has a fair chance of getting the lead again when his suit is nearly or quite established. But with ace and four or more small ones, it is considered best to begin with the ace, lest the ace be trumped, second round. Also, with a strong sequence in the strong suit, it is best to lead one of the sequence first, lest the adversaries win with a very small card. The following are the principal leads from sequences:

From ace, king, queen—lead king, then queen.
From ace, king, and small—lead king, then ace.
From ace, queen, knave—lead ace, then queen.
From king, queen, knave, and more than one small—lead knave.
From king, queen, knave, and one small—lead king.
From king, queen, and small—lead king.
From king, knave, ten, nine, &c.—lead nine.
From king, knave, ten, and small—lead ten.
From queen, knave, ten, and small—lead queen.
From knave, ten, nine, and small—lead knave.

After the first trick, the lead may remain with the first leader. His best play, as a rule, is to continue his suit. If the lead falls to another player, his play, as a rule, will be to open his best suit; and so on. If the lead falls to the first player's partner, he has choice of two modes of play. If he has a good strong suit of his own, as, for instance, one of those in the list above, and containing four or more cards, he would, as a rule, open it; if not, he would, as a rule, do well to continue the suit his partner first led; or, as it is commonly called, to return his partner's suit. The object is to strengthen partner, by assisting to clear his strong suit.

In returning a suit, if the player has only two cards of it remaining in his hand, he should return the highest; if more than two, the lowest. The exception is, if he has the winning card, he should return that, irrespective of the number of other cards in the suit. The reason of this rule is that, with but two cards of the suit remaining, the player is weak in the suit, and he is therefore bound to sacrifice his good card to support his partner. But with three or more remaining after the first round, he is strong, and is therefore justified in calling on partner to support him.

This rule of play is most important. It should be carefully observed with even the smallest cards, as it enables partner to count the situation of the remaining cards. For example: A leads a suit in which C (his partner) holds ace, three, and two. In returning A's suit, after winning with the ace, C is bound to return the three, and not the two. When C's two falls in the third round, A will know that his partner has no more of the suit. But suppose C's cards to be ace, four, three, and two. In returning the suit, C is bound to choose the two. Then after the third round, A will conclude with certainty that C has at least one more card in the suit.

Late in a hand, the considerations with regard to the lead vary. If there is no indication to the contrary, it is best for each side to continue the suits originally opened by them. But the fall of the cards may shew that it is disadvantageous to persevere in the suits first led. In such cases, the player must have recourse to other and weaker suits. The general rules to be observed here are—to choose a suit in which there is reason to infer that the right-hand adversary is weak; or—but this is less favourable—one in which the left-hand adversary is strong. In either case, if the suit chosen contains but three cards, none higher than knave, or only two cards, it is generally right to lead the highest.

The second player, as a rule, should play his lowest card, in order to preserve his strength in the leader's suit. The first trick in the suit is left to partner, who has an even chance of holding a better card than the third player. But if the second hand has a strong sequence, he should play the lowest of the sequence, by which partner's hand may be saved, and a high card still remain over the original leader.

The following are the principal sequences :

With ace, king, queen—play queen.
With ace, king, &c.—play king.
With king, queen, knave—play knave.
With king, queen, &c.—play queen.
With queen, knave, ten—play ten.
With queen, knave, and one small—play knave.

When a high card is led, it is sometimes advisable for the second player to cover it with a higher one. The shortest rule is to put an honour on an honour, if with but two or three cards of the suit. With king or queen, and four of the suit, it is better to pass an honour led.

When the second hand has none of the suit led, he should, as a rule, trump, if he has but two or three trumps ; but he should not trump a losing card if he has more than three trumps, the reason of which will be explained when treating of the management of trumps.

The third hand, as a rule, plays his highest card in order to support partner in his suit. The exceptions are, that with ace, queen, &c. the queen is to be played ; and if partner has begun with a high card, it is often right to pass it.

The management of trumps varies according to whether the player is strong or weak in them. If strong (i. e., with four or more), they should not be used for trumping, if it can be avoided, but should be kept together, in hopes of establishing a suit, and of remaining with the long trump, with which to get the lead after the other trumps are out, and so to bring it in. Thus, if the opponents lead a losing or doubtful card, it is better, as a rule, not to trump it when holding four trumps. But if the opponents lead a winning card, it is, as a rule, better to trump it, though holding four trumps, than to pass it in hopes of bringing in a suit.

With five trumps, the chance of succeeding in exhausting the opponents' hands, and of remaining with the long trump, is so considerable, that a player having five or more trumps, should lead them ; and as number is the principal element of strength, he should not be deterred from leading trumps merely because the fourth hand has turned up an honour.

With four trumps only, it is better first to lead the strong suit. When the adversaries' hands are cleared of that suit, or so far cleared that the holder of the long cards in that suit commands it, it is, as a rule, safe to lead from four trumps.

As a rule, less than four trumps should not be led from. But a player is justified in leading from weak trumps, if he holds winning cards in every suit ; if the adversaries are both trumping a suit ; or if the game is lost, unless his partner has strength.

It is most important to return partner's trump lead at once, unless he has led from weakness ; for partner, by leading trumps, declares a strong game, and it is then the best policy to abandon one's own plans, and to support his.

It follows that a player should not, as a rule, lead a card for his partner to trump, unless he has four or more trumps ; for with less than four trumps the player is weak ; and if he forces his partner to trump, his partner is weakened also ; and the chances are that by weakening partner under such circumstances, the command of trumps will remain with the adversaries.

But a player may force his partner to trump, although weak himself, if partner has already been forced, and has not afterwards led trumps ; if partner has already declared weakness in trumps, as by trumping a doubtful card second hand ; if two partners can each trump a different suit ; and when one trick from partner's hand wins or saves the game.

The same considerations which make it inexpedient to force partner when weak one's-self, shew the advantage of forcing a strong trump-hand of the opponents.

There are yet some general rules of play which have not been explained.

The second, third, and fourth players should always play the lowest of a sequence. The rule here given is in conformity with the play that would naturally be adopted in playing cards that are not in sequence ; and by keeping to a uniform plan, players are enabled to infer what cards their partner does or does not hold. It is true that the adversaries often gain the same information ; but it is found by experience that it is of more advantage to inform partner than to deceive the opponents.

As a rule, it is advisable to lead out the winning cards of partner's suit. The presumption is that he has led from his strong suit ; and by leading out the winning cards, the suit is cleared for him, and his long cards are not obstructed. The reverse applies to suits led by the adversaries. It is mostly right to retain the winning cards of such suits as long as possible, in order to stop the establishment of them.

When a player has none of the suit led, he should, as a rule, throw away from his weakest suit ; for by discarding from a strong suit, its numerical power is damaged. But when the adversaries have shewn great strength in trumps, it is not advisable to keep small cards of a long suit, as it is not likely that it can ever be brought in. Under such circumstances, the player should throw away from his best protected suit, and keep guards to his weaker ones.

What is called finessing is in many cases advantageous, but young players had better avoid it. A finesse is an endeavour by the second or third player to obtain or keep the command of a suit by heading a trick with an inferior card, though holding a higher one of the suit not in sequence. Thus having what is called a tenace (namely, the best and third best cards of a suit), say ace and queen, the third player finesses if he play his queen instead of his ace.

Players should watch the cards as they are played, and endeavour to infer from them where the others lie. Thus, if a player wins a queen with an ace, it may be inferred that he has not the king, the rule being to win with the lowest ; if a player leads trumps at starting, it may be inferred, as a rule, that he is strong in trumps, or has a very fine hand. By recording in this way, and by counting the number of cards played in each suit, skilled players will often, towards the close of a hand, know the position of all the important cards

remaining in ; and by means of this knowledge, they will be able to play the end of the hand to the same advantage as though they had seen all the cards.

And lastly, and most important of all, players should play to the score. Thus, wanting but one trick to save or win the game, a winning card should be played at once. The example is stated as for one trick ; but it should always be kept in mind how many tricks are requisite to win or save the game, or even a point, and the play should be varied accordingly.

The previous condensed outline embodies the principal rules of play. For more detailed information, the reader is referred to Professor Pole's Essay on the modern scientific game (Longman, Green, &c.) ; *Cavendish's Principles of Whist* (De la Rue & Co.) ; and 'J. C.'s' Treatise on the game (Harrison). They should be read in the order here indicated.

When whist is played by three players, which is known as playing Dummy, one hand, called Dummy's, is exposed on the table, and played by one of the players. The only peculiarities of this game are, that Dummy deals at the commencement of every rubber, is not liable to the penalty for a revoke, because his adversaries see his cards, and is not liable to any penalty for an error from which he can gain no advantage. Double Dummy, played by two players with two exposed hands, differs from Dummy only in this that there is no misdeal, the deal being a disadvantage.

CRIBBAGE.

This game is played with the whole pack of cards, and by two, three, or four persons, as the case may be. When there are three, they play against each other ; when four, two play as partners, as in the case of whist. The value of the cards in cribbage is the same as in whist ; but in counting, the court cards count for ten each, and the ace for one, and there are no trumps, excepting the knave of the suit turned up. The mode of playing differs according to the number of cards dealt ; the number being generally five or six. The game consists of sixty-one points, and to keep score or reckoning, an apparatus called a cribbage-board is employed. This board possesses holes for the scoring of each party, and the scoring is made by means of pegs. The player who is able to bring his peg into the last hole first wins the game.

The terms used in the game are as follows :

Crib, cards laid out by each player, the dealer scoring whatever points are made by them. *Pairs*, two cards of the same denomination, as two aces or two kings. They reckon for two points, whether in hand or play. *Pairs royal*, three cards of the same value. They reckon for six points, whether in hand or play. *Double pairs royal*, four cards of the same value. They reckon for twelve points, whether in hand or play. The points gained by pairs, pairs royal, and double pairs royal, in playing, are made as follows : your adversary having played a seven, and you another, constitutes a pair, and entitles you to score two points ; your antagonist then playing a third seven, makes a pair royal, and he marks six ; and your playing a fourth seven is a double pair royal, and entitles you to twelve points. *Fifteens*, any combination, whether of two or more cards in your hand, or of cards put down in play, which makes up fifteen, e.g., a ten and a five ; or an eight, a two, and a five, which entitles you to score two points. *Sequences*, three or four, or more successive cards, either together in the hand, or played in succession. They reckon for as many points as there are cards in the sequence, either in hand or play. In play, it is of no consequence in what order cards of a sequence are thrown down : thus, your adversary playing an ace, you a five, he a three, you a two, then he a four, he counts five for the sequence. A *flush* is formed by three or more cards, all of one suit, and reckons for as many points as cards. For a flush in the crib, the card turned up must be of the same suit as those in the crib. For a flush in hand, this is not necessary. *The go* is gained by the last player when no card can be played without exceeding thirty-one ; he takes one point when the number made is under thirty-one, but if the number makes thirty-one, he takes two.

FIVE-CARD CRIBBAGE.

Proper cribbage is played with five cards, and we shall give a description of it in reference to two persons.

After the dealer has been determined by cutting, as in whist, the cards are dealt one alternately, to the extent of five for each player. The non-dealer takes three points on the board (as compensation for his not having the crib). Each player then proceeds to lay out two of the five cards for the crib, which always belongs to the dealer. The non-dealer cuts the remainder of the pack, and the dealer turns up the uppermost. This card, whatever it may be, is reckoned by each party in hand or crib. When it happens to be a knave, the dealer scores two points to his game.

After laying out and cutting, as above mentioned, the elder hand plays any card he pleases. The other endeavours to pair, or to find one, the points of which, reckoned with the first, will make fifteen ; then the non-dealer plays another card, trying to make a pair, or pair royal, and so on alternately till the points of the cards played make thirty-one, or the nearest possible number under that. When the player whose turn it may be to play cannot produce a card that will make thirty-one, or come in under that number, he says 'Go' to his antagonist, who thereupon is to play any card he has that will come in to make thirty-one, whereby he makes two points, or to score one for the 'end hole.' The last player has besides opportunities of making pairs or sequences. Such cards as remain after this are not to be played ; but each player having, during the play, scored his points gained, proceeds to count and take, the non-dealer first for his hand, then the dealer for his hand and the crib, reckoning the cards every way they possibly can be varied, and always including the turned-up card. The points are reckoned as follows :

For every fifteen, two points ; for every pair, or two of a sort, two points ; for every pair royal, or three of a sort, six points ; for every double pair royal, or four of a sort, twelve points ; for every sequence of any sort, according to the number ; for every flush, according to the number ; for the knave of the suit turned up, one point (unless

it has been turned up, in which case, as the dealer has already got two for it, it is not again reckoned); for a flush, as already described, according to the number of cards.

In laying out cards for the crib, the player should consider not only his own hand, but also to whom the crib belongs, and what is the state of the game; because what might be proper in one situation would be extremely imprudent in another.

If you have a pair royal, be sure to lay out the other two cards for either your own or your adversary's crib, except you hold two fives with the pair royal; in that case it would be extremely injudicious to lay them out for your adversary's crib, unless the cards you retain insure your game, or your adversary is so near home that the crib becomes of no importance. It is generally right to flush your cards in hand whenever you can, as it may assist your own crib or baulk your opponent's. Endeavour always to retain a sequence in your hand, and particularly if it is a flush. Always lay out close cards, such as a three and four, a five and six, for your own crib, unless it breaks your hand. As there is one card more to count in the crib at five-card cribbage than there is in hand, be sure to pay great attention to the crib, as the chance of reckoning more points for the crib than are in hand is five to four. For your own crib, always lay out two cards of the same suit, in preference to two of different suits, as this will give you the chance of a flush in the crib. Never lay out cards of the same suit for your adversary's crib. Endeavour always to baulk your opponent's crib, The best cards for this purpose are a king and an ace, a six, a seven, an eight, a nine, or a ten; or a queen, with an ace, a six, a seven, an eight, or a nine; or any cards not likely to form a sequence. A king is generally esteemed the greater baulk; as, from its being the highest card in the pack, no higher one can come in to form a sequence. Never lay out a knave for your adversary's crib, when you can possibly avoid it, as it is only three to one but the card turned up is of the same suit, by which he will obtain a point. Even though you hold a pair royal, never lay out for your adversary's crib a two and three, a five and six, a seven and eight, or a five and any tenth card. Whenever you hold such cards, observe the state of your game, and, particularly if it is nearly ended, whether your adversary is nearly out, or within a moderate show, and it is your deal. When this is the case, you must retain such cards as will, in playing, prevent your adversary from making pairs or sequences, &c., and enable you to win the end hole, which will often prevent your opponent from winning the game.

Three and *four* hand cribbage differs only from two hand, in as far as the players only put out *one* card each to the crib; and when thirty-one has been made, or has been approached as near to as can be, the next eldest hand begins, and the players go on in rotation, with any remaining cards, till all are played out, before they proceed to shew their hands and crib. In three-hand cribbage, a triangular board is used, with three lines of holes, to allow of each scoring his own game.

Six-card cribbage differs very little from five-card, except in that six cards are dealt instead of five. The game is played, and the points are reckoned and marked precisely in the same manner in both games.

SPECULATION.

This is a round game at cards, the term *round* meaning that it can be played by a large party round a table. The number most suitable is from seven to thirteen.

The principle of the game is this: A *pool* is formed by the dealer putting two counters, and every other player putting one counter, into a dish or treasury in the middle of the table; and this store is paid to the person who holds the highest trump. Thus it is the object of every person to get the highest trump, and the effort to do so is the *speculation.*

After the cards have been duly shuffled and cut, and the dealer determined, the dealer deals three cards to each person, one at a time. These cards must be placed before each person, and no one is allowed to look at them until after the trump is turned. Having finished the deal, the next card determines the trump; this card may be *sold* either before or after being seen. When this speculation is concluded, by some person *purchasing* it with counters, or the dealer retaining it, if he thinks proper, the eldest hand turns his uppermost card, and if this be a superior trump to the one turned, he may also speculate. Each player does the same, till all the cards have been exposed, when the pool is given to the possessor of the highest trump.

LOO.

Loo is a game played by five or six people; and a pool is made by the dealer putting in five counters. He then deals five cards to each person, and turns up a trump. Whatever suit the trump may be, the knave of clubs, called *pam*, is the highest card; the ace of trumps is next in value; the other cards count as in whist. Those who are dissatisfied with their hands can throw up their cards, and demand fresh ones from the pack; or can throw up their hands in order to escape being looed.

When the ace of trumps is played, it is usual to say, 'Pam, be civil;' the holder of pam is then expected to let the ace pass.

When any person holds a flush of trumps with pam, he can sweep the pool before playing. Then there is a new deal.

The next best hand to the above is trumps only, and this sweeps the pool, if there be not a pam flush; and there is also a new deal.

The next best hand is that of a flush of other suits, which sweeps the pool; and there is also a new deal.

When any of these flushes occur, each person, excepting those who hold inferior flushes or pam, is *looed*, and has to pay five counters into the pool.

When none of these flushes occur, and those who wished have changed their cards, the game goes on as at whist, the highest card taking the trick.

When all the cards are played out, they will make but five tricks; and all the counters in the pool are divided between the holders of these tricks, in proportion to the tricks they hold, every other player being looed—that is, obliged to pay five counters, the amount put into the pool by the dealer, to the pool for next deal.

This is five-card loo. Three-card loo is not so amusing a game, and is a much more speculative one.

Bézique.—A card game called Bézique has

recently come into vogue. Its chief recommendation is that it can be played by two persons. The rules of the game, which are rather intricate, are sold along with the appropriate cards and apparatus for counting the scores.

DANCING.

Dancing, as one of the most healthful and elegant indoor amusements, cannot be too highly recommended. Among a rude or dissolute people, it may degenerate into something worthy of condemnation; but all the blessings of Providence are similarly liable to abuse, and it would be most unjust to condemn a cheerful domestic amusement, merely because it has at times been degraded to immoral purposes. By all physicians, dancing, when pursued in moderation, is recommended as highly conducive to health; and no exercise is more calculated to purge the mind of melancholy, and put the whole temper into good-humour.

The art of dancing is only to be learned from an instructor, and little profit can be derived from written directions. We shall therefore not attempt any description of the many and ever-changing forms that the art assumes.

CHARADES.

A charade is a sort of word-puzzle: an audience being required to guess a word from enigmatical descriptions of the word itself, and of the syllables of which it consists. Only words, the component syllables of which are themselves words, are suitable for this amusement (for example, herring, season). In addition to there being usually no connection in meaning between the word given to be guessed, and the words which form its syllables, the description both of the parts and of the whole takes more or less of the character of a riddle; and thus there is much room for ingenuity, both in the construction of charades, and in the solution of them. The words which are the subjects of charades do not often consist of more than two syllables; and it is usual, though not imperative, to give first the descriptions of the syllables in their order, and then the description of the whole (thus, *my first*, *my second*, *my whole*). As might be expected of a pastime which occupies a great variety of minds, the bad charades in circulation are out of all proportion in number to the good ones; the majority are too far-fetched to be tolerable, and are altogether wanting in pleasantry.

As a fair example of the charade, take the following: 'My *first* is ploughed for various reasons, and grain is frequently buried in it to little purpose. My *second* is neither riches nor honour, yet the former would generally be given for it, and the latter is often tasteless without it. My *whole* applies equally to spring, summer, autumn, and winter; and both fish and flesh, praise and censure, mirth and melancholy, are the better for being in it.'—*Ans.* Sea-son.

And here is a French example, somewhat different in structure: 'Pour aller me trouver il faut plus que les pieds, et souvent en chemin on dit sa patenôtre; mon tout est separé d'une de ses moitiés; la moitié de mon tout sert à mesurer l'autre.'—*Ans.* Angle-terre.

The word charade came into use in France during the 18th century, and is commonly said to be derived from the name of the person who first hit upon this species of amusement; but, according to M. Littré, it is derived from a Provençal word, *charrada* (equal to *charrette*, a cart-load), which was applied first to any species of talking resorted to for passing the time (so that it meant a cart-load or heap of babblement), and afterwards was appropriated to the word-puzzles we have been describing, when they came to be popular.

A similar play upon the *letters* composing a word is to some extent practised. But there is much less scope for this than for the charade proper, and it requires greater ingenuity both in the making and in the solving. Here is a very happy French example:

> Quatre membres font tout mon bien,
> Mon dernier vaut mon tout, et mon tout ne vaut rien.

Ans. Zero.

The charade, in its original form above described, though harmless and amusing, is a somewhat frivolous pastime. But upon it has been founded an admirable evening amusement, which of late years has been rising in popularity, and which deserves encouragement both on account of the talents which it calls into action, and the entertainment which it may be made to afford. This is the *Acted Charade*, which is in principle precisely the same as the charade proper. A word is chosen, made up of syllables which are themselves words; and the syllables in their order, and then the word itself, are each shadowed forth by means of a short play in which a number of performers appear, and act, and speak in character. At the end, the spectators are called upon for the word which has been the subject of the acting. The highest form of the acted charade is that in which all the acts are woven into one drama; but a connection between the acts is not necessary nor usual, and requires more skill and premeditation than can usually be devoted to a drawing-room amusement. The main thing is that each act should be so conceived and carried on, as to afford a real clue to the discovery of the word which is to be guessed from it, while not making such a disclosure as to deprive the spectators of the pleasure of guessing. The word to be guessed from an act should be conspicuously, and yet not obtrusively mentioned in the course of the dialogue. It is plain that the acted charade gives to young people of lively talents a fine opportunity of distinguishing themselves and amusing their neighbours. While it may be possible to get up a charade on the spur of the moment, and much must always be trusted to the readiness of the actors, this amusement cannot be made really successful without preconcert; and, at any rate, the plan of the charade should be carefully prepared. When this is done, the subject of the acting is, of course, a secret which should be strictly kept. As a word of two syllables involves three acts, as a rule, only dissyllabic words are suitable for the acted charade.

The *Proverbe*, a little comedy, usually in one act, the story of which illustrates some proverb, is a development of the acted charade, or rather has sprung out of it, and is much in vogue with our French neighbours. The Proverbe requires more careful construction than is necessary for the charade, and perhaps also more careful study of their parts by the actors. Eminent French dramatists have not disdained to apply themselves to the production of Proverbes.

MUSIC.

THE subject of Music will occupy two numbers of the Information. The present number will be to a certain extent introductory and technical, and will include the following subjects: The Relation of Sound to Music; Musical Notation; Scales, Keys, Intervals, and Chords; Theories of Harmony; and the nature and capacities of Musical Instruments. No attempt will be made to teach *executive* music—singing or playing—which cannot be learned from books; but the underlying principles will be sketched as fully as our space will allow. The second number will consist of a sketch of the history of the development of musical art up to the present time.

SOUND AND MUSIC.

Before proceeding to give any account of the methods adopted for representing musical sounds upon paper, we must examine briefly the nature of these sounds—the physical basis upon which the art of music rests. This matter properly belongs to, and forms a part of, the science of acoustics, but it is also so intimately connected with music that it would be impossible for us to omit all account of it here. We must assume at the outset that our readers are acquainted with the general fact that the cause to us of the sensation which we call sound is the motion of the air or other medium through which that sound is conveyed; that if, for instance, a bell be struck in a vessel from which air is exhausted, and in which, therefore, there does not exist any medium by which motion can be conveyed, no sound whatever is audible. When the motions of the air which translate themselves into sound by our ears are *irregular*, our sensation is that of a non-musical sound; but when they are regular, or *periodic*, our sensation is that of a musical sound, and it is with this class of sounds only that we have to do here.

The first thing to be examined into is the nature of the 'regular motions' of the air just referred to. These can be best explained by the analogy which they present in every point to the *waves* of liquid bodies. Every one is familiar with the appearance of sea-waves, the long lines of alternate ridges and furrows steadily moving forward in a direction at right angles to their length. On examination of these, the first point noticed is the difference between the actual and apparent motion of the water. A piece of wood floating on the water is not carried forward by the waves, but simply moves up and down in a vertical line, according as the ridge or furrow of the wave passes it; its highest position being the level of the former, and its lowest that of the latter. If not influenced by wind, or tide, or current, it will remain for ever over exactly the same spot. Each particle of the water, when in a state of wave-motion, will move exactly as the piece of wood we have supposed; it will oscillate between two positions, and so be alternately higher and lower than its neighbouring particles (which are differently situated upon the wave, but which oscillate themselves between precisely the same limits), but it never moves forward in the direction of the wave. The motion of the particles is, therefore, *relative to each other* only; and if the waves were to cease, and the water become calm, they would occupy again precisely the same positions that they occupied before the waves had risen.

So much being understood as to the nature of the real motion of each particle of water in a wave, we may now look at the wave as a whole; and doing so, we find that it is conditioned by *three* elements, knowing which for any particular wave, we know all about it. Of these elements, the first and most important is its *length*—by which is meant the distance from crest to crest, or from trough to trough of the wave. It is obvious that the time in which a wave traverses its own length determines, and is the same as, that in which each drop makes one complete vibration up and down. From this also we see that, for waves travelling with equal velocities, the *rate* of drop-vibration is inversely proportional to the corresponding wave-length. Thus, if each of the waves in one series is half the length of each of the waves in another, but both are travelling with the same velocity, it will be seen at once that twice as many crests and troughs must pass any point within any given time in the first case, as in the second, and each drop will therefore have made twice as many vibrations. Similarly, for waves a third or a fourth as long, the drops will vibrate three or four times as quickly.

The *amplitude* of a wave is the vertical distance between the top of its crest and the bottom of its trough; it is, therefore, exactly equal to the distance through which each drop moves, or to the *extent* of its vibration.

The *form* of a wave may vary as much as its length or its amplitude; it may be steepest on the front or on the back, may have a sharp crest or a rounded one, and so on through endless intermediate forms. We have seen how the length of a wave corresponds to the rate of the vibration of its drops, and its amplitude to the extent of their vibration; in an exactly similar way, the *form* of the wave determines their *mode* of vibration. If a wave is steepest on its front side, the drop will move upwards more quickly than it moves down; if the wave have a sharp crest and flat trough, the drop will move more quickly (in both directions) in the upper half of its vibration than in the lower; and similarly, every different form taken by the wave has a mode of drop-vibration with which alone it can co-exist.

We may now define the motion of a wave as being the 'uniformly progressive motion arising out of a number of oscillatory movements,'* and this definition enables us to take a larger view

* Sedley Taylor, *Sound and Music*, p. 26.

of the subject than we have hitherto done. We have seen that the oscillatory movements in water were at right angles to the direction of the motion of the wave, but we can easily conceive of their being in some other direction. For instance, the wave-like oscillation produced by wind upon a field of corn is a familiar phenomenon. Fig. 1

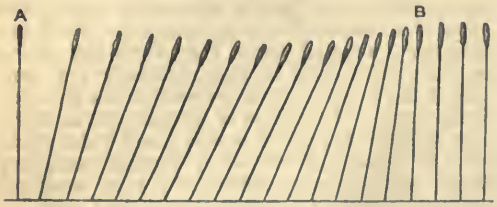


Fig. 1.

shews the nature of this motion. The gust of wind is supposed to be moving from left to right, and to have just reached the point B, the stalk A has just swung back again to its original position. The ears of corn are prevented by their stalks from vibrating more than a limited distance up and down, and the wave produced does not, therefore, consist entirely of elevation and depression of surface, like a sea-wave, but to a very great extent also of a condition of more closely or less closely packed ears.

From this illustration (for which we are indebted to Mr Sedley Taylor's excellent book *Sound and Music*), it becomes quite easy to conceive of a wave-motion in which there is no longer *any* vibration at right angles to the direction of the wave, but in which the whole vibration is similar to that shewn in the packing of the ears of corn, and therefore *in* the direction of the wave. Waves of this kind are called waves of alternate condensation and rarefaction, and it is to this class that the sound-waves of air belong. It is obvious that these waves have length, amplitude, and form, just as much as those of water, and also that the rate, extent, and mode of the air-particle vibrations must depend on these just as before. Each air-particle makes little oscillations backward and forward along the line of progression of the wave; and when the wave-motion has ceased, it returns to its original position, just as in the case of water.

Characteristics of a Musical Sound.

Every musical sound has three characteristics, which, when known, completely determine it. These are pitch, loudness, and quality. We know of no element in the nature of the sound which does not fall under one of these heads. We find experimentally that these three characteristics depend entirely upon the rate, extent, and mode of the air-vibrations which produce that sound. This indeed might almost have been seen *a priori*, for although we speak of the vibrations *producing* the sound, yet this is not in reality correct—they *are* the sound. The sound has no other existence, so far as we know; the vibrations exist, and when they strike our ears, we call them sound.

The *pitch* of a musical sound, then (or, in popular language, its highness or lowness), depends on the rate of its vibrations; the greater their number in a given time, the higher the sound. The longest organ-pipe is 32 feet long, and the sound emitted by it (the C 4 octaves below the middle C of the pianoforte) is the lowest which can be distinctly recognised by the ear as a musical sound; it vibrates 16 times per second.* The highest sound heard in orchestral music is the seldom-used high D of the piccolo flute, which vibrates 4608 times per second. It is uncertain what is the highest note actually audible to the ear; its pitch varies very much in different individuals. Between the limits we have named there is a separate musical note corresponding to every change in the number of vibrations. It is important to bear this continuity of sound in mind, and not to think of musical sounds being discontinuous, and occurring only at regular intervals; like the series of sounds which can be played by the flute, for instance. The ear, however, does not take pleasure in hearing any or every succession of these almost innumerable sounds; on the contrary, it selects but a small number of them, and hears these with gratification; while if another sound, varying by a very small amount in its 'vibration-rate,' be substituted for one of these, it at once pronounces it to be 'out of tune.' The wrong note is just as much a musical note as the right one; it is important, therefore, to examine the cause of the unquestionable physical fact, that our ears pronounce a certain sequence of musical notes to be 'in tune,' and any other slightly different sequence to be 'out of tune.' Taking any one sound as a standard (it does not matter in the least *what* sound), we find that there are certain other sounds which can be combined with it or with each other in melody or harmony, with an effect which is satisfactory to the ear. These sounds have always a fixed relation of pitch to the standard sound, and they are known as the sounds of the ordinary scales of which the standard sound is the key-note. It is also known by universal experience, that ascending or descending the scale from any given key-note, we come (after passing over six notes, which our ears recognise as belonging to that scale) to a note which we at once hear to be identical with the note from which we started in everything except pitch. The *interval*, or distance between this note and the key-note of which it is the replicate, we call an *octave;* and the interval between the key-note and any of the intermediate notes is called a second, a third, &c., according to the position of these notes—the second being the interval between the key-note and the note next above it. If the notes forming the intervals of which we have been speaking be sounded successively, it will be at once recognised that some of them are agreeable or *consonant*, and some disagreeable or *dissonant*, the former being called *concords*, and the latter *discords*. It will also be noticed that the degree of consonance or dissonance varies—some of the discords being harder than others, and some of the concords sweeter than others, so that one or two of the intervals seem to lie on the borderland between consonance and dissonance, shewing that these two sensations differ only in *degree*, like heat and cold, and not in *kind*. Further, the two notes forming some of the concords are much

* This is according to the lowest pitch in use. Unfortunately, there is no unanimity as to what the standard pitch should be—it varies as much as half a tone in different countries.

more alike (that is, more nearly resembling a note and its octave) than those forming others of them.

By means of suitable instruments, it has been found that certain numerical ratios exist between the different rates of vibration of the notes in the scale, and that a very remarkable relation exists between these ratios and the mental effect of the intervals to which they correspond. When two notes make the interval of an octave with each other, the higher vibrates exactly twice as fast as the lower; when the interval is a fifth, the higher vibrates 3 times for every 2 vibrations of the lower; and when the interval is a fourth, the higher vibrates 4 times to every 3 vibrations of the lower. These ratios, 2 : 1, 3 : 2, and 4 : 3, are most easily expressed by fractions, and accordingly we call the fractions $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{3}{4}$ the *vibration fractions* of the intervals of an octave, a fifth, and a fourth respectively. The following table shews the vibration fractions for the intervals which occur in the ordinary major and minor scales:

Name of Interval.	Example of Interval.	Vibration Fraction.	Character of Interval.
Second	C . D	$\frac{8}{9}$	Discord.
Minor third	C . E♭	$\frac{5}{6}$	Concord.
Major third	C . E	$\frac{4}{5}$	"
Fourth	C . F	$\frac{3}{4}$	"
Fifth	C . G	$\frac{2}{3}$	"
Minor sixth	C . A♭	$\frac{3}{5}$	"
Major sixth	C . A	$\frac{5}{8}$	"
Minor seventh	C . B♭	$\frac{9}{16}$	Discord.
Major seventh	C . B	$\frac{15}{16}$	"
Octave	C . C′	$\frac{1}{2}$	Concord.

The conclusions to be drawn from this table are very plain. The intervals which have the *simplest* vibration fractions, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, &c. are consonant; while those whose vibration fractions have numerators and denominators of which the least common multiple is large, as $\frac{8}{9}$, $\frac{15}{16}$, &c. are dissonant. The intervals which have vibration fractions most nearly approaching in simplicity to the vibration fraction of the octave, are just those which most nearly resemble it in smoothness of sound—the fifth and fourth. It was for long a very common assertion of musical theorists that these numerical ratios were directly the *cause* of consonance and dissonance; that 'the ear delighted in simple numerical ratios,' and *therefore* took pleasure in the corresponding intervals. This, as we shall see farther on, is by no means a correct statement of the case; the cause of the smoothness or roughness of an interval lies deeper than its vibration fraction; and, moreover, the intervals which have the simplest ratios are *not* those in which the ear takes the greatest pleasure.

The vibration fraction of an interval is constant, no matter what may be the absolute pitch of the notes which form it; so that the absolute rate of vibration of any note can be at once deduced from the rate of vibration of the key-note of the scale to which it belongs. By extending this reasoning a little further, we are able to establish the fact with which we started, that *the pitch of a note depends upon the rate of its vibration*, and therefore upon the length of the air-wave producing it.

The *loudness* of a musical sound is a much simpler matter than its pitch. By setting a violin-string or a tuning-fork in motion, we see at once that the largest vibration corresponds to the loudest sound, and that the dying away of the sound occurs simultaneously with the visible cessation of the vibrations. The pitch of the sound has remained the same throughout; we know, therefore, that the length of the air-waves has been in no way affected by the decrease of the visible vibrations. The quality of the sound also, of which we shall have more to say presently, has remained unaffected, so that the form of the air-waves has not been altered. It therefore becomes evident, that the extent of the visible vibrations of the fork or string corresponds to the *amplitude* of the air-waves, and that upon this depends the loudness of the sound.

We now come to the more difficult question of the *quality* of musical sounds; and before we can see how this quality is affected by the wave-form, or mode of vibration, we must say something as to what that quality actually is. We are accustomed to speak of the tone of a voice or an instrument as if it were a *simple* thing. In reality, however, there is scarcely such a thing as a simple musical sound to be heard. Almost all musical sounds are compound—they are made up of one principal note, from which they take their name, and a number of other and higher notes, not so distinct, but still quite as real. These notes always stand in a certain definite relation to the fundamental tone, the first being an octave above it; the second, a fifth above the first; the third, the octave of the first; the fourth and fifth, respectively a major third, and a fifth above the third. There are a considerable number of these notes; fig. 2 shews the first nine of them for the note C in the bass clef. The peculiarity about them is, that their rate of vibration increases in arithmetical ratio as they ascend. The first of them vibrates twice as fast as the fundamental tone; the second, three times as fast; the third, four times as fast; and so on. Professor Tyndall has introduced a nomenclature for compound sounds adapted from Helmholtz; he calls a compound sound a *clang*, and the different tones of which it consists, *partial tones*. Of the partial tones, the lowest is called the *fundamental tone*, and the others the *over-tones*. This excellent nomenclature has been adopted by all writers upon the subject, and we shall use it here; it affords us the means of stating in general terms the first proposition in regard to the quality of a musical sound. This is, that '*the quality of a clang depends upon the number, position, and intensity of the partial tones of which it is composed.*' Fig. 2 shews the first nine over-tones which can occur in the clang of which C is the fundamental tone, but it does not follow that the whole of these shall be heard, or shall exist, when that C is sounded. This is a matter which depends entirely upon the instrument used for sounding the C. One of them only may exist, or two, or three, as the case may be. Further, those which do exist need not occur consecutively; the clang may contain the first, third, and fifth, or the fourth and ninth, or the second, fourth, and sixth over-tones, or any other combination. Further still, the intensity or relative loudness of the different partials may vary to an almost unlimited extent. Clangs may differ

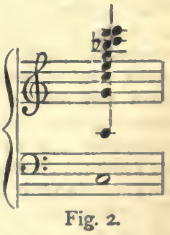


Fig. 2.

in one or in all of these respects—that is, in the number, position, and relative loudness of their constituent partials; so that the number of different clangs which can exist *having the same fundamental tone* is almost indefinitely great. Each of these clangs gives rise to a distinct *quality* of tone. It may be added here, that not only can clangs be resolved by suitable apparatus into their constituent elements, but they can also be *built up*. A tuning-fork emits a sound which is very nearly *simple;* and by sounding together a number of tuning-forks corresponding to a series of partial tones, the effect produced is that of one tone of great richness, and not of a number of different tones forming a chord. The same effect, but in a less remarkable degree, can be observed by striking all the notes in fig. 2 simultaneously upon a piano.

It is not difficult to see the connection between the clang and the air-wave which conveys that clang to our ears. We have shewn how the pitch of the sound is determined by the length of its air-wave, and the loudness of the sound by its amplitude. There is now left the third element in each, the quality of the sound and the wave-*form*, so that the effect of each variety of clang must be to produce air-waves of different form. The form of the wave produced by any particular clang is determined by the combined action of the waves of all the different tones of which it consists; and this action, for any given clang, will produce a number of different wave-forms, according to the relative position of the crests and troughs of the simple waves when first they come in contact. This might at first sight seem to disprove what we have been saying, were it not for the two remarkable facts—1st, that although one clang gives rise to many wave-forms, yet each wave-form can *only* arise from one particular clang; and 2d, that the ear possesses the faculty of analysing the wave-form, or breaking it up into its different elements, and thus is never misled as to what clang it belongs to. The conclusion of the whole matter is, therefore, that the form of an air-wave determines its quality, but that the quality does not, conversely, indicate the form.

Consonance and Dissonance—Beats.

We have now seen what are the physical conditions which accompany a musical sound, and make it appear to us high or low, loud or soft, full and round, or hard and wiry. It will be necessary to follow the subject a little farther, in order to understand the physical conditions accompanying a combination of sounds which translate themselves to us as consonance and dissonance, qualities which, as we have said, have been often, by theorists, erroneously attributed to the vibration fraction of the intervals. When two simple tones are sounded together, they give rise to a compound air-wave, just in the same way as two of the partial tones of a clang. An investigation of the resultant air-waves (which can very easily be made, but for which we have not space here) shews that they go through a regular series of changes in amplitude—becoming alternately larger and smaller. The sound produced, therefore, must necessarily become louder and softer correspondingly, with the same regularity—'its greatest intensity exceeding, and its least intensity falling short of, that of the louder of the two tones.' Each recurrence of maximum loudness is called a *beat;* and the number of beats per second due to the sounding together of two simple tones, is equal to the difference between the number of vibrations they respectively make in the same period. Thus, if one of the tones vibrates 512 times in a second, and the other 576, the number of beats produced when they are sounded together will be 576 – 512, or 64. Suppose, now, that we have two tubes capable of producing the same *simple* musical tone when air is blown through them, and one of which can be shortened at pleasure, so as to produce higher tones. If air be blown through the tubes when they are of the same length, we hear, of course, one musical tone only, of perfectly uniform loudness. If, now, one of them be gradually shortened, we notice at once the variation of loudness which we have called a beat. At first, the beats are very slow, and scarcely unpleasant, but they become rapidly faster, till we can no longer count them. We still recognise their existence most distinctly, however, and they produce upon the ear an exceedingly harsh and disagreeable effect. They become faster and faster as the tube is shortened, until a point is reached at which the disagreeable effect entirely ceases, and we should no longer recognise their existence, were it not that we feel their effects in the altered (but now pleasant) effect of the sounds produced, as compared with the tone with which we started. If we translate the effect of the whole process into the universally understood musical language, we say that we began with notes in *unison*, and that the disagreeable sounds were *dissonant*, and the agreeable ones *consonant*. The experiment, however, shews that these terms denote differences of degree only, and not of kind. We gather from it that the recurring *beats* are alike the cause of dissonance and consonance, and that when they are slow they give us the former feeling, and when extremely fast, the latter. On examining separately the notes produced by the two tubes, we find that the most unpleasant effect on our ears occurred when the interval between them was about a semitone, and that the effect ceased to be unpleasant when that interval had increased to a minor third. In order, therefore, that two notes may be dissonant, the interval between them must be less than a minor third. This interval Mr Sedley Taylor has called the 'beating distance,' and in his language we may therefore say that '*dissonance can arise directly between two simple tones only when they are within beating distance of one another.*'* But although direct dissonance can only arise between *simple* tones within this limit, the case is different in regard to *clangs*, to which category it will be remembered belong almost all the musical sounds with which we are acquainted. Here dissonance occurs whenever any of the partial tones of the one clang come within beating distance of those of the other. This will be found to occur, to a certain extent, with every interval except the octave. The

* As the rapidity of the beats depends upon the *absolute* difference between the vibration numbers of the two tones, and as our sense of dissonance depends upon the *absolute* rapidity of the beats, it follows that the 'beating distance' must vary very much with the pitch of the notes, being greater for low notes, and less for high ones. That this is really the case, any one may convince himself by noticing the exceedingly coarse and disagreeable effect of even a fourth or fifth in the lowest octave of a pianoforte, and the comparatively smooth effect of a second in its highest octave.

fifth is the smoothest, and after it the fourth, then the major third and major sixth. On the borderland between consonance and dissonance lie the minor third and minor sixth. The minor seventh is nearly as smooth as the minor sixth. The tone, the major seventh, and the semitone, are intervals which must be pronounced to be decided discords. This statement as to the comparative smoothness of the different intervals is based upon an examination of the relative position of the partial tones in clangs which each contain the first five overtones. Between clangs differently constituted, the character of the interval varies very considerably.

Differentials.—It is at once apparent, from the definition of dissonance, that there is no *direct* discordance in the interval even of a major seventh, if the notes composing it are simple tones; and a question naturally arises as to what is the cause of the dissonance that does undoubtedly accompany this interval, even when its constituent sounds are as nearly simple as any sounds can be—the sounds of a pair of tuning-forks, for instance. The cause of this lies in the fact, discovered more than a century ago, but forgotten until Helmholtz revivified it, that when any two notes, simple or compound, are sounded together, a third sound is formed, the vibration-number of which is the difference between the vibration-numbers of the two original sounds. This third sound, which is called a difference-tone or *differential*, is, in the cases just mentioned, within beating distance of the lower tone, and the dissonance which is heard is the result of the beats between it and that lower tone. Thus, suppose the lower simple tone to have 256 for its vibration-number—that is, to make 256 vibrations per second—and the upper one to be its octave; the vibration-number of the latter will then be $256 \times 2 = 512$, and the differential will vibrate $512 - 256 = 256$ times per second. It will thus merely strengthen the lower primary tone. But if the upper tone be a major seventh above the lower one, instead of an octave, its vibration-number will be $256 \times \frac{15}{8} = 480$; and the vibration-number of the corresponding differential will be $480 - 256 = 224$, the tone corresponding to which is scarcely more than two semitones below the first primary, and therefore will beat disagreeably with it. Other differentials are produced between this first differential and the primary tones, but they are less audible and of less importance. The differential of a *minor* seventh is a little more than a minor third below the lower primary, and therefore beyond beating distance—at least in all but the lower octaves; and we find, correspondingly, that when this interval occurs between tones that are as nearly simple as we can make them, it has lost nearly the whole of its roughness, and sounds almost as agreeable as a major sixth. We may reasonably infer that, if the sounds were *absolutely* free from over-tones, this interval would no longer have even the slightest suspicion of dissonance.

MUSICAL NOTATION.

In order to be complete, a musical notation must so define the music written in it that it can be sung in only one way. For this purpose, it is necessary that the following points should be determined—namely, the absolute pitch of the notes, their absolute and relative duration, their rhythmic accent, and the degree of force with which they are to be sung. We shall take these points in the order in which we have mentioned them.

1. *Absolute Pitch.*—The absolute pitch of a musical note is determined by its position upon five parallel lines, called the *staff*, in conjunction with a sign called a *clef* (Fr., from Lat. *clavis*, a key), placed upon them. The two commonest forms of clef are the G and F clefs (fig. 3), so called because the lines upon which the clef signs are made stand for G and F respectively. The G clef is put upon the second line, counting upwards, in the upper staff, and the F clef upon the fourth line in the lower one; and when two staves having these clef-marks are bracketed together, it is necessary to assume that there is one note between a note placed over the upper line of the lower (or bass) staff and one placed under the lower line of the upper (or treble) staff. This note is the middle C of the pianoforte (the highest C in a man's voice, and the lowest in a woman's), and is placed upon a line between the treble and bass staves, as in fig. 3. It will be seen from this that if the two staves of five lines each had another line placed between them, they might be combined into one 'great staff' of eleven lines, the notes still retaining the same significance as at present. This would, however, be practically inconvenient, for obvious reasons. There is a third clef-sign  which always denotes that the line upon which it is placed is middle C. It is

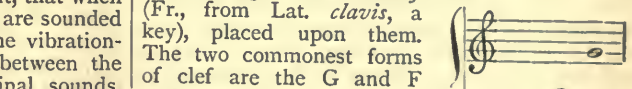


Fig. 3.

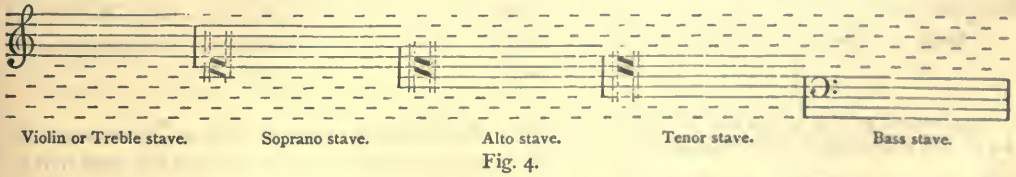


Fig. 4.

used frequently in orchestral music, and often in the middle parts of choral music; and, according to its position, the staff on which it is gets the name of soprano, alto, or tenor staff. The ordinary treble and bass staves may be considered to be simply the upper and lower sections of the 'great staff' already mentioned, and these other staves to be slices cut out of the middle of it. Their relative position will be better understood from fig. 4, in which the eleven lines are dotted throughout, and the different sections shewn in full, with a clef-mark on each.

The notes are placed in the staff both upon the lines and in the spaces, so that, by means of one staff, eleven notes may be indicated, including those above and below the upper and lower lines. When notes beyond these limits have to be indicated, they are placed upon short lines, called *leger* lines, above or below the staff itself, as in fig. 5. In order to distinguish, in writing, the different octaves of the same note, those in the lowest octave counting from C, are denoted by capital letters; those in the next, by small letters; in the next, by letters once underlined; and so on.

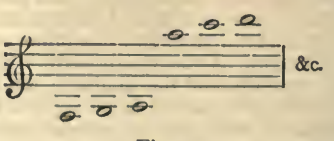


Fig. 5.

Fig. 6 shews the different notes so distinguished.

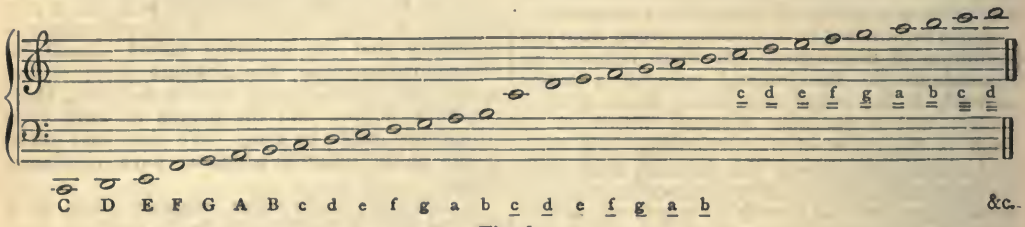


Fig. 6.

Notes above g are frequently called notes *in alt.* In speaking of the different octaves shewn in fig. 6, they are called the great octave, small octave, one-line octave, &c. When it is not specially desired to distinguish the particular octave of a note, the capital letters A, B, C, &c. are used for all the octaves.

The notes we have so far defined are the notes which occur in the scale of C—the white notes upon the pianoforte. The sign ♯ (called a *sharp*) placed before a note indicates that a note a semitone higher is to be substituted for it; while the sign ♭ (a *flat*) denotes the substitution of a note a semitone lower. Thus, in fig. 7, the notes stand for C sharp and A flat, instead of for C and A. The signs × (double sharp) or ♭♭ (double flat) indicate the substitution of notes two semitones higher or lower (respectively) than the notes written. Either of the signs affects the note to which it is prefixed every time it occurs in the same measure and in the same staff, unless it is contradicted, the contradiction being indicated by the sign ♮ (a *natural*). Thus, in fig. 8, the note B flat is to be substituted for B each time it occurs, except the last.

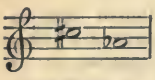


Fig. 7.

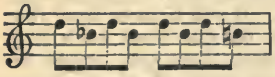


Fig. 8.

2. *Absolute Duration of Notes.*—In modern music, it is usual to mark on all important compositions or movements the number of times that some particular type of note occurring in it could be repeated in a minute. For instance, ♩ = 60 prefixed to a piece of music means that in it each minim is to last the one-sixtieth part of a minute, and similarly with ♩ = 100, &c. An instrument called a *metronome* is, or may be, used to determine the exact value of these *tempi*. It is still very common, however, to affix no more definite indication of time to a composition than the Italian words Andante, Allegro, &c. which rather mark the style or manner than the time. In these cases, the absolute duration of the notes is entirely in the hands of the conductor or performer, and depends on his taste and judgment.

3. The *relative duration of notes* is indicated by their shape, as their pitch is by their position. The following are the signs used in modern music, each one standing for a note exactly twice as long as the one which follows it (thus, one semibreve equals two minims, one minim two crotchets, and so on):

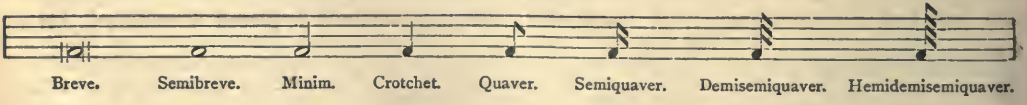


Fig. 9.

The stems of the notes which have them may be turned either upwards or downwards, as may be

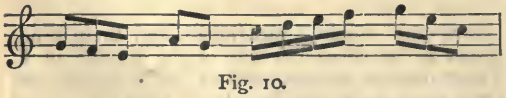


Fig. 10.

most convenient, and the tails of several may be joined together, as in fig. 10.

A dot placed after a note, as 𝅗𝅥., increases its length by one half; and a second dot adds half as much as a first; so that a dotted minim, 𝅗𝅥. is equal to three crotchets, and a double-dotted minim, 𝅗𝅥.., to three crotchets and a quaver.

There is a sign to indicate rest, or silence, corresponding to each of the signs of duration.

These *rests* are shewn in fig. 11. They may be placed anywhere upon the staff, above or below it, or upon a leger-line if more convenient.

4. *Accent, Time-signature.*—Something more than we have yet described is, however, required before the written music can be self-interpreting,

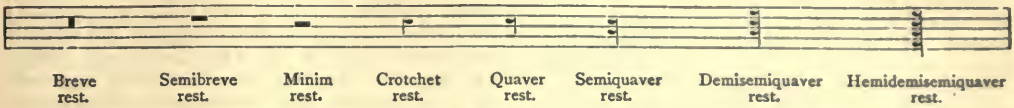


Fig. 11.

namely, that there should be sufficient indication of the notes upon which the stress or *accent* is to fall. Without this, music would be unintelligible. Nothing, for instance, can be made out of the apparently unmeaning succession of notes in fig. 12, although completely

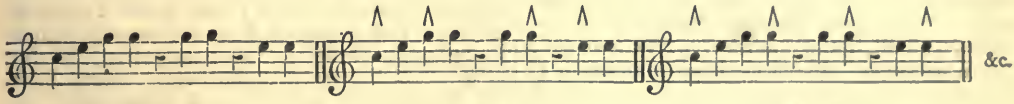


Fig. 12. Fig. 13. Fig. 14.

defined as regards pitch and duration; nor is anything recognisable in the same phrase with the accent as marked in fig. 13; but as soon as the accent is rightly placed, as in fig. 14, we recognise the commencement of Strauss's familiar melody. In all music, the accents recur at certain regular intervals, and the occurrence of the principal ones is marked by a perpendicular line or *bar* placed across the staff. These bars, therefore, divide the music into short sections of equal absolute length. The position chosen for the bar is one which seems on every account the most suitable. It is always placed just *before* the notes upon which the principal accent is to be laid. In the illustration already given, for example, the bars are placed as shewn in fig. 15, and the phrase is then fully defined in every respect. The music between each pair of bars may be accentuated in a number of different ways, and is subdivided by these lesser accents into different numbers of time-units, or beats. From the arrangement of these beats, the different kinds of musical time are named. A piece of music is said to be in *common*

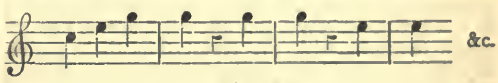


Fig. 15.

time when each of its bars contains two or four beats, and in *triple time* when each contains three beats. The time is further described as *compound* or *simple*, according as the beat itself is or is not further subdivided. The *time signature* is a fraction written at the commencement of every piece of music, and representing the number of aliquot parts of a semibreve contained in each measure.* The following table gives the principal varieties of time used by modern composers, with their time-signatures:

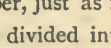
Time.	Beats in Measure.	SIMPLE TIME.			COMPOUND TIME.		
		Time Signature.	Notes in Measure.	Length of Beat.	Time Signature.	Notes in Measure.	Length of Beat.
Common.	Two.	¢	Two minims.	𝅗𝅥	$\frac{6}{4}$	Six crotchets.	𝅗𝅥.
		$\frac{2}{4}$	Two crotchets.	♩	$\frac{6}{8}$	Six quavers.	♩.
Do.	Four.	C or $\frac{4}{4}$	Four crotchets.	♩	$\frac{12}{8}$	Twelve quavers.	♩
					$\frac{12}{16}$	Twelve semiquavers.	♪.
Triple.	Three.	$\frac{3}{4}$	Three crotchets.	♩	$\frac{9}{8}$	Nine quavers.	♩
		$\frac{3}{8}$	Three quavers.	♪	$\frac{9}{16}$	Nine semiquavers.	♪

The time-signature is placed after the signature of the key (to be explained presently), and before the first notes of the music. It will be seen that, for four-crotchet time, the letter C is used instead of the fraction $\frac{4}{4}$; and for two-minim time, the

* The semibreve is adopted as the standard, because it is the longest note used in modern music, the breve being only employed occasionally in church music. A *measure* is the space between two bars.

same letter, with a stroke drawn through it, ¢. The first beat in a measure always bears the strongest accent. Where there are only two beats, the second remains unaccented; and where there are three, both the second and third are unaccented. If there are four beats, the third has a stress greater than that on the second and fourth, but less than that on the first. Where a beat is subdivided, the accents are distributed upon the subdivisions according to their number, just as in the whole bar. Thus the $\frac{6}{4}$ time is divided into two beats, each forming a group of three crotchets. In each group, the *first* must have the greatest stress, and in the whole bar, the first crotchet receives the strongest accent, the fourth the next strongest, and the second, third, fifth, and sixth are unaccented. Similarly, if a crotchet in ¢ time should happen to be divided into four semiquavers, the accents in this sub-group are placed similarly to those in the whole bar, and so on for all subdivisions. A thorough knowledge of the nature and treatment of these accents is essential to what is called the correct 'phrasing' of a piece of music, and therefore to its correct performance. It is a point, however, too often left untouched by music teachers, with the result that their pupils find their music lifeless and uninteresting. Accent and expression combine to make the light and shade of a musical picture, while harmony fills in its colour.

5. *Relative Force.*—It is evident that there can be no way of marking the absolute degree of force with which any particular phrase or piece of music is to be performed. Its *relative* force is determined by certain Italian words marked by the composer upon it. Of these the principal are *forte* (loud) and *piano* (softly), denoted by their first letters, *f* and *p*. *ff* and *pp* stand respectively for *fortissimo* and *pianissimo*, very loud and very soft; and *mf* and *mp* for *mezzoforte* and *mezzopiano*, with a medium degree of loudness and softness.

The mark  means that the phrase to which it is attached shall become gradually louder, and its opposite that the phrase shall become gradually softer; the words *Crescendo*, (growing) and *Diminuendo* or *Decrescendo* (diminishing) are used for the same purpose. The *slur* or *tie* ⁀ indicates that the notes covered by it are to be played smoothly and connectedly, the word *legato* standing for the same thing. *Staccato* is the opposite of *legato*, and means that the notes are to be struck sharply, and somewhat detached from each other; it is indicated by little strokes or dots placed above or below the notes. The tie and the staccato marks are often used together as an indication of phrasing; in this case the notes are to be 'detached, but not crisp.' When of two notes connected by a tie, the second is simply a repetition of the first, it is not sounded, but merely sustained, unless the notes have staccato marks. Fig. 16 illustrates the application of some of these signs.

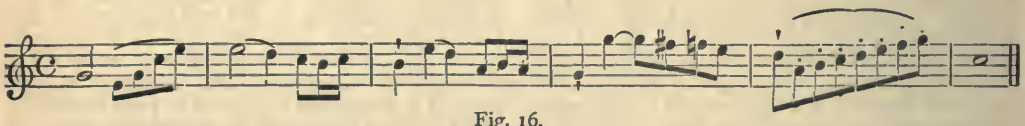


Fig. 16.

The *ornaments* used (principally) in instrumental music are often not printed at full length, but merely indicated by some abbreviation. Of these, the principal are the shake, the turn, the trill (or mordent), and the appoggiatura and acciaccatura. Fig. 17 shews the notation used for these orna-

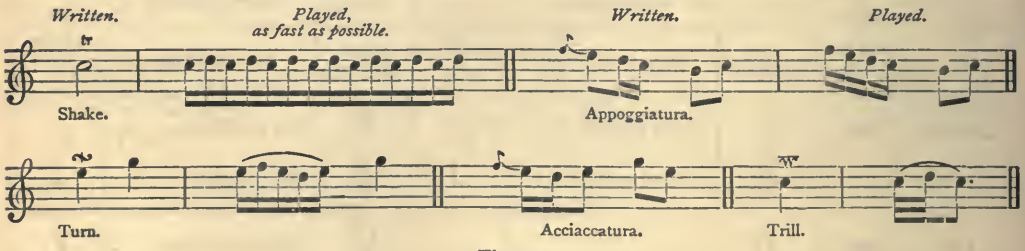


Fig. 17.

ments, and the way in which they are played. The appoggiatura receives the full accent of, and takes half the time from, the note before which it is placed, and there is no reason why it should not be written as it is played, as is now generally done. Its notation probably arose from a wish to evade the strict laws as to the preparation of discords: it was written as an ornament, with a tacit understanding that it was to be played out in full. The acciaccatura does not take the stress on itself, but is played simply as a very short unaccented note, liding into the one which follows it.

We have already mentioned that Italian words are used to indicate approximately absolute time. The following are some of the other expressions most commonly found, with their meanings; they are arranged in order from the slowest to the quickest:

Grave—very slow, heavy.
Adagio, Largo, Lento—slow, lingering.
Larghetto—(diminutive of *Largo*).
Andante, Andantino—'walking.' There is some little doubt which of these ought to be the slower, but it seems generally to be the former.
Allegretto—(diminutive of *Allegro*).
Allegro—gay, lively.
Presto—quick.
Prestissimo—(superlative of *Presto*).

Tonic, Dominant, &c.—We have already mentioned the succession of sounds forming what we know as a scale, and consisting of tones and semitones occurring in a certain order. The first note of a scale is called the tonic; the next, the supertonic; the third, the mediant; the fourth, the sub-dominant; the fifth, the dominant; the sixth, the super-dominant or sub-mediant; and the seventh, the leading tone or sub-tonic. These names are very cumbrous and awkward, and it is far more convenient to call each note by the name belonging to it in the old Solfeggio:* Do, re, mi, fa, sol, la, and si; or, as Mr Curwen spells them, partly phonetically: Doh, ray, me, fah, soh, lah, and te.

The following table shews the relations which exist between these notes:

Name.				Interval from Tonic.	Distance between each pair of notes.†
Numerical.	Italian.	Mr Curwen's.	Relative.		
	Do	Doh	Tonic	.....	
Second	Re	Ray	Super-tonic	Second	Tone.
Third	Mi	Me	Mediant	Major third	Tone.
Fourth	Fa	Fah	Sub-dominant	Fourth	Semitone.
Fifth	Sol	Soh	Dominant	Fifth	Tone.
Sixth	La	Lah	Sub-mediant (or Super-dominant)	Major sixth	Tone.
Seventh	Si	Te	Leading tone (or Sub-tonic)	Major seventh	Tone.
Octave	Do	Doh	Tonic	Octave	Semitone.

Key-signature.—There is only one succession of notes upon the ordinary staff which corresponds to this scale sequence—that, namely, which we obtain by making C Doh. If the music is to be written in any other key than that of C, that is, if it have any other note than C for its *key-note*—it is necessary to indicate by suitable marks that other notes have to be substituted for those notes in the key of C which do not belong to the new key. For instance, if the music be in F, then C will be Soh, and the note below it being Fah, must be a whole tone from it. On the staff, however, the note below C is B, only a semitone distant. We therefore put a flat upon the line corresponding to B, to indicate that B♭ must be played instead of B♮. Similarly, for the key of G, we require a sharp put upon the line that stands for F, so that F♯ may be played always instead of F♮. For other keys, two or three or more sharps or flats have to be placed on the staff. These are called the 'key-signature,' and are placed at the commencement of each line of the music, and understood to refer to all the Bs, Fs, &c. (as the case may be) through the piece, unless they are specially contradicted or altered by a natural or some other sign.

Major and Minor Scales.—In the scale of which we have just given an analysis, the third is major, and from this it receives its name of the 'major scale.' There are, however, scales with minor thirds, called 'minor scales,' the connection of which with the major scales has been matter of endless dispute. We shall confine ourselves here to saying that a scale commencing upon a minor third below the tonic of any major scale is called the relative minor of that scale. For instance, the minor scale on E is the relative minor to the major scale on G (G being called the relative major to E minor). A minor scale beginning upon the same note as any major scale is called the *tonic minor* of that scale; thus, D minor is the tonic minor of D major. The order of the semitones in the minor scale is not unalterably fixed by our ears, as is the case in the major scale. In its commonest form, however, the *descending* scale is identical with the notes of its relative major from Lah to Lah, while the ascending scale is the same from Lah up to Me, but has the Fah and Soh each raised a semitone. This scale for the key of B minor, the relative

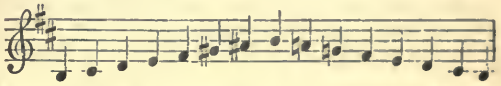


Fig. 18.

minor of D major, is shewn in fig. 18. The signature used for a minor key is always the same as that of its relative major.

TONIC SOL-FA NOTATION.

The notation which we have now described at considerable length is a notation of *absolute* pitch—that is to say, it represents each sound to us absolutely, and not relatively to other sounds. When we hear music, however, and still more when we sing it, we do not notice the absolute height of the notes so much as their relative position in reference to each other, and especially in reference to the key-tone. Thus the three phrases in fig. 30 below are at once pronounced by the ear to be identical, although they differ in pitch, and are represented by entirely different signs. These two facts—that it gives no indication of the relation of sounds to their key-note, and that it uses many different signs to represent the same thing—render the ordinary musical notation both difficult and cumbrous. Its cumbrousness, especially for vocal music, where the whole machinery of key-signatures becomes quite useless, will be acknowledged by any unbiassed student. That it is difficult must, we think, be sorrowfully admitted, when we see what a very small proportion

* See the next number of *Information for the People*, page 707.
† 'Tone' and 'semitone' only approximately represent these intervals, but are sufficiently accurate for our present purpose.

of those who have received what purports to be a thorough musical education at school can read even a common hymn tune *at sight;* while of those even who can read at sight, but a small proportion will have any idea what a piece of music sounds like by merely looking at it without playing or singing it over.

A singer must have some standard of absolute pitch given him to commence with, but after that, all he requires to know is the *relative* position of the notes he has to sing. To give this necessary information is the principal object of Mr Curwen's Tonic Sol-fa notation. In it every note is represented by the initial letter of its sol-fa name, that sol-fa name defining at once its position relative to the key-note of the music. Here, for example, is *God save the Queen*, in Mr Curwen's notation:

KEY A.

| d : d : r | t_1 :-.d : r | m : m : f | m :-.r : d | r : d : t_1 | d :—:— ‖ s : s : s

| s :-.f : m | f : f : f | f :-.m : r | m : f.m : r.d | m :-.f : s | l.s,f : m : r | d :—:— ‖

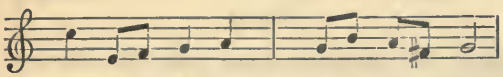
Fig. 19.

The full advantages of this notation are felt just where the ordinary one becomes excessively difficult—namely, where a piece of music has gone into a key very remote from the one indicated by its signature, or where modulations occur frequently. Here is a phrase from *Tannhäuser*, with its translation into the sol-fa notation; it speaks for itself.

Key F♯ | : d | d . d : d . r | m, m : f . s | s . d : | . s_1 : s_1 . s_1 | d, r : m . m | m : -.d | f : ‖

Fig. 20.

A change of key is represented by marking one note with its sol-fa initials for both the original and the altered key, so that it serves as a guide in making the modulation; after this doubly marked note the initials are used as belonging to the new key. The following would be the notation of a change from key C to key G, for instance:



d^1 : m . f | s : l | ^{t}d . m : r . t_1 | d :—

Fig. 21.

The accent is denoted by suitable marks, a long vertical line (a bar, in fact) for a strong accent, a short one for a medium accent, and two dots placed like a colon for a weak accent. The space between two accent marks is called a *pulse*. A dot divides a pulse into halves; and a comma, into quarters. The continuation of a note through several pulses is denoted by horizontal lines; and a rest, by the pulse being left empty. Illustrations of all these will be found in the examples we have given. When a note is sharpened or flattened without change of key, it is denoted by affixing the letter *e* to its initial in the one case, and *a* in the other, thus *de* stands for a note a semitone above *d*, and *ta* for one a semitone below *t*.

We have been able to watch many singing classes taught on both notations, and have no hesitation whatever in saying, that for teaching vocal music, Mr Curwen's notation is incomparably superior to the ordinary one. It has held its own for more than twenty years now, and has probably made as many singers in that time, in our own country, as have been made by all other agencies put together during the rest of the century. The old musical notation, with all its defects, is probably too widely known, and too deeply rooted, to be superseded by Mr Curwen's; but among those who value the spread of music among our people more than the preservation intact of any antiquated forms—who, in fact, love music for its own sake, and not for the sake of its mere husk and shell—Mr Curwen's method and notation must find most hearty appreciation.

HARMONY.

The three most prominent elements in a musical composition are melody, harmony, and rhythm. The first of these may be said to be a pleasing succession of musical notes. We have already, in speaking of the physical basis of music, shewn that our choice of notes from which to construct melody is to a certain extent limited. But the actual construction of melody belongs to the composer, and it would be impossible for us to enter upon that subject here. We have incidentally, also, said as much about musical rhythm (that is, the arrangement and recurrence of accents), as it is necessary to say. It only remains, therefore, for us to say a few words about harmony. Here we find at the outset that two conflicting schools of theorists exist, divided among themselves, into several subdivisions, and pursuing a violent paper warfare, while the composers are all the time quietly writing us beautiful music, utterly regardless of any theories whatever. The older writers on harmony laid down endless rules, according to which alone the composer might express his ideas. These rules were originally, no doubt, founded upon the ear-experience of their authors, and were intended to prohibit things that sounded ill, and permit those that sounded well. They remained, however, petrified and changeless, while the ears of musicians were always being educated to enjoy new harmonies and new progressions, and so it comes about that every great musician has broken numberless rules, and has had his music condemned by the theorists accordingly. It has been accepted by the people notwithstanding; and after a while, the theorists have come round and founded

new rules upon it—on the wreck of their old ones—and again pronounced them final, and resisted innovation, until they were again irresistibly swept forward by another master-hand. Thus it happens that the theory of music has generally remained half a century behind its composition.

The great principle underlying all theories of harmony, so far as they embody themselves in fixed rules for construction, should be, that *whatever progression or chord sounds well, is right; whatever sounds ill, is wrong.* Moreover, the 'well' and 'ill' are not absolute, but are to be taken in connection with the poetic idea which the composer wishes to express. A chord or a phrase may not be beautiful; it may be grotesque, or it may be terrible; but if the accompanying emotion is intended to be the same, it must yet be pronounced to sound 'well,' and to be perfectly admissible—rules or no rules. By modern writers this is generally admitted; the discussion we have alluded to is not so much *what* should be allowed and prohibited, as *why* it should be allowed and prohibited. The one school of theorists maintains that the cause lies in some connection, not always very clearly defined, between the chords and the natural series of partial tones we have already explained; the other school pronounces this to be a mathematical fiction, without real basis in musical experience. Intimately and necessarily connected with this controversy is another, the battle between *perfect intonation* and *temperament*, and this we must endeavour to explain in as few words as possible. We will use an illustration to make our meaning clear. The note A on the pianoforte is a major sixth, and the note G a fifth, above the note C. We know, therefore, that each one must vibrate at a certain fixed rate compared with C, and therefore at a certain fixed rate compared with each other; and a simple calculation shews us that this rate is $\frac{1}{9}$. This vibration fraction determines the exact height of A above G. But if we now take G as our tonic, and start on a new scale, of which A is the second, we find, from our list of vibration fractions, that A should vibrate $\frac{9}{8}$ as fast as G, instead of $\frac{1}{9}$. It follows, that to be able to play correctly both the major sixth in the scale of C and the second in the scale of G, we should require an instrument which could produce two separate notes for A, instead of only one, as in the piano. Many other similar duplications would also be required in order to give correct intervals in all the keys used in modern music, the total number of notes necessary being stated by Mr Alexander J. Ellis, F.R.S., who has investigated the subject most minutely, to be 72 *in the octave*. An instrument like the violin, which *can* (whether it does or not) produce all these variations of sound, is said to be capable of '*perfect intonation*.' Our ordinary keyed instruments, such as the piano, have only one-sixth as many intervals, and are therefore not *perfectly* in tune. In order to make them as nearly in tune as possible, the twelve intervals or semitones into which the octave is divided are all made precisely equal, and this is called the system of '*equal temperament*.' The believers in perfect intonation do not assert that it can be practically applied to keyed instruments, but simply maintain that the ear can tell the difference between a true and a tempered interval, and that it prefers the former. The upholders of temperament will not admit that the difference between A♯ and B♭ (for instance) exists anywhere but on paper, and deny *in toto* that it is ever made by performers. They maintain, in addition, that they alone speak for the musicians, who, they say, write according to a tempered scale; and that the believers in perfect intonation are mere theorists. Their arguments are, however, more plausible than real, and experience leads us to believe that they are in error. A good violinist or a good singer will *naturally* make the true, untempered intervals, when not forced to temper by the accompaniment of a keyed instrument,* and the chords made by an unaccompanied choir or string quartette of good performers will be the true chords, and not the tempered ones. The cause of this is, that the ear accepts the note or chord *in its true key relationship*, and it is played or sung accordingly. The performer neither knows nor cares whether the note produced is A♯ or B♭, but he feels that it is a note which stands in a certain key relationship to another—in the one case, perhaps the major seventh in the key of B; and in the other, the fourth in the key of F—and he produces the note which satisfies this relationship to his ear. It will, therefore, be the *true*, and not the *tempered* note. If, however, there is an accompaniment upon a pianoforte, he insensibly modifies his voice to the tempered interval, for the true intervals would cause a discord far more intolerable than the mere tempering of the note. Much of the confusion which unquestionably has arisen on this subject is the consequence of the ambiguity of an absolute notation, such as that in common use. Perhaps the easiest way of satisfying one's-self of the reality of the difference between pure and tempered intervals is to go to a concert at which a string quartette and a pianoforte trio or quartette† are to be played. Even if the one does not succeed the other immediately, it is scarcely possible to help noticing the harder and less satisfactory effect of the latter than of the former.

Chords.—To return to the theories of harmony. It does not appear to us that any satisfactory or complete explanation of our comparative *sense of pleasure* in different chords (or combinations of notes) has yet been given. It is not even possible to say whether it has a physical basis, like our sense of the smoothness of certain intervals, or is purely intellectual. It is certain, however, that in penetrating to the real nature of concord and discord, and of the *quality* of musical sounds, physical science has done a very great deal for musical art.

We shall only mention here a few technical points in relation to harmony, without touching further the theory which may be supposed to underlie them. The combination of any note in a scale with the third and the fifth above it in the same scale, is called the chord, or common chord, of that note. The whole effect and nature of such a chord depend upon its relation to some particular scale or key, and not upon its absolute pitch; it therefore takes the *relative* name of the note on which it is founded. Thus (*a*), fig. 22, is the 'tonic chord' of the key of F, and (*b*) the 'dominant chord' of the same key. It is both shorter and better, however,

* Professor Helmholtz determined, by careful experiment, that Herr Joachim plays the true, and *not* the tempered intervals upon his violin.

† A trio or quartette for stringed instruments and a piano.

to call each chord by the *sol-fa* name of its root, in which case (*a*) becomes the chord of Doh, and (*b*) the chord of Soh. The lowest note in each of these cases is called the *root* of the chord, but the same triad of notes may be placed in any order without altering the nature of the chord. When the third is in the bass, as at (*c*), the chord is said to be in its *first* inversion; and when the fifth is in the bass, as at (*d*), in its *second* inversion.

The principal chords in the major scale are the chords of Doh, Soh, and Fah, which are all called *major* chords, on account of their containing a major third. The chords next most frequently used are those of Ray, Lah, and Te. The first two of these have minor thirds, and are therefore called minor chords. The last has an imperfect fifth, and for this reason it has frequently been excluded from the list of chords given by the theoretical writers on music. Composers used it constantly as a chord, nevertheless, and there

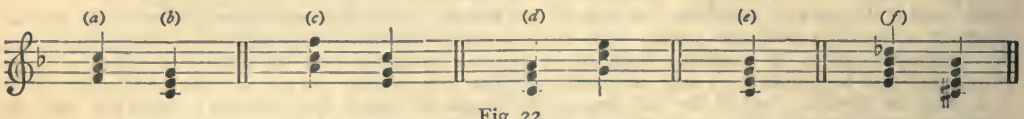


Fig. 22.

seems no adequate reason why it should be refused that name. The chord of Me is seldom used, but not from any imperfection, mathematical or other, but simply because it seldom sounds well by itself, and is seldom wanted to use as a substitute for any other.

There are dissonant as well as consonant chords, but of these we can only mention two. The chord of Soh, with a seventh added above the fifth, as at (*e*), commonly called the chord of the dominant seventh, is the most common of them. It possesses the property of defining the key in which it occurs in a very remarkable way, and on this account is used as the last chord but one in the great majority of pieces of music.* The chord of the 'diminished seventh,' as it is most frequently called, is shewn in two forms at (*f*). It consists of three minor thirds one above the other, so that its intervals remained unchanged in any of its inversions. Its great importance consists in the extraordinary facilities it gives by its peculiar constitution for modulating from one key into another.†

Mr Curwen, whose Tonic Sol-fa notation we have already mentioned, is also the author of a system of *Harmony Analysis*, with a corresponding notation, which, although written in a popular style, contains a thoroughly scientific investigation of chord-structure. It is built up upon no theory, harmonic or otherwise, but merely carries out consistently, in their application to harmony, those principles of key relationship which are the foundation of all modern music.

VOCAL MUSIC AND VOICES.

Vocal music is generally written in four parts—Soprano, Alto, Tenor, and Bass—the first two being sung by women and children, and the last two by men. In oratorio music this arrangement is almost invariably adopted, the quartette of parts being sometimes doubled, as in *Israel in Egypt*, or Bach's *Matthew-Passion*. Wagner also writes his choruses usually in this form; but the modern Italian opera writers have found it too much trouble, and frequently write three-part choruses only, in a very slipshod fashion.

* On the history of this chord, see the succeeding number of *Information for the People*, p. 711.

† This chord is generally said to be derived in the second of the forms shewn at *f*, from the Me of the key to which it belongs, and in the form shewn to have its root omitted. This 'derivation' seems to be purely gratuitous on the part of theorists, and to have no *objective* existence.

The compass of the four different classes of voice mentioned above cannot, of course, be given with the same accuracy as the compass of as many different instruments, but fig. 23 shews it approximately at (*a*). At (*b*) are the compasses of two

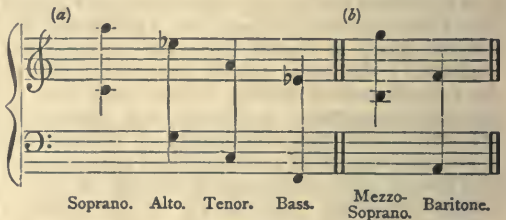


Fig. 23.

kinds of voice very common in this country, the baritone and the mezzo-soprano; the one lying between the tenor and bass, and the other between the soprano and contralto. The limits given are those which are reached by the majority of chorus-singers; but voices of greater compass will be found in every chorus, and soloists have a very much greater range. The songs of the Queen of Night (in Mozart's *Magic Flute*), for instance, go up to $\overline{\overline{f}}$, although they are generally sung a tone lower. Among basses, too, the note C is occasionally reached. It is not the extreme compass of a voice, however, which determines what part it is best suited for, but the compass which it can produce most comfortably, and with the least fatigue. All voices have at least two *registers* or qualities of tone, which overlap each other in the centre, so that a number of tones can be sung at will in one or the other of them. They are called the *chest* and the *throat* registers, the latter being always the higher. The bass and contralto voices can commonly use their chest tones, which are fuller and rounder, and more sonorous than the throat tones, throughout the whole of their compass; but the sopranos and tenors use their throat register for their upper tones. Many voices have also a third register above the throat register, called the *falsetto*, the notes in which are occasionally, but not very often, of service to the higher voices of men and women. The throat register is sometimes called, incorrectly, the *head* voice, and confounded with the falsetto; and the so-called 'chest' As and B♭s of tenors are almost invariably 'throat' tones. One of the great difficulties in singing is to manage well the notes lying about

that part of the compass where the chest register joins the throat register. This is called the 'break' of the voice, and one of the principal cares of the voice-trainer is to teach the proper management of it.

MUSICAL INSTRUMENTS.

The Organ and Harmonium.

'The *Organ* is in its essence nothing more than an assemblage of many wind instruments.'* It is, in fact, a vast collection of wooden and metal pipes of lengths varying from 32 feet to 1 inch, and differing also proportionately in diameter. Each set of similarly shaped pipes is called a *stop*, and extends two, three, or more octaves, as the case may be. The pipes stand upon a wind-chest, and mechanism is arranged so that any stop (or any number of stops) may, at the will of the organist, be put into communication with the main wind-chest in such a way that its pipes may sound whenever the corresponding keys are pressed down. The different stops not only differ as to their pitch, but also vary very much in the quality of their tone. Their pipes are of two classes, *flue* and *reed* pipes. The former are plain tubes of wood or metal, up which the air is blown through an opening at the bottom, against the thinned upper edge of an opening at one side. In *reed* pipes, the sound is produced by the vibration of a metal tongue or reed, and only qualified by the pipe itself, which strengthens the fundamental tone of the reed clang. There is also a class of stops called *mixtures*, which, instead of sounding the note corresponding to the key that is pressed down, sound some of its over-tones.

Large organs have three (sometimes four or five) key-boards for the fingers, called *manuals*, and one set of keys, called *pedals*, for the feet. The latter are connected to the lowest pipes of the organ, and commonly have a range of about two octaves. The manuals are called respectively the *great*, *choir*, and *swell* organs, the pipes belonging to the latter being inclosed in a wooden box fitted with movable shutters like Venetian blinds, which can be opened and closed by the organist's foot pressing upon a lever, and in this way a crescendo or diminuendo given to the music.

The *Harmonium* deserves mention here, if only because, by its cheapness, it has found its way into many places where even the pianoforte is not yet used. In it the bellows are worked by the feet of the performer, and the stops consist of rows of reeds instead of rows of pipes. The clang of these reeds contains very numerous and strongly developed over-tones, and in consequence of this, the French harmoniums, hitherto most common in this country, are very seldom pleasant instruments to listen to; even the best of them have often a rough, disagreeable tone. The American harmoniums—called cabinet organs, or American organs—are very much better in this respect, although perhaps somewhat more expensive. In them, the wind is *drawn* through the reeds, instead of *forced* through them, and they contain many improvements in voicing, which give their tone a pleasant, even quality.

The Pianoforte.

The *Pianoforte* is probably the most popular of all instruments at the present day; and has certainly done more than any other instrument to render good music familiar to the great mass of the people. It passed through many stages before it attained its present perfect condition; Bach's fugues were written for the clavichord, and Mozart's sonatas for the harpsichord, both of them instruments in which the strings were *plucked* instead of *struck*, and the tone of which would seem to us very weak, and indeed disagreeable. The modern pianoforte has a compass of about seven octaves, extending upwards from a C an octave below the lowest note in fig. 6. Each note is represented by an ivory key, those for the notes belonging to the scale of C major being white, and the others black. There are three (or in smaller instruments two) 'strings' of wire for each note, and a 'damper' of cloth or leather rests on each of these groups of strings. The mechanism of the instrument is such that, when any key is pressed down, the damper is immediately lifted from the corresponding strings (so as to leave them free to vibrate), and they are simultaneously struck by a little leather-covered hammer. So long as the key is held down, the note so originated continues to sound (until the string at length ceases to vibrate); but directly the key is released, it rises into its place, and the damper falls upon the strings, and stops their vibration. Pianos are always provided with two pedals, called, popularly but erroneously, the loud and the soft. The former raises the whole of the dampers of the strings, which has two consequences: first, that the sounds do *not* cease to vibrate when the fingers are lifted off the keys; and secondly, that many strings which have not been touched at all (being now left free) vibrate *sympathetically*. The latter will be found to be the strings corresponding to the over-tones of the strings already sounding. From the first of these, it follows that all the notes struck while the pedal is held down will be heard together, from which it can be at once deduced that the pedal must not be held down *during a change of harmony*. For instance, if the pedal be held down during the bar in fig. 24, the notes marked A would all be heard distinctly at the end of it, and as these contain no dissonances, the effect would be an agreeable one. But if the pedal

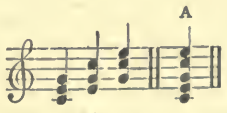


Fig. 24.

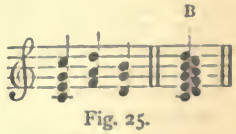


Fig. 25.

were held down during fig. 25, the effect, as shewn at B, would be unendurable. There is no fault commoner with young pianists than this putting down of the pedal at wrong places. It should be observed as an unalterable rule, that no pianist who does not understand something of harmony should ever touch the pedal, except when it is distinctly marked in the music. The word *Ped.* upon the music means that this pedal is to be pressed and kept down until the mark ⊗ is reached, when it is to be raised again.

The effect of the depression of the so-called 'soft' pedal is to move the hammers sideways, so that they strike only *one* of the wires belonging to each note. This pedal ought only to be used

* Marx, p. 53.

where the phrase *Una corde* (one string) occurs in the music, and *not* in every place where the tone is required to be soft, as its frequent use tends to put the instrument out of tune.

ORCHESTRAL INSTRUMENTS.

The modern orchestra, complicated as it appears, seldom contains as many as twenty different kinds of instruments. These instruments may be divided into three groups: stringed instruments, wind instruments, and instruments of percussion. The stringed instruments of greatest importance are the violin, viola, violoncello, and double-bass; these form the foundation of every orchestra. The harp and pianoforte are also occasionally employed in orchestral music. Of wind instruments, there are, first, the flutes; then those with *reeds*—namely, hautboys, bassoons, contra-bassoons, and clarionets; and, lastly, the brass instruments—horns, trumpets, trombones, &c. Of the third class, the kettle-drums are the only instruments which give a definite musical sound (unless such special appliances as the *Glockenspiel* in the *Magic Flute* be included); the others—drum, cymbals, and triangle—produce only noise, which is useful in certain circumstances.

The *Violins* in an orchestra are always divided into two sections, first and second violins, playing distinct parts, analogous to those of the soprano and alto of a chorus. The instrument used in both sections is, however, exactly the same. The external shape of the violin is too well known to need description. It has four strings, tuned a fifth apart, to the notes shewn in fig. 26. By drawing the bow across the strings, these four notes can, of course, be sounded; and by pressing the finger upon the strings, and thus shortening the length of their vibrating part, all the intermediate notes, and those above the E, can also be produced. The compass of the violin, as ordinarily used in orchestral music, extends from g to $\overline{\overline{g}}$, three octaves; but good performers can go to the c above this, and great artists even some notes higher still. Even in the orchestra, higher notes may be obtained by the use of over-tones instead of fundamental tones. These can be readily produced on the violin by *touching* the string at a particular place, and drawing the bow as usual across it. The whole string then vibrates, but broken up into sections, the length of which is determined by the point touched with the finger, and the sound produced will be the corresponding over-tone. Over-tones produced in this way upon the violin or other stringed instrument are called *harmonics*. Any two strings of the violin can be sounded at the same time, and thus a great many double notes can be played. This is called 'double-*stopping*.'

Fig. 26.

Sometimes, for the sake of attaining a special effect, phrases for the violin are played by plucking the strings with the fingers, instead of setting them in motion with the bow. This is called *pizzicato* playing. It is evident that it is suitable only for staccato passages, as the notes cannot be sustained. Another special effect is obtained from the violins, and also the other stringed instruments, by the use of 'mutes' (in Italian, *sordini*), little wooden or brass plates which are fixed to the bridge of the instrument, and make its sound soft and mysterious.

The *Viola* is an instrument exactly similar to the violin, played and handled in the same way, but its strings are somewhat more than an inch longer, and are tuned a fifth lower than those of the violin. If the first and second violin parts are considered as corresponding to the soprano and alto of a chorus, the viola part may be called its tenor; the instrument itself is, however, often called the 'alto.'

The *Violoncello* forms the bass of the 'string quartette.' Like the instruments just described, it has also four strings; they are tuned an octave below those of the viola, and its compass, as used in the orchestra, extends about three octaves and a half above the lowest of these notes (C).

The *Double-bass* is the real bass instrument of the orchestra, and its part forms in general the groundwork of the harmony. In England, this instrument is generally made with three strings only, tuned sometimes in fifths, as in fig. 27, and sometimes in fourths, as in fig. 28; the sounds in

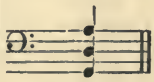


Fig. 27.

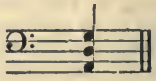


Fig. 28.

Fig. 29.

both cases being an octave lower than the notes we have written. In Germany, the double-basses have frequently four strings, tuned as in fig. 29, and this form of instrument is much to be preferred, the lowest three notes being of great value. The part taken by the double-bass is very frequently just a reduplication in the octave below of the violoncello part.

The *Harp* has fallen very much out of use now, having been superseded by the pianoforte; but before the latter reached its present form and cheapness, the former was very popular as a chamber instrument. It is frequently used in orchestral works to obtain some special effect, or to accompany a particular melody. By the nature of its mechanism, its capacity was formerly very limited; but in the *double-action* harp of M. Erard, many of its shortcomings are remedied, and it now has a compass of six octaves and a quarter, with all the included semitones.

We now come to the wind instruments in the orchestra, of which there are two classes, the wood and the brass instruments. In all wind instruments the sound is produced by the vibrations of a column of air, but in most of the wood instruments its quality is modified by a reed. The only wood instrument without a reed is the flute, the form of which is too well known to need description here. The notes produced by it are very nearly simple sounds. The natural scale of the concert flute—that is, the scale which can be played without the use of keys—is the scale of D major, and its compass is nearly three octaves. It is sometimes called a C flute because of its possessing the two notes C♯ and C below its lowest D. The *piccolo flute* has nearly the same compass as the concert flute, but an octave higher.

The *Hautboy* (Oboe)* has for its mouthpiece a double reed, the end of which is held about half an inch within the performer's lips. Its clang contains a tolerably full series of over-tones. It is best adapted for simple, graceful melodies, or for music of a pastoral character; but in *tutti* passages the hautboys often play with the rest of the band, in order to add to the richness of the general orchestral tone. The compass of the hautboy is about two and a half octaves above b♭ (fig. 6), its natural key being C, but its best notes lie in its lower two octaves.

The *Bassoon* is the bass instrument of the class with double reeds. Its tone as a solo instrument can scarcely be said to be pleasant, it is indeed almost grotesque, but it is an instrument of the greatest use in combination with others. Its natural key is B♭, and its compass about three octaves below a (fig. 6). The contra-bassoon is an octave below the ordinary bassoon.

The *Clarionet* is the principal instrument of the single-reed family. Its tone differs essentially from that of the oboe, for it has a 'stopped' tube, and its clang contains only the second, fourth, and sixth over-tones shewn in fig. 2. Although all the chromatic semitones within its compass can be played upon it, yet it cannot easily be played continuously in any key far removed from its natural key; and for this reason every clarionet-player uses *three* instruments, of which the natural keys are respectively C, B♭, and A, and is thus able always to choose an instrument tolerably near the key of the music he has to play, by using the B♭ clarionet for flat keys, and the A clarionet for sharp ones. The music for the clarionet, however, is written always as if C were the natural key, and the particular instrument to be used is marked at the beginning. Thus, the notes given at (*a*) in fig. 30 would sound as written if played on the C clarionet; but would sound as at (*b*) if played on the B♭; and as at (*c*) if played on the A instrument. This necessarily causes a corresponding change in the key signatures. As the signature of C—that is, the absence of either sharps or flats, which indicates the key of C—stands always for the key of the instrument, whatever that may be, it follows that the signature to be used for any particular key must depend entirely on the relation of that key to the key of the instrument. On this account the clarionet is called a 'transposing' instrument. The clarionet is the principal instrument in most military bands, standing in much the same relation to them that the violin does to the orchestra.

We now come to the brass instruments, of which the principal are the horns, trumpets, and trombones. These are all essentially tubes of metal of a certain definite length. The various bends and twistings which strike the eye in most of them have nothing to do with their tone, but are only matters of convenience, to avoid the awkwardness of having one straight tube perhaps many feet long. In all of them, the length of the tube can be altered at pleasure in one of several different ways. A brass instrument is named after the musical note which is produced by blowing through its tube when it is in its shortest condition, so that horns in C or in B♭ are respectively

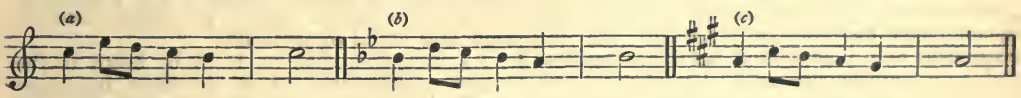


Fig. 30.

horns of which the fundamental note due to the length of their tube, through all its convolutions, is C or B♭.

Of all the brass instruments the *Horn* is the simplest—in the form, at least, in which it has been used in orchestras up to a comparatively recent date. In this form it is called the *French horn*, and consists simply of a long tube, increasing very gradually in diameter throughout the greater portion of its length, but curving out rapidly into a large bell at the extreme end. By his manner of blowing through his instrument, the performer can sound a series of notes which are the overtones of the fundamental already mentioned, and which are the only notes that can be produced of full or satisfactory quality. Other notes, limited in number, and very uneven in quality, can be produced by blowing as if to sound one of the 'open' notes, and inserting the hand into the bell of the instrument. These are called *closed* tones. The open notes of the horn in C are given in fig. 31. The fundamental note of the tube is of course an octave below the lowest note marked—it is, in fact, 16 foot C—the tube of the horn being 16 feet long. This note can be sounded, but it is both difficult to sound, and indistinct and disagreeable when sounded; it is therefore not included in the compass of the instrument. This remark applies also to the trumpet and cornet, but not to the trombone, of which the lowest note has sometimes very great sonorousness. The higher notes given in fig. 31 are seldom used. By taking out one particular bend of the tube (purposely made movable), and inserting another piece or crook of a different length, the horn can be put in any key, and the open notes in other keys bear the same relation to their fundamental tone that the notes shewn in fig. 31 do to C. As regards its notation, the horn is a 'transposing' instrument, like the clarionet. When any notes for the horn are written in the G clef, they are written an octave higher than they sound, but its lower notes are generally noted in the F clef, and then sound as written.

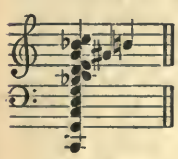


Fig. 31.

Of late years, horns with pistons have been introduced. The effect of this is, that the key of the instrument can be instantaneously changed (by the alteration of the length of its tube), and for every alteration of length an entirely new series of notes can be played, each series being the overtones of the new fundamental tone of the tube.

* The oboe was formerly called in this country the Wayte or Waite, from which comes our word *Waits*, originally the watchmen who 'piped the night-hours' upon this instrument.—*Banister*, p. 224.

These notes can be fitted in with one another, so that the instrument has a complete chromatic scale of open notes. This will be better understood from fig. 32, in which are shewn at (*a*)

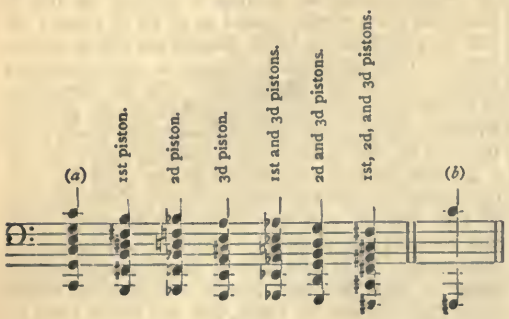


Fig. 32.

the six series of harmonic notes which can be obtained upon a C horn with three pistons: the first piston lengthens the tube by an amount which lowers its pitch one semitone; the second piston, a whole tone; and the third, a tone and a half; and by using the first and third, second and third, and all three together, it is lowered two whole tones, 2½ tones, and three whole tones respectively. By piecing together all the notes thus obtained, it will be seen that the instrument has a complete chromatic scale between the limits shewn at (*b*), and this by the use of only the more easily produced harmonics.

What has been said as to the nature of the sounds which can be produced by the horn, holds equally good for the *Trumpet;* but with this instrument only a few closed notes are possible, and these scarcely ever used. Its tube is nearly cylindrical throughout its whole length, the bell at its mouth being comparatively small, and this shape is the cause of the brilliancy and piercing quality of its tone. What has been said as to the different keys of the horn, and the effect of fitting it with pistons, equally applies in every respect to the trumpet. Its compass is about the same as that of the horn, but an octave higher; it plays, therefore, notes on the treble clef as they are written.

The ordinary *Cornet*, or *Cornet-a-piston*, differs from the piston trumpet only in the shape of its tube, and in being only half its length. Its compass, however, is nearly the same, for although, on account of its shorter length, its fundamental tone is an octave above the fundamental tone of the trumpet in the same key, still it is found that its most effective notes lie in the second octave of its compass, while those of the trumpet lie in the third, and thus either of these two instruments can perform music written for the other.

The cornet by its shape stands between the trumpet and a very large family of instruments belonging to the *Bugle* class, which are more used in military bands than in the orchestra. This class includes the alto and tenor bugle, euphonium, bombardon, ophicleide, and many others, besides the sax-horns and tubas, and other instruments too numerous to mention. Their peculiarity is, that their tubes taper very gradually and throughout almost their whole length.

Of all the brass instruments, the grandest in tone are the *Trombones*, the real bass of the class of which the trumpets form the soprano. In them a slide moved by the hand takes the place, and serves the purpose, of the pistons in the instruments just described. There are three principal classes of trombones, called respectively alto, tenor, and bass; the second is the most common, but the latter is one of the grandest instruments in the orchestra. It is, however, difficult to play, on account of the muscular exertion required. Its fundamental tone, with the slide closed, is the double E♭ (fig. 33), and in the case of this instrument, the fundamental tone of the tube, as well as its over-tones, can be used. The trombones are *non*-transposing instruments, their music being written always in the key in which it is to be played.

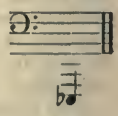


Fig. 33.

We now come to the last class of orchestral instruments—instruments of percussion. The principal of these are the *Kettle-drums*, of which every orchestra has at least a pair. By means of screws, which increase or lessen the tension upon the drum head, each drum can be tuned to different notes within a moderate range. The larger drum can take any note between F and c (fig. 6), and the smaller B♭ and f. Usually, the two drums are tuned to the tonic and dominant of the key in which the music is written, but other intervals can also be employed when they are required by the exigences of harmonies. The ordinary 'side-drum,' used in military bands, and occasionally also in orchestral music, does not emit a definite musical tone, but only a sound of some sonorousness, which in certain circumstances is useful rhythmically.

An orchestra, such as is to be heard in the larger opera-houses, or at the more important orchestral concerts, generally contains seventy or eighty performers. The proportions of players on the different instruments in such an orchestra will be approximately as follows: Fourteen first and as many second violins, ten violas, six violoncelli, eight double-basses, two flutes, two oboes, two clarionets, two bassoons, four horns, two trumpets, three trombones, one harp, and two kettle-drums. To these will be added side-drum, cymbals, and triangle when required; and in some cases, other instruments are also necessary, as the *Corno Inglese* or the ophicleide.

As it has not been possible for us, within the limits of this short article, to do more than barely sketch in some of the outlines of the subjects of which we have had to speak, we append a short list of books which may be studied with advantage by any one who wishes to pursue them further. Those which we think most valuable for general purposes we have marked with an asterisk. *Lectures on Sound*, by Professor Tyndall (Longmans); **Sound and Music*, by Sedley Taylor (Macmillan); **Music*, by H. C. Banister (Deighton, Bell, and Co.), an elementary technical manual; *General Musical Instruction*, by Marx (Novello); *A Theory of Harmony, founded on the tempered Scale*, by Dr Stainer (Rivingtons); *Six Lectures on Harmony*, by G. A. Macfarren (Longmans), founded on Day's harmonic theory; **How to Observe Harmony*, by John Curwen (Tonic Sol-fa Agency); * *Modern Instrumentation and Orchestration*, by Berlioz (Novello).

MUSIC.

HISTORY OF THE DEVELOPMENT OF MUSICAL ART.

'MUSIC is a *new* art;' so says a recent accomplished writer upon the subject; and the statement, although almost paradoxical in appearance, is perfectly true in fact. No doubt, the art of making sounds from which the adjective 'musical' could not in strictness be withheld has become known to every nation at a very early stage of its progress towards civilisation, and frequently, at a not much later stage, the art of making these sounds succeed each other in what must strictly be called a 'melody;' but using the word music even in the wide sense of any succession or combination of musical sounds pleasing to our ear, still Mr Hullah's assertion holds good, that 'music is a *new* art.' We esteem the Grecian statue unapproachable; its very fragments, buried for centuries, and but now unearthed, are priceless; we strive to imitate, not to excel, the Grecian temple; we reverently build the towers at Cologne in the spirit of the first architects of that glorious cathedral; but with music we live in the present, not the past. Mozart died in 1792, Beethoven in 1827; Weber, Mendelssohn, Schubert, and Schumann have all flourished in the present century, and Wagner still lives. Scarcely any, indeed, of the composers whose works are now performed (with the exception of a few Church writers), but were alive in the middle of the last century.

But music is not only modern, but *local*. Among all European nations one musical system is adopted, and one method of subdividing the scale only satisfies our ears. But among the eastern and other nations the whole system and subdivision differs essentially from ours. Frequently their music cannot be written in our notation; they use sounds unknown to us; our ears derive no satisfaction from their cadences and closes; and, in fact, their music and ours has scarcely anything in common but the name. The difference, it must be borne in mind, is *not* the difference between barbarous and civilised music. European music in the middle ages, and Greek music, so far as we know anything of it, was barbarous enough; but we can trace its gradual expansion and development all through the centuries, and see that the germ of modern music really was in it. The *tonality* (the mutual relation between the different notes forming 'the scale') of the Greek chorus was the same as that of *Tannhäuser*, so that we could write the former in the same notation as the latter. But a Bengali chant can never develop into a German opera; the two things are entirely apart and distinct. The question of the possible or probable development of these non-European music systems is a very interesting one, but one which has attracted little attention. Time only can decide whether they will disappear, supplanted by European tonality, or whether they will follow their natural course of development, merely stimulated by European culture. All that we can be certain of is, that they cannot develop into music pleasing to European ears, as at present constituted.

In this paper we shall endeavour to sketch the rise and development of musical art in Europe. We shall avoid biographical details, which can easily be obtained elsewhere, and speak of individual artists only in connection with their influence upon this art.

GREEK MUSIC.

There can be few subjects in reference to which the disproportion between what has been written and what is really known is greater than the music of the Greeks. The more important of the facts actually discovered or known may be very shortly summed up. The Greeks were acquainted with both vocal and instrumental music, and, in the time of their greatest prosperity, these two seem to have been always used together. In the choruses of the plays, the vocal part was unisonous, and consisted, probably, of monotonous phrases without *time*, in our sense of the word (but possessing rhythm and accent), and also without melody in the modern sense. They were ignorant of the principles of 'key relationship,' and using the scale of C,* formed their melodies in various 'modes,' each of which had for its fundamental tone some note in that scale, and for its other tones the related notes in the same scale. Some idea of the effect of this will be obtained by playing any melody written in the keys of D or E upon the piano *on the white notes* only. On the whole, it seems probable that the music to which the choruses were sung very greatly resembled the (so-called) Gregorian chants. The Greeks possessed several varieties of lyre, and had also pipes or flutes, as well as instruments of percussion. Until a comparatively late period, these seem to have been used in the theatre only as accompaniment to voices. Whether they played in unison and octaves with the voices, or played any kind of harmony, has been a point keenly contested, and on which we cannot here give an opinion. If any harmony were used, it was probably a succession of fifths and fourths which would be intolerable to the modern ear. But it would be more interesting to know what the music of the people was outside the theatre than in it, and of this, unfortunately, there is no trace. It is difficult to suppose that a people like the Greeks, vivacious as well as cultured, should have had no domestic music, and it is almost equally difficult to suppose that the Hellenic ploughman whistled nothing more lively than Gregorian chants to his team. If we cannot accept either of these positions, we must suppose that there was a school of popular music existing along with the classical music of the

* In the 'diatonic genus.' In the 'chromatic' and 'enharmonic' genera, the case was different, but these are less important historically, and need not be described here.

tragedies, of which we neither do, nor (unfortunately) can, know anything.

CHURCH MUSIC—AMBROSE.

In the early Christian church, the singing was no doubt unisonous. We read very early of regular choirs, and earlier still of antiphonal singing, one choir or part of the congregation singing alternately with another. It is not until the time of Ambrose, however, in the end of the 4th century, that we begin to see with any degree of definiteness what church music was, and the name of Ambrose himself is the first which stands out clearly in relation to musical art: he was elected bishop of Milan in the year 374 A.D. In what condition he found the music of the Western Church it is not possible to say, but we know something of the condition in which he left it. He seems to have studied Greek music—a subject of very great complication—and to have adopted as the basis of his system the Greek 'diatonic genus' (which we have already mentioned), and greatly simplified it, so that the people could use it intelligently. He retained four only of the Greek diatonic modes—viz., those commencing on D, E, F, and G, and called the Dorian, Phrygian, Lydian, and Mixo-Lydian respectively. The scales, therefore, in which church music had then to be written were as follows:

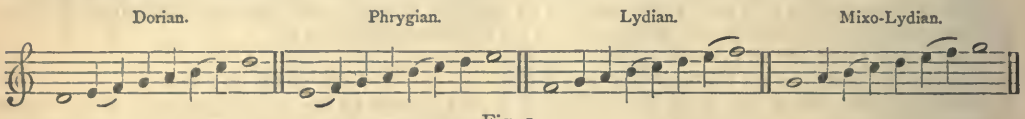


Fig. 1.

But he discarded the Greek names (perhaps to get rid of pagan associations), and called them the first, second, third, and fourth modes respectively. It is worth while to attempt to obtain a clear understanding of what these modes, which were destined to exert so powerful an influence on the future of music, really were. The differences between the four scales are two—first, the difference in *absolute pitch;* and secondly, the difference in the position of the two semitones relatively to the first note of the scale.

The first distinction is apt to be lost sight of: the idea of key relationship is now taken so much as a matter of course, that it is not easy to imagine ignorance of it. But it seems evident that the old modes consisted not merely of a succession of sounds bearing certain relations to each other, but that these sounds were each of a certain absolute, as well as relative, pitch. Our ears, for instance, recognise at once that the following is only a repetition of the same phrase in three different *keys*. But this idea, which

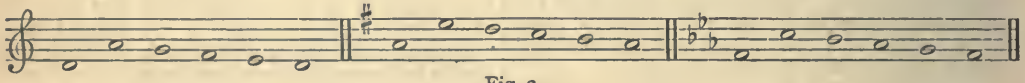


Fig. 2.

lies at the very root of modern music, was undreamed of by Ambrose, and a composer wishing to have used the phrase given in fig. 2, could have employed it only in the Dorian mode on the notes D, A, G, F, E, D. But the limits within which the scales could be used were even narrower than these, for it appears to have been necessary that a melody, to be correctly written in any mode, must lie within the octave of which that mode consisted. It is not possible to conceive that either of these totally artificial restrictions existed in the music of the people, or anywhere but in music written to conform with ecclesiastical regulations. It is not known at what time they were formally, as well as tacitly, broken through; but we may be sure that minstrels and people's-singers at that time transposed and altered melodies to suit the compass of their own voices, just as they do now.

It will be remembered that an octave in our ordinary tempered scale is subdivided by universal custom into seven intervals, five of them 'tones,' and two 'semitones,' and also that these semitones come (in major keys) always between the third and fourth and the seventh and eighth notes in the scale. The last especially, the semitone below the key-tone (the eighth note being the octave or higher duplicate of the key-tone), is essential to give satisfaction to our ears. But an examination of fig. 1 shews, that of the four Ambrosian modes, only one (the Lydian) has a semitone below the key-tone, for, very strangely as it seems to us, the major scale of C was entirely omitted from the church modes. In the Dorian mode, the semitones occur between the second and third and the sixth and seventh; in the Phrygian, between the first and second and the fifth and sixth; in the Lydian, between the fourth and fifth and the seventh and eighth; and in the Mixo-Lydian, between the third and fourth and the sixth and seventh. We have said that the basis of the Greek diatonic genus, from which Ambrose selected his modes, was the scale of C. There was one important exception, however—namely, the use of B♭ instead of B♮ under certain circumstances. The B♭ seems to have been adopted into the Lydian mode, which, therefore, became exactly similar to our ordinary diatonic major scale—became, in fact, the scale of F major. Comparing the rugged effect of the Dorian mode, with its ascent of a full tone to the key-note, with the sweetness of the Lydian scale, it can be readily understood how the latter came to be spoken of as if it were soft and effeminate.

National music—melodies handed down for centuries unaltered—might be expected to shew more direct traces of the influence of these modes than modern compositions, and in Scotch music, tunes in them all are to be found abundantly. In the Dorian mode, for instance, is *My Boy Tammie;* in the Phrygian, *Roy's Wife of Aldivalloch;* in the Lydian, the *Reel of Tulloch* and *Ghillie*

Callum; and in the Mixo-Lydian we have *Scots wha hae*, and many others. Unfortunately, in several instances, a zeal without knowledge has 'amended' the old tunes, and by sharpening a note here, and flattening there, has brought them into accordance with modern ideas, at the expense of all their beauty and originality.

GREGORY THE GREAT.

After the death of Ambrose, the music of the church seems again to have fallen into the direst confusion, in which it remained until the time of Gregory the Great (pope, 590–604 A.D.). Gregory's labours are better known to us than those of Ambrose, but it is questionable whether his work was really so difficult. The limits of the Ambrosian tones had become very uncertain, and the church singing altogether too free and secular; and Gregory's first work seems to have been to find out what was really authorised by the Ambrosian system, and to clear away the many abuses with which two centuries had encumbered it. He added to the four ancient or 'authentic' modes four others, called 'plagal' or derivative, each of which began with a note a fourth lower than the authentic mode from which it was derived. The lowest notes of the eight scales thus formed a complete diatonic scale, and these were indicated by Gregory by the first seven letters of the alphabet, this nomenclature being the same as that which is still used. Gregory collected the results of all his labours into an *Antiphonarium*, an authorised collection of church music, which is used to this day in the Roman Catholic Church.

During all this time, musical notation was scarcely known, and it was the work of years to train a chorister. With our present system of notation, clumsy and imperfect as it is, still every note and phrase is so defined that it can only be rightly sung in one way. For the first eleven centuries of our era, however, the very reverse was the case. The MS. music of this period is very uncertain in its indications of pitch, and totally wanting in any indications whatever of time or expression. It must be remembered always, though, that however little rhythm there is, or seems to be, in the old ecclesiastical forms, it can never have been wanting in the popular music, if for no other reason than that the universal amusement of dancing must necessarily have had a rhythmic accompaniment.

GUIDO ARETINO.

The great churchmen of whom we have been speaking seem to have been so much absorbed in arranging the forms in which music was perforce to be moulded, that they were never able to look at the matter as a whole, and for many years their successors had not the genius to do so. No attempt seems to have been made fairly to grapple with the difficulties of music, or even to ascertain what these were, for more than four hundred years after the time of Gregory, and the study of music was still so difficult as to be the study of a lifetime. At the beginning of the 11th century there rose another great musical monk, who applied himself to the clearing up and removal of these difficulties with so much vigour and success as to put the art of music fairly on a new footing. This man, to whom music owes so much, was Guido Aretino, or Guy of Arezzo, a Benedictine of a monastery at Pomposa. He has been well called 'the father of all music-masters,' for he was, so far as we know, the first to adopt any really rational system of teaching music. The system which he used was one which was revived centuries afterwards; it consisted in impressing upon the pupils the nature of the various tones and intervals in connection with the signs standing for them, by shewing them these same signs or intervals in melodies with which they were familiar, and causing them to associate the one with the other. To fix in their memory, in this way, the signs which stood for the notes C, D, E, F, G, and A, he chose the very ancient melody of a hymn to John the Baptist, which had the peculiarity that each line began with the note immediately above that with which its predecessor had commenced from C up to A. This melody has so much historic interest that we print it entire, with its words:

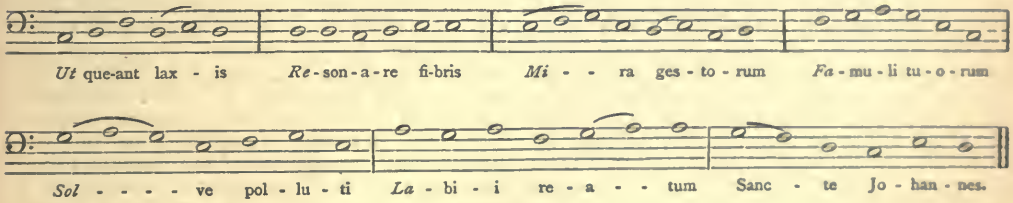


Fig. 3.

The suitability of this tune, familiar to the ears of all Guido's pupils, to help them to remember the signs which stood for the notes C, D, &c. is evident at a glance. But the interest of the tune to us is even greater than this. After the time of Guido, the first syllables of the lines of the hymn came to be definitely associated with the notes to which they were sung, and so was formed the *solmisation* Ut, Re, Mi, Fa, Sol, La; Ut being changed to Do at a later date, and the name, Si, of the seventh added. It is scarcely necessary to add that these names are still in constant use among us. In France and Italy, they still stand for the absolute pitch notes with which they were at first associated; while with us the key-note of a piece of music is always called Do, and the other syllables are applied to the notes which bear the same relation to this Do that D, E, F, &c. bear to C, the original Do.

Franco of Cologne, a priest who lived about the end of the 12th or the beginning of the 13th century, wrote a treatise on the *Cantus Mensurabilis* (Measured Music), which is the first authentic record we have of the use of notes similar to those

used at present, determining by their position and shape the pitch and relative duration of the sounds represented. He also used signs to mark the raising or lowering of a note by a semitone, corresponding to our sharps and flats.

THE BEGINNINGS OF HARMONY.

We have spoken so far as to the early progress of *melody*; we must now, before going further, glance at the ancient *harmony*. The earliest mention of harmony, in our sense of the word, is to be found in a treatise by Isidore, archbishop of Seville, a contemporary of Gregory's, who distinguishes between consonant and dissonant combinations of notes, calling the one *symphony*, and the other *diaphony*. What these combinations were we have no very certain knowledge, but they had probably made their way in some form into church music. Hucbald (a Flemish monk, 840-930) gives us examples of what he calls *organum*, the species of harmony allowed by rule in his age. He shews how a melody may be accompanied in several different ways: with the octave above or below; with the fifth above; with the fourth above; with the fourth above and the fifth below; and with the fifth above and the fourth below; and so on. To our ears such progressions are unendurable, and at first one is apt to come to the conclusion that they must necessarily have been the same to all ears and at all times. It seems, however, certain that Hucbald and his contemporaries must have chosen the consecutive fifths, &c. in deliberate preference to consecutive thirds and sixths, just as they chose the mode of D in preference to that of C. There can be no doubt that the ear can be educated, like our other faculties. In no other way can the storm of disapprobation be accounted for which has greeted composer after composer—Beethoven, Schumann, Wagner—who has written anything original or uncommon; this storm always subsiding after a longer or shorter period, and the popular feeling changing from dislike to enthusiastic admiration. It is, therefore, by no means inconceivable that the combinations of Hucbald's *organum* may have been such as gave pleasure to the ears of the musicians of his time. It must be remembered also that the progressions were *sung*, and not played upon a 'tempered' instrument, and that even to our ears there is a great difference between consecutive *true* fifths (as they can be played on the violin) and consecutive *tempered* fifths, as played on the pianoforte. One cause also of our dislike to these consecutive intervals arises from the confusion of key which they seem to produce; the ancients, not having our sense of key relationship, would not feel them unsatisfactory on this ground.

Modern harmony, however, is neither ecclesiastical nor southern in its beginnings, but belongs in its origin to the northern nations. Our Saxon and Danish ancestors had beyond all doubt a custom of singing in parts songs which were subsequently called 'Three-men's' or 'Free-men's songs,' and this custom lasted for centuries, and is even said to exist still in some parts of the south of England. There is evidence to shew also that, from time immemorial, the people of Northern Europe have possessed and used instruments so constructed that they could not be played on without producing a number of sounds at once, and therefore playing a succession of chords. It is notable, too, that it is among the northern nations mostly that persons are found with a natural aptitude (occasionally an inconvenient one) for 'singing second'—improvising a tuneful accompaniment to a melody. The art of making *melody* thus grew up in Southern Europe, based upon Greek models, but fostered by the church, and doubtless continually influenced by the secular melody of the people growing up beside it comparatively free and unfettered; while the art of *harmony* was developing itself in the wilder nations of the north, among the Britons and the Russians, ignorant of rule or mode, and having their own sense of tune to guide them instead of learned but useless dissertations. Gregory's missionaries carried everywhere with them, as they came northward, the Gregorian melodies, and everywhere, among Teutonic nations, they found the people singing in harmony. This harmony they adopted as part of their music; and by the end of the 11th century, we find the church admitting the performance of 'discantus,' or *descant*. This was simply an improvised 'second' sung along with the plain-song or church melody. Rude enough at first, and unwritten, in time it came to be noted down, and got the name of 'counterpoint'—point against point, or *note for note*, as we should say.

We have now given some idea of the development of musical knowledge and art up to the end of the 14th century, which Mr Hullah calls the First Period. A tolerably complete notation now existed; harmony (in our sense of the word) had become possible, and Hucbald's barbarous 'organum' had nearly died out; the art of descant or counterpoint had been taken up by the church, and was about to become the leading idea of musicians for many centuries; and some knowledge of key relationship (probably much restricted in its application by ecclesiastical rules) had been obtained.

MUSICAL ART IN THE 15TH AND 16TH CENTURIES—BELGIAN SCHOOL.

The Second Period—to adopt Mr Hullah's convenient arrangement—extends from 1400 to 1600 A.D. It is the period of those whom we are accustomed to call the 'old masters.' They were not restricted by all the Gregorian rules, but they still used the old Gregorian, or rather Ambrosian modes, and in this their music therefore differed from ours. In another respect, their methods also differed widely from those of the moderns; their harmony was not a succession of chords, but a combination of melodies; they wrote, as it were, *horizontally*, while modern musicians write *vertically*. Their rules of harmony—for they had many—did not refer to the use of certain chords one after the other, but to the arrangement of certain melodies, or melodic phrases, one above the other.

At the commencement of the Second Period, the Low Countries were at the height of their prosperity, and it is to them that we have at that time to look in connection with the development of musical art. About the end of the 14th century, a number of Belgian musicians went to Rome, and took with them the first masses that had been seen there in *written* counterpoint. Of

these men the chief was William Dufay, who was tenor singer and chapel-master in the papal chapel from 1380 to 1432. He is interesting to us more as being the author of the first known specimen of *canon* in music, than for any other reason. Canon is a repetition or imitation by one voice or part of a musical phrase previously given out by another. It forms a considerable step forward from the original form of descant, in which one part is of the first importance, and the other merely an accompaniment. In a canon, the parts which contain the 'subject' and the 'answer' (as the phrase and its repetition are called) must be treated as of equal importance, and therefore a wider view taken of the whole musical composition than before.*

A generation later than Dufay came Johannes Ockenheim (about 1425–1513), who was frequently mentioned as the inventor of imitation until Dufay's music was discovered. Ockenheim was the teacher of the foremost musician of his time, a man whose music was as universally performed then as it is neglected now—Josquin Deprés, or des Prés (about 1450–1515). It was of Josquin that Luther said: '*He* masters his notes; the notes of other musicians master them.' All Europe rang with his praises; his masses were sung in every chapel; his style was imitated by every composer anxious to secure public favour. He was a most prolific composer, and in reality a great genius, but greater men came after him, and his music has now dropped totally out of sight, never to be resuscitated. His position has been to a certain extent correctly defined when it was said of him, that he 'closed the list of musical calculators, and opened that of real composers.'

The influence of the Belgian musicians rapidly made itself felt throughout Europe, and for a hundred and fifty years the Low Countries continued to be the headquarters of musical culture and learning; while it was not until 1540 that the first music-school was opened in Rome. This school was established by Claude Goudimel, a Frenchman, best known in connection with his music to the psalms of Marot and Beza. Like Ockenheim, his fame rests on his pupils rather than on himself. One of the first of them was the greatest and noblest musician of his time—Giovanni Pierluigi da Palestrina, commonly called (after the place in which he was born) Palestrina—'the type and glory of the second period.'

PALESTRINA.

During the latter half of the 14th century, after the return of the pope from Avignon, grave abuses had begun to creep into ecclesiastical music; the simple descant became transformed into elaborate contrapuntal embellishments, under which the plain-song almost disappeared. These embellishments, as time passed on, became more and more outrageous and unsuitable. By the middle of the 16th century it had become quite a common thing for musicians to take popular melodies of the day as the principal themes for their masses and anthems, and to call them by their secular titles, and even, in many cases, to adopt the whole of the secular words bodily, along with the tune, so that while the choir were singing to some solemn Gregorian tone, 'Who is like unto Thee, O Lord!' the singer or singers to whom the descant was given might be singing 'Belle dame, me prie de chanter,' to an air which was sung and whistled outside the church by all the populace. While the musicians had thus devoted time and ingenuity to the introduction of unsuitable melodies and profane words into the church service, the proper ecclesiastical music had, as may be supposed, not been developing itself in a very satisfactory way. No attention whatever seems to have been paid to the meaning of the words; the psalms and hymns had become merely so many syllables to which musical notes might be attached in the way best adapted to shew off the composer's knowledge and the performer's skill. The music of the church had become a purely artificial thing, appealing to the intellect of the few, instead of to the hearts of the many.

The state to which church music was thus brought by its unworthy professors could at last be tolerated no longer. Bulls and remonstrances seemed to have no effect, nor even the censure of a council (Basel), and at last the celebrated Council of Trent (1562) took the matter up, and —resolved to eradicate abuses which no amount of remonstrance had lessened—decided virtually that no music should be performed in church except the ancient Gregorian chant. A commission of eight cardinals (of whom St Carlo Borromeo was one) was appointed to carry out the decrees of the council. Palestrina's music was already known at Rome, although not beyond it, and the Roman cardinals knew well that they had at least one composer who could adhere to the ancient school in all essential points, and yet not carry its mannerisms to an extreme; who could work by the same rules as the rest, and yet produce music so beautiful and (as we should call it) emotional, that it seemed a new thing altogether. These cardinals, and the Emperor Ferdinand I., made repeated protests against this throwing away of the good and the bad together, and reducing of church music to the bare forms of two centuries before. On their representation, it was at last agreed that Palestrina (now in the prime of life) should be commissioned to write masses for the approval of the commission, and that on the result should depend the extent to which the severer wishes of the council should be carried out. Thus the whole future of church music, and with it the very existence of musical art, lay for the time in Palestrina's hands.

He wrote three six-part masses, of which the first two 'excited an amount of admiration altogether without precedent; the third settled the vexed question, as it would seem, for all time, and at once saved music to the church catholic, and established a type which all the changes, enormous as they have been, that the musical art has known since his day, have failed to render less precious and less revered.'* This mass is written for soprano, alto, two tenors, and two basses, and was first performed on the 19th June 1565, which thus becomes a memorable date in the history of music. The mass has come down to us under the name of *Missa Papæ Marcelli*, given to it

* The canon was afterwards developed into the *fugue*, which has been found capable of such varied expression in the hands of Bach and Handel.

* Hullah, *Lectures*, &c. p. 80.

afterwards by its composer in memory of a former patron, Pope Marcellus II.

Palestrina was born in 1524. He received his musical education in Rome, and spent most of his life there holding different offices at different times. As is the case with most composers of the greatest genius, his works are as numerous as they are noble, and a number of them are still performed every year at Rome. His character seems to have been a singularly beautiful one; he was among Roman Catholic Church musicians very much what Sebastian Bach was among Lutherans. His life, however, seems to have been, notwithstanding his great musical successes, one continued struggle with poverty, but cheered for many years by the companionship of a loving wife. He died in 1594, in the arms of St Philippe Neri, and lies buried in St Peter's with the epitaph on his tomb: 'Joannes Petrus Aloysius Prænestinus, Musicæ Princeps.'

The influence of Palestrina upon church music was destined to be permanent. The aberrations which he had been instrumental in rooting out were never again allowed to disfigure the church service, although for some years they were a constant object of the attention of the provincial synods of the Catholic Church. With the close of the Second Period came also the end of the Belgian school; they had taught all they had to teach, and the Italians had taken their place, all countries being indebted to Italy for their music for many years, with the sole exception of England, where there was at that time an independent school of really great musicians.

THE MADRIGAL.

The *madrigal*, a form of composition which was the principal work of whole generations of musicians, seems to have been invented in the period of which we are now speaking, although it is not possible to name any one man as the inventor of it. It bore for many years much the same relation to the mass or church service as the opera does now to the oratorio. A madrigal is a vocal composition written in several parts, generally four or five; it has always a distinct melody or tune, with well-marked rhythm, and in both these respects it differed considerably from the mass of contemporaneous ecclesiastical music. Its words were almost always secular, often love-songs or pastoral poetry, and in those which are still known we very frequently find some proverb, or epigram, or witty saying. Of the Italian madrigalians, Luca Marenzio is the most celebrated. He is said to have composed more than a thousand, of which, however, none are now heard.

THE ENGLISH SCHOOL.

Among the English composers of this date are to be found Tye (who set the Acts of the Apostles to most charming music, some of which is still sung to other words), Tallis, Farrant, and Byrd, as writers of church music; and Edwardes, Wilbye, Weelkes, and Morley, as madrigalians. Dr Bull, too, lived at this time, and Dowland,

> 'Whose heavenly touch
> Upon the lute doth ravish human sense;'*

* *Passionate Pilgrim.*

and greatest of all, Orlando Gibbons (1583–1625), some of whose anthems can still stand beside Handel's choruses, and lose nothing by the comparison. It is worthy of a passing remark, that while it cannot be claimed for these musicians that they were greater or more original than their Italian contemporaries, their works have certainly lived longer. The old English madrigals are familiar to all; there cannot be a choral society in the kingdom which does not include many of them in its répertoire; and anthems of the sixteenth-century composers whom we have named are still familiar as 'household words' in the services of the church for which they were written, and even far beyond its pale.

It is known, from the amount of printed music which was in circulation, that at the close of the 16th century, musical culture was very general throughout Europe. Notation had been improved during the last two hundred years, but music was still printed without either bars or expression marks. This alone would make the reading and performance of a piece of music infinitely more difficult than with us; but there was the superadded difficulty, that in very many cases the singers had to sharpen or flatten the notes for themselves as they sang—according to certain rules—without any indication from the music before them. 'Hundreds of entire volumes of music of the Second Period exist without a single sharp or flat in them (accidental or other) from beginning to end.' By this time, also, the construction of the organ had been brought to some degree of perfection; the pedal-board having been added to it by Tedesco at the end of the 15th century. The chorale or hymn-tune of the Lutheran Church was gradually developing itself into a form fit for the genius of John Sebastian Bach to work upon. Its melody in Luther's time had been in the tenor, but it was found that this made it somewhat difficult for the congregation to catch the tune and join in it, and in 1586 we find a tune-book published by Lucas Osiander in which the melody was given, as it is now, to the treble. A little later, the great organist Hassler also published a tune-book of the same kind, endeavouring, as he said, 'so to harmonise the best known church tunes that the chorale shall be distinctly heard throughout the treble, and at the same time the congregation can join in and sing too.'

THE 'IONIAN MODE' AND 'FULL CLOSE.'

The Third Period extends from 1600 to 1750 (of course the dates are only approximate), and forms the transition from Palestrina to the modern school; it culminates in Bach and Handel, and, with the exception of these two great names and a few others, is remarkable rather for what it began than for what it did. The oratorio dates from this period, and the opera, and also instrumental music in its separate existence.

The two principal alterations in music itself, independently of any special form, which were effected during this period, were the adoption of our ordinary major scale, which was at first called the Ionian mode, and the use of the perfect cadence, or full close. After all that we have said about the modes, the first of these points will require no further explanation. It had long been used in secular music, especially dance-music, for

which reason it had been called *il modo lascivo*, and shunned by church musicians, but Palestrina used it frequently, and after his time it gradually came more and more into use.

The mere use of the 'Ionian mode' was not of itself, however, sufficient to change the old into the new tonality; it required also what is now known as the 'full close.' The most superficial examination of any music written within the last two centuries is sufficient to shew that one of its distinguishing features is a succession of chords invariably employed at the close of a piece or movement, the first of these chords being that of the 'dominant seventh,' and the second that of the tonic, of the key in which the music is written. The following are examples of the perfect cadence in its usual form. This sequence of chords has the property possessed by no other, of *defining the key in which it is played*. The distinguishing notes of every key are its fourth and seventh; that is to say that, given two notes which stand in the relation respectively of fourth and seventh to a third, then these two notes can co-exist only in one key, just as only one straight line can be drawn through any two points upon a piece of paper. Thus the notes F and B can

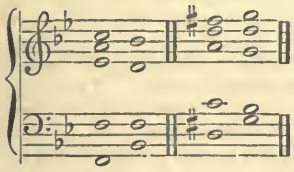


Fig. 4.

occur together only in the key of C; the notes C and F sharp only in the key of G; and so on. In the chord of the dominant seventh, the first chord in each of the examples above, *both* these notes occur (E flat and A in the one case, C and F sharp in the other); it is of itself, therefore, sufficient to determine the key. When this chord is followed by the chord of the tonic or key-note, the ear is perfectly satisfied, and desires nothing more. It seems strange to us, but is nevertheless true, and affords another illustration of the fact that our sense of hearing has only reached its present position by a gradual process, that this progression was at first quite unused by the ancients; and even after some musicians had ventured to introduce it, it was not at once accepted as welcome, but only slowly, and after many years, made its way into favour with orthodox musicians. Although the use of this cadence seems at first sight but a small matter, yet its influence upon music, by putting an end to that vagueness of key which is noticeable in all previous compositions, but with which it cannot co-exist, can scarcely be exaggerated.

THE OPERA.

The earliest operas (or dramas set to music) seem to have been an attempt to put madrigals or madrigalian music on the stage, and adapt it in somewhat clumsy fashion to dramatic purposes. In 1580, a number of Florentine gentlemen formed themselves into a society for the 'revival of the musical declamation of the Greeks.' Their object was the encouragement and development of dramatic music, it being assumed as a fact that Greek musical art, if its real nature could only be discovered or rediscovered, must have included just that combination of music and poetry which they wished to find. This little society did not revive the Greek drama, for reasons which will be sufficiently clear after what has been said on the subject, but they *did* establish the Italian opera—a far more important result for mankind. Vincent Galileo, the father of the astronomer, was one of the foremost members of the society, and he seems to have invented *recitative* (a kind of chanted recitation) under the impression that he was merely reproducing a form which had been used by the Greeks. Several small operas, in which presumably recitative was introduced, followed, but the first which stand out in any way clearly to us at this distance of time are a pastoral, *Dafne*, performed at the Corsi Palace in 1597, and an opera, *Il Morte di Eurydice*, performed at Florence in 1600, on the marriage of Henry IV. of France with Marie de Medici. The music was composed by two musicians, Peri and Caccini, of whom the former seems to have been the more important. These two works are the earliest complete operas—they contained almost all the forms now used, recitatives, airs, choruses, and instrumental preludes, and were accompanied by an orchestra consisting of a harpsichord, guitar, lyre, and lute.

No one musician of that epoch did more to free music from the fetters of the theorists than Claudio Monteverde, who was born about 1566, and died at Venice 1650. He did not certainly *invent* the perfect cadence, but he used it freely, as well as many other combinations and progressions familiar enough to us, but bold and startling to the precisians of the old school. It would be out of place here to enter in detail into any of these innovations, most of them purely technical; it will suffice to say that they all tended in the direction of the better defining of *key*, and of using similar phrases more freely in different keys. He strove hard also to make music more expressive, and something more than a mere concatenation of sounds, sweet but meaningless. Opera is specially indebted to Monteverde for his development of the orchestra. In his opera of *Orfeo*, produced in 1608, there was an orchestra of 36 performers, and the score includes parts for 2 clavichords, 10 violas, 2 double-basses, 1 harp with *two* rows of strings, 2 French violins, guitars, trumpets, trombones, &c.

Two great composers of sacred music—Carissimi (of whom more further on) and Viadana—followed in Monteverde's footsteps, both in giving their music greater depth of expression, and in still further freeing melody from contrapuntal restraints. To the influence of both these men opera was much indebted, although neither of them wrote for the stage. Carissimi was, in his old age, the teacher of Alessandro Scarlatti, who was probably the most popular composer of his day. Some of his works have been recently revived in this country, but his chief honour lies in having been the founder of the Neapolitan school. Of this school it is scarcely too much to say, that it exercised a direct or indirect influence on every composer who flourished within a century

and a half of its foundation. We owe to it in great measure our modern methods of handling instruments, and even when Italy itself, having fallen to the level of Bellini, Donizetti, and Verdi, could no longer pretend to produce composers, the Italian method of singing, the method first taught by the Neapolitan school, remained, as it remains still, unrivalled.

The French operatic school was founded by an Italian, Jean Baptiste Lulli (1633–1687), the story of whose life has perhaps been told oftener, and in more detail than that of any other musician of the same age. We need not repeat it here. Lulli was unquestionably a genius; he went to Paris in a very humble capacity as a boy of twelve (he can scarcely have had any musical education previously), gained notice by his excellent violin-playing, was allowed to devote himself to music (but to teaching and conducting, not to learning), and became a most prolific composer, apparently self-taught. He was an excellent violinist, a capital comic actor and dancer, an unequalled theatrical manager, a thoroughly unscrupulous but most successful man. He seems to have endeavoured to make his music dramatic, to give it really some close connection with the words and the situation, and to avoid the continual senseless repetition of words and phrases, so common in the pure Italian style since his time. These objects were certainly praiseworthy enough. He is also credited with having introduced the practice of putting a ballet in the middle of the opera, a vicious custom, which has since held its own in French opera, with as much reason on its side as the dance which Nicholas Nickleby had to insert in his play. Lulli's music held its own in France for a hundred years, until at length it was displaced by a man who may be called the Wagner of his century, Christopher Gluck, of whom we shall have to speak farther on.

INSTRUMENTAL MUSIC.

Among the earlier musicians separate instrumental music was unknown; it may without much error be said to have been brought into existence by the opera, which was necessarily the cause of increased attention being given to the construction of, and performance on, orchestral instruments. To Italy, to whom we owe the opera, we owe also instrumental music. Strangely enough, while the operas of the 17th century have passed out of existence, and the instruments have been so improved as to be different in all but name from those of that time, some of the earliest compositions for instruments have retained their popularity, and are perhaps as familiar to the English musician of to-day as they were to the Italian of two centuries ago. These are the violin sonatas* of Archangelo Corelli (1653–1713), compositions so fresh and melodious, and so modern in shape, that it is difficult to realise their age, and still more difficult to do adequate justice to the greatness of their composer's genius, who, surrounded by pedantry and conservatism, and hedged in by innumerable rules, could yet free himself of them all, and strike out suddenly in a new path, as readily as if it were one with which he had been familiar all his life. The sonatas (frequently called trios) which we have mentioned were published in Rome in 1683, and yet are still listened to with the same genuine pleasure as that with which we listen to one of Haydn's quartettes.

In connection with Monteverde's *Orfeo* we have mentioned many of the instruments used during this period. *Viols* existed in immense variety; we cannot identify all the modifications which are mentioned in the scores of the early instrumental music, but we know that they were much feebler than our instruments of the same class, although often played in the same way. The wind and reed instruments were, on the other hand, harder and less manageable than ours. The pianoforte, in which the strings are struck by hammers, had not been invented; the clavichord, virginal, spinet, and afterwards the harpsichord, were the instruments which preceded it. In them the strings were twitched by some kind of plectrum. The organ, as we have already mentioned, was a tolerably perfect instrument even before the commencement of the Third Period.

THE ORATORIO.

We have mentioned the name of Giacomo Carissimi in connection with the growth of opera, to which his music indirectly contributed. He is, however, chiefly to be held in remembrance as the father of modern oratorio. The expression and emotion which his contemporaries were striving to infuse into dramatic music, he developed in connection with the sacred cantata. His compositions were almost confined to this class of music; he wrote but few masses, and no operas. His oratorio of *Jephtha* was revived by Mr Hullah a good many years ago, and performed at St Martin's Hall; it has never been published, but it is described as being very remarkable for the beauty and force of its recitatives, a musical form in which Carissimi seems to have had few equals, even among his greater successors. The dates of Carissimi's birth and death are uncertain, but his life must have been nearly coextensive with the 17th century.

The object of this article being rather to trace the development of music than the lives of individual composers, we can do no more than mention a few of the best known names in this period, before looking at the work of the great masters with whom it ended, Bach and Handel. In Italy (besides the names mentioned already), were Stradella, Metastasio, Porpora, Geminiani, Pergolesi, and many others; in Germany, Keiser, and Graun, and Hasse; in France, Rameau; and in England, Jenkins and Lawes, Lock, Humphreys, Blow, Croft, Arne and Boyce, and Henry Purcell.

BACH.

In John Sebastian Bach the music of the German Protestant Church reached its highest point. He was born at Eisenach in 1685 (the year also of Handel's birth), one of the fifth generation of a musical family, and lived a quiet, uneventful life, never leaving his native country. His compositions are very numerous: they embrace *five entire series* of cantatas for all the Sundays and holidays in the year, numerous motets, at least two sets of 'Passions-musik,' the

* Written for two violins and violoncello, with accompaniment for the organ. A sonata is a piece of music written for one or more instruments, and consisting of several parts, called 'movements.' The majority of sonatas are for pianoforte solo.

48 preludes and fugues, besides a number of pianoforte and orchestral suites, and organ fugues, several complete masses, and other works.

Bach's choral compositions are very difficult, and were probably not much performed even in his lifetime; and after his death, the more important of them fell entirely out of sight until the time of Mendelssohn, who, by his enthusiasm, aroused public interest again in the works of the grand old master. What Mendelssohn did for Bach's choral compositions, the modern school of pianists, Liszt, Hans von Bülow, Halle, Frau Schumann, and others have done for his pianoforte compositions, many of which are now universally familiar.

Bach's greatest choral work is his *Matthew-Passion*, intended for performance in the Lutheran Church on Good-Friday evenings. It may be perhaps rightly called an oratorio, but yet differs much in form from the oratorios of Handel. It describes the whole of the events related in the 26th and 27th chapters of Matthew in the words of the text, interspersed with comments upon them in the form of hymns and chorales. The music is highly dramatic—solo voices telling the story and taking the parts of Caiaphas and Pilate, and of Jesus, while the chorus speaks for the Jews, soldiers, and disciples; and the one answering to the other, as when the multitude shout tumultuously, 'Barabbas!' and 'Let him be crucified!' in answer to Pilate's questions. This wonderful work may truly be said to be the apotheosis of the chorale. Five different chorales are introduced, one of them as many as five times; the words are varied each time, and generally the harmony also. These old melodies, as thus harmonised by Bach, seem to be transfigured. In appearance, the under parts are as formal and heavy as the chorale itself (which is in the soprano); but when once they are *heard*, all the formality disappears; you are unconscious that what you listen to is written in conformity to a hundred artificial rules; you hear only the great soul of the most religious of musicians pouring out its noblest thoughts, and are lifted unresistingly into some calmer, serener atmosphere, above all the littlenesses and commonplaces of life. We speak of the music by itself, not of the words to which it is sung; the latter are acceptable to one class of religionists only, the former belongs to religion itself. In whatever place Bach may be played, said Mendelssohn, that place becomes a church.

The *Matthew-Passion* rested for a century, till Mendelssohn had it performed in Berlin in 1829. It has lately been performed in London a number of times (twice at Westminster Abbey on Good-Fridays), and also in Glasgow. It seems, indeed, as if the prophecy of a recent German critic (Riehl) must be true, that Bach 'was born for schools and connoisseurs in the eighteenth century, but for *the nation* in the nineteenth.'

Of Bach's instrumental works, the best known is his *Wohltemperirte Klavier*, a set of 48 preludes and fugues for the piano. To characterise these compositions would be difficult; they have never been young, and will never be old; they seem almost to form a genus by themselves. They are exceedingly difficult to play *well;* even the mere playing of the notes calls for no small technical skill; but nevertheless they must be both studied and *mastered* by any one who really wishes to be a first-rate pianist.

HANDEL.

George Frederick Handel* was born in the same year with Bach, and survived him nine years. The greatest musicians of their time—indeed, of *all* time, in their own departments—were thus contemporaries; but they do not seem to have met each other, or even to have influenced each other's work, as did Mozart and Haydn later on; while in circumstances and life they were as opposite as can well be imagined. In 1710, Handel came to England, a young man of twenty-five, and from that time until his death his permanent residence was in this country, although he was frequently on the continent, generally travelling in search of artists for his opera company. We have already spoken of the English school of the Second Period. This school can scarcely be said to have flourished as a school later than the time of Orlando Gibbons; but our greatest composer, Henry Purcell (1658–1695), stands out alone in the latter half of the 17th century. His operas are his most important works, and, besides their other merits, shew a power of musical expression which places him ahead of most of his contemporaries. Some parts of them, as 'Britons, strike home,' and 'Come, if you dare' (both from *King Arthur*), are still familiar to all, although the operas, as a whole, will never be resuscitated. It is important to mention Purcell here, however, because at the time when Handel came to England, his music was heard at every theatre and in every house, and it seems to have exercised a marked influence upon Handel's later and greater style.

For seven-and-twenty years, Handel devoted himself almost entirely to opera writing and management. He wrote during this time five-and-thirty complete operas, besides numberless other works, and at the end of it all, in 1737, nearly ruined financially, and broken down in health, he was compelled to leave opera and England together. A short stay at Aachen restored his health, and on his return to his adopted country, to which he was really attached, he commenced at the age of fifty-three the composition of those works which alone have made him immortal. Of his earlier choral works, *Alexander's Feast*, *L'Allegro*, and *Acis and Galatea* alone survive entire; the operas no one would now care to listen to. In oratorio music, he reached at one bound the utmost height that as yet has been reached by any musician. *Israel in Egypt*, his greatest work, was also his first, being composed in 1738, soon after his return from the continent. He wrote nothing afterwards equal to it as a work of art; but his fame in popular estimation certainly rests chiefly upon the *Messiah*, which, strange to say, was rejected in London on its first performance (April 12, 1741), and first met with appreciation on its performance in Dublin shortly afterwards. This oratorio is so well known, that it is unnecessary here to say anything as to its nature. It owes its popularity probably as much to the nature of the words as to the music. There is nothing in it to equal 'The people shall

* Handel's name ought to be spelled Haendel, or (as usually written) Händel; but it is so well known to us in the incorrect form, that it seems pedantry to alter it now.

hear, and be afraid;' but 'He shall feed his flock,' and 'He was despised,' appeal to feelings that lie nearer the hearts of the hearers than 'Thou shalt bring them in,' and 'The enemy said.' It cannot be denied, however, that several times in the *Messiah*, and frequently elsewhere, Handel's music is the very reverse of suited to its words. It is difficult to understand how the writer of 'He was despised' could also write 'All we like sheep;' and many of his oratorio solos are simply airs that would have done equally well in his operas; in some cases, they actually have done duty in both. Handel's oratorios are now always performed with additional accompaniments, added by later composers, to suit the increased capacities of the modern orchestra; of these, Mozart wrote a number, including those for the *Messiah*. Handel used to accompany them on the organ himself, but we are unfortunately imperfectly informed as to what his accompaniments were. Handel died on Good-Friday (April 14), 1759, and was buried in Westminster Abbey.

After Handel's death, a new era commences, the era of what is now known as modern music. Germany had by this time attained that supremacy in things musical which it has since held, and which does not seem likely to be wrested from it for many years to come. We must not, however, in recognising the greatness of the German composers of the last and present centuries, and of the service done by Germany to musical art, forget how much we owe to Italy in building the foundation on which German music rests. The Italians had originated the oratorio and the opera, the overture and the quartette—in fact, almost every known musical form; and the first composers of any separate instrumental music, as has been seen, were Italians. They had also invented a majority of the orchestral instruments now in use, and perfected the methods of playing on them, and, in addition, had taught Europe how to sing. The sceptre had passed from their hands, however, never more to return.

THE GROWTH OF INSTRUMENTAL MUSIC—HAYDN.

The composers of whom we have now to speak are the greatest whom the world has seen; but their works and peculiarities are so much more generally known and understood than those of the old masters, that we shall not have to speak about them at such length as otherwise their real importance would demand. Modern music commences with Joseph Haydn—'Father Haydn,' as he has been so often affectionately called—'the veritable originator of German instrumental music.' We shall not make any catalogue of Haydn's works, but simply note the points in which music is most indebted to him. He was, in the first place, the chief instrument in changing the old *contrapuntal* style of composition into the modern *thematic* style, in which a succession of secondary subjects are derived or developed from, or added to, a leading idea or theme, and fugal imitation but sparingly used. He not only was the first to employ this style freely, but he originated and constantly used the very form known as the 'sonata' form,' in which it has ever since been employed.

We have shewn how long it was before composers had learned how even to make music *express words*. This art had now been attained, and Haydn went a step farther, and made it express *ideas*. Instrumental music before his day had appealed solely to the ear or the intellect. He did for it what Palestrina had done for vocal music, and shewed how it could be made to appeal also to the emotions. The most important form which orchestral music had taken before his day was the *Suite*, a series of dance tunes (Sarabande, Gavotte, Bourrée, Gigue, and so on), sometimes connected together, and sometimes merely following one after the other. Of these suites, J. S. Bach composed a great number, parts of which are well known (in pianoforte arrangements) in this country; and his son, Carl Philip Emanuel Bach, transformed the suite into something nearly resembling the modern symphony.* It was reserved for Haydn, however, actually to originate the symphony in the form which Beethoven used, and with which we are now familiar; and it does not seem as if music alone, unaccompanied by poetry or action, could attain to any higher form. In the hands of a master its capacity for expression is absolutely unbounded. Haydn's symphonies, no doubt, cannot be compared with Beethoven's, but they are an immense advance in the direction of emotional music upon anything that had preceded them. He wrote 118 altogether, of which those most celebrated are the twelve written for Salomon's concerts in London, when the composer was nearly sixty years old, and after the death of Mozart. It is worthy of mention also that Haydn went one step farther than this. He not only wrote music which appealed certainly, though indefinitely, to the emotions, but he also on many occasions gave such titles to his instrumental works as afforded a clue to the actual ideas which they were intended to express,† and brought them thus into the category of 'programme music.'

In this country, Haydn is indissolubly associated with his oratorio of the *Creation*, which he wrote after visiting London to conduct his symphonies, and which was no doubt suggested by hearing Handel's great works. It cannot be said that the *Creation* in any way advanced the genus oratorio. Its choruses are in no way equal in dignity or grandeur to those of Handel or Bach, and it holds its own in popular estimation mostly by the beauty of its melodies. Without wishing to say anything to detract from the merit of this beautiful work, it must yet be admitted that it did not do much to increase the debt which musical art owed to its composer.

Haydn's other vocal works we cannot here mention; but it would not be right to pass on without any allusion to his eighty-three string quartettes (for two violins, viola, and violoncello), which even now remain the most delightful of chamber-music, and do not call for any degree of execution or ability unattainable by study to the amateur.

THE OPERA—MOZART.

Wolfgang Amadeus Mozart was born twenty-four years after Haydn, and died many years

* A symphony is a piece of music in several parts or 'movements,' written for a full orchestra.

† For instance, *Elena Greca; Il Solitario; Departure of a Family for America, Grief of those left behind, the Voyage and Return*, &c.

before him; but the *intensity* of his existence was such that, in the brief five-and-thirty years that were allotted to him, he lived twice as much as any ordinary man. If Haydn is associated in the history of musical art with the symphony, Mozart is similarly associated with the opera. In symphony-writing, he has been overshadowed by the colossal genius of Beethoven; his pianoforte sonatas were juvenile compositions, by which he himself did not wish to be judged; his masses also he did not himself esteem highly, although the No. XII. is so popular at the present time as to be positively 'hackneyed'—it is upon his dramatic works that his fame depends. Judged by comparison with his predecessors, it would be almost impossible to praise Mozart's operas too highly, nor, judged by comparison with the later composers of Italian opera,* would it be possible to find any to rival them; so far the opinion of his warmest admirers is fully justified. There is, however, a school of musicians whose devotion to Mozart prevents their seeing, or at least admitting, the possibility of any one going beyond him: they consider *Don Giovanni* as complete a work of art as, for instance, Beethoven's seventh symphony. Now it may readily be admitted that Mozart takes the same place in relation to *Italian opera* which Beethoven takes in relation to the symphony form, and so far the composers may be put on a level. But, judged on their own merits, there is a wide difference between the value of these two musical forms. The symphony has been already spoken of; it does not seem possible for us, *as yet*, to conceive of a higher form of instrumental music. But it does not require any searching to find the imperfections of Italian opera, imperfections which Mozart's music, composed *in* that form, and not *out of* it, inevitably shares. We shall have something to say farther on about the wholesale reforms made or attempted by Gluck. Mozart, too, made some reforms; but while his musical genius was greater than Gluck's, his intellectual appreciation of the whole question was not so clear. Gluck first asserted the supremacy of the writer of the music over the performer of it, and afterwards the equality in importance of the poetry and music in a perfect musical drama. To Mozart, on the other hand, the music was everything. He was ready enough to curtail the liberties of the singer, but not to increase the importance of the librettist.† So far as he was concerned, the duty of the latter was merely to furnish verses which could conveniently be 'set' in the established forms of recitative, air, finale, and so on. With him, 'absolute' music was everything; dramatic and poetic expression were only secondary. It follows naturally from this that he cared very little what his libretti were, and set to music some that were utter trash. It has been repeatedly noticed, however, that even Mozart was, unconsciously, so far dependent on his poetry, that his most successful operas, as *Don Giovanni*, or *Le Nozze di Figaro*, are just those in which he has a spirited and intelligible libretto; while in spite of beauties of detail, a stupid libretto results in tame music, as in *La Clemenza di Tito*.

'It would have been Mozart,' as Wagner writes, 'the most absolute of all musicians, who would have solved the problem of the opera long ago—that is, who would have assisted in producing the truest, the most beautiful, and most perfect *drama*, if he had met with a poet whom he as a musician would only have had to *assist*. But such a poet he, unfortunately, was never to find.'* 'It was not in his tender and unpolemical nature to destroy established forms with the sword of the reformer; he could only make us forget the narrowness of these fetters.'

THE SYMPHONY—BEETHOVEN.

The name of Ludwig von Beethoven is the greatest as yet inscribed on the roll of musicians. 'He took up musical art where Haydn and Mozart left it; he adopted the *manner* of those great masters, but developed and improved it till it became absolutely transformed by his genius,' wrote a contemporary.† Beethoven was essentially an instrumental composer. He wrote several masses, and a complete cantata, or, as it is often called, oratorio, the *Mount of Olives*, all of them full of genius and originality; but it is quite plain from these that choral writing was not his forte—he treats his voices too much like instruments. Even in his songs (he said he 'did not like writing songs'), it will be noticed often how his interest has been rather in the accompaniment than in the vocal part. He wrote only one opera, *Fidelio*, in the music of which he has in parts restricted himself by conventional usages. *Fidelio* would suffice to immortalise any one but Beethoven; Beethoven is immortal without it.

His fame rests upon his instrumental works, and chiefly upon his orchestral symphonies. Of these there are only nine in existence, for Beethoven, in contrast with many composers, only completed works with great deliberation and care, and perfected each bar until he felt he could do no more to it. He is said not even to have allowed to be mentioned in his presence some pieces which he had written when quite a lad, but which some foolish friends had managed to get into print. During the latter part of his life he was perfectly deaf, and to this has been attributed the peculiarities and unintelligibility of some of his later compositions, which are assigned to what some of his biographers have called his 'third period.' But a musician like Beethoven would know the effect of his scores just as well by looking at them as by hearing them played; and the 'third period' seems to have been simply a convenient way for his critics to dispose of what they did not understand. With the progress of musical culture, the works assigned to this period, including the ninth symphony (the choral), are becoming better appreciated, because better understood, and it is seen how they are the legitimate development of his earlier compositions.

It would be impossible to attempt here any analysis of Beethoven's symphonies, or even to give any details of their leading features, and mere praise of them seems almost impertinent. The following passage, from the pen of Beethoven's greatest successor, describes very beautifully the growth of the symphony, and the place it took in Beethoven's hands. Wagner says: 'Haydn was

* The genus 'Italian opera' is, of course, quite distinct from operas written to Italian words.

† So called because he writes the words or 'libretto' of the opera.

* Quoted by Hueffer. † Krause.

the gifted master who first extended this form' [the suite], 'and made it wonderfully expressive by the inexhaustible changes in the motives, as well as in their connections and transformations. Whilst the Italian operatic melody retained its poor construction, it had, nevertheless, when delivered by talented singers gifted with noble voices and warm feeling, received a sensuously beautiful colouring. This sweet euphony had been hitherto unknown to German masters, and was entirely wanting in their instrumental music. Mozart first realised the charm, and whilst giving to Italian opera the richer development of orchestral composition, he imparted, on the other hand, the sweetness of Italian singing to orchestral melody. Beethoven then took possession of the rich and promising inheritance left by Haydn and Mozart; he developed the symphonic work of art to such astonishing breadth of form, and filled this form with such marvellously various and entrancing wealth of melody, that we now stand before his symphony as before a landmark of an entirely new period in the history of art; for in this symphony a phenomenon has arisen, the like of which has never existed in the art of any period or any nation.'*

MODERN ITALIAN OPERA.

While Germany occupies the central position during the whole of the period of which we are now writing, we must also look at other countries, although we have not space even to mention the names of a multitude of composers of more or less repute. Among writers of Italian opera, as might be expected, Mozart's influence is for some time traceable. The principal of these, at the end of the last century, were Paesiello and Cimarosa, the latter still represented by his *Matrimonio Segreto*. After these, there comes Rossini (1792–1868), who, although undoubtedly a genius, can hardly be spoken of with much respect as a musician. His *Il Barbiere* is probably destined to a long life; its sparkling music and lively plot seem to disarm all criticism, in spite of its manifold plagiarisms and general shallowness. Paris has pronounced for his *William Tell*, but the verdict of Paris is no longer regarded by musicians. In the majority of his compositions, everything is sacrificed to vocalisation; they possess little dramatic interest, and are not likely to retain any hold on the public, now becoming educated to appreciate better things than endless roulades. Rossini, very unlike most musicians, was one of the laziest of men; and after writing *William Tell*, he retired altogether from public life, only composing now and again some unimportant piece 'to order.' Bellini and Donizetti, Rossini's immediate followers, restricted the opera more and more to a mere display of vocalisation; and their works have held their ground simply through the splendid execution of one or two great singers. They are 'melodious' only in the vulgar sense of the word, and rarely rise to any originality. 'Italian operatic melody has remained satisfied with a harmonic basis of such astounding poverty that it might exist without any accompaniment whatever. It has been content also with so mean a construction of phrases that cultivated musicians of the present time stand with sorrowful amazement before this scanty, almost childish form of art, the narrow limits of which condemn even the most gifted composer, if he deals with it, to a complete stability of form.'* So remains Italian opera at the present time.

* From Mr Dannreuther's translation of Wagner's letter, *Zukunftsmusik—Brief an einen französischen Freund.*

OPERA REFORM—GLUCK.

The French school of music we left with Lulli. This school has also developed itself through the opera, and its development presents some points of special interest to us, although the ultimate issue has been very disappointing. Rameau (a Frenchman) succeeded Lulli, and further developed his style, increasing especially the importance of the orchestra and the richness of the instrumentation; but our interest centres entirely upon one figure, that of Christopher Gluck (1714–1787), whose ideas as to the reform of the opera are substantially the same as those now advocated by the Wagner school. As a young man, Gluck wrote Italian operas for Venice, Milan, and London, which do not concern us, and which have long since been deservedly forgotten. When about thirty-four, he seems to have ceased composing for a while, and devoted himself to thought and study, the result of which became manifest in his later work. Gluck's reforms were all directed against artificiality, and in favour of the oneness of poetry and music in the musical drama, and among them was the not unimportant one that he used only natural voices, and not the detestable artificial soprani who had before his time taken part in all operas. But his whole ideas on these subjects are so admirable, and present such a marked contrast not only to those of his predecessors, but also to those of the modern Italian opera writers, that it will be well to quote his own words:†

'I wished to confine the art of music to its real object—that of aiding the effect of poetry, by giving greater expression to the words and scenes; but without detriment to the action of the plot, and without weakening the impression by useless ornamentation. . . . . Therefore, I do not stop the performer in the middle of a dialogue while he waits the termination of a tedious *ritornello*; nor do I allow him to pause on a word or a vowel, in order to give him an opportunity of shewing off the flexibility of his voice in a long roulade, or to wait till the orchestra gives him time to take breath for a long *cadenza*. . . . . In short, I wished to do away with those abuses which common-sense and good taste had inveighed against for some time past.'

These ideas he carried out, so far as his limited musical resources would allow, in *Orfeo*, *Alceste*, the two *Iphigenies*, *Armide*, and other works, of which the first two were produced originally at Vienna, but which only met with decided success on their performance in Paris in 1774 and the four succeeding years. They became subsequently naturalised in France, and models for the succeeding generation of composers. A writer who was at the first performance of *Alceste* (Vienna, 1767), wrote thus of it: 'I am in the land of miracles. A serious melodrama with natural voices, music without solfège, or rather without

* Wagner.

† From a dedication of his *Alceste* to the Grand Duke of Tuscany. Quoted from Schlüter's *History of Music* (English ed.), p. 131.

chirruping, Italian poetry without affectation and bombast.'* Notwithstanding this, Gluck's reforms failed to take hold on the Germans at the time, and their effect in France was not permanent. It has been reserved to Wagner, in our own day, to make, with vastly greater genius, and vastly greater resources at command, another, and it is to be hoped a finally successful attempt, to conjoin poetry and music in one harmonious whole, and to sweep away the conventionalities and artificialities which have so nearly destroyed the soul of musico-dramatic art. Gluck remained only a few years in Paris, and then retired again to Vienna, probably worn out with the incessant fightings of his supporters and those of his rival Piccini. His stay in France was long enough to establish his operas so firmly in public favour that they are still often produced, but not long enough to enable him to establish among those who were to be his successors enthusiasm for his principles apart from his music. It may be owing to this cause that those principles have been so sadly neglected and overlooked.

GLUCK'S SUCCESSORS—FRENCH OPERA.

Among the best known of Gluck's successors were Mehul, Cherubini, and Spontini (the last two Italians, but domesticated in France); these all followed Gluck rather than Rossini. Cherubini (1760–1842), who was the last of the great Italians, was so popular in Paris that he has been called the 'musical autocrat of France.' He composed twenty-eight operas, eighteen masses, and numberless other smaller pieces, and was also the author of theoretical works still well known. Two at least of his operas survive, *Medea* and *Les Deux Journées*, and a few of his overtures. Boieldieu (whose opera, *La Dame Blanche*, has been performed considerably over 1000 times in Paris) and Auber were pupils of Cherubini. Auber is better known by his *Fra Diavolo* and *Domino Noir*, than by his more ambitious and important *Masaniello*, but the first-named works are to the musician only the first steps in the direction of Offenbach's 'deeper depths.'

By successive stages the Parisian taste became more and more depraved, until at last the people that had rejected Beethoven's seventh symphony, and were yet to reject *Tannhäuser*, found their beau-idéal of a grand opera in the *Robert le Diable* of Jacob Meyerbeer. Meyerbeer's instrumentation is sometimes very striking, and he has undoubted dramatic force, as is especially exemplified in parts of the *Huguenots*, but his highest object was not to produce a noble work of art, but to write an opera which should be successful in Paris, and the two things were totally incompatible. It is not to be wondered at that this man, with his stage devil and dancing nuns, should have excited the bitterest animosity in those who were giving their lives earnestly and enthusiastically to the service of art. Verdi has shewn us the lowest point to which music can be brought by a combination of modern French and Italian ideas. It is hard to say whether the plots or the music of some of his operas are the more thoroughly bad. His orchestration is noisy and commonplace, and, in fact, he has Meyerbeer's defects without his merits. He was, nevertheless, at one time exceedingly popular, and an audience can even now always be found for *Trovatore*. It is to be hoped that, with the development of a purer taste, *Trovatore*, *Traviata*, and the rest will soon be banished from the theatre, for lack of audience to go to listen to them.

* Sonnenfels in the *Wiener Diarium*—quoted by Schlüter.

MODERN GERMAN MUSICIANS—WEBER, SCHUBERT, MENDELSSOHN, SCHUMANN.

We left Germany with Beethoven, in order to sketch the development of the Italian and French schools. We must now return to it, in order to trace its progress since that time. Out of the ninth symphony, the music-drama of Wagner seems directly to grow; but the former was far ahead of its time.* It had been given over as unintelligible to the 'third period,' until this next step forward had been taken; *then* a new light seemed to have been thrown upon it, and it is now universally acknowledged to be the combination as well as the conclusion of the greatest series of instrumental works which the world has yet seen. The intervening period has been a most important one for musical art. It contains the names of Weber, Mendelssohn, Schubert, and Schumann. Carl Maria von Weber stands by himself as respects the opera, neither developed from Mozart, nor developing into Wagner; but yet leaving the one behind, and placing the other under great obligations.† The opinion frequently expressed about Weber's operas is, that they bear a position in reference to the German *Volkslied* (People's Song) analogous to that which Rossini's bear to Italian melody, and that their superiority is in the main a consequence of the nobler nature of the one type of tune than of the other. This may be true, but it is insufficient, like many very philosophical criticisms. The Volkslied *idea* does indeed form the foundation of Weber's music, but the Italian melody *is* Rossini's; there is nothing else. After *Don Giovanni* or *Figaro*, *Der Freischütz* seems a new genus, its differences are so great. There is at length some real unity between the poetry and the music—the conventional forms of the latter have been modified (although not yet altogether set on one side) to the exigences of the drama. The subject, too—the familiar old legend—has real poetic beauty, in marked contrast to the frivolity of the plots of Mozart's operas, for we cannot hold that the efforts of some critics to make out that the story of *Don Giovanni* has a high moral purpose have been successful. Lastly, the so-called 'unaccompanied' recitative has disappeared, its place being taken by spoken dialogue, which has since been turned into accompanied recitative. The overtures of *Freischütz* and *Oberon* are of themselves sufficient to immortalise their composer.

We cannot wholly refrain from mention of Ludwig Spohr (1784–1859), who wrote music in every form, instrumental and vocal, and whose compositions were so popular in the earlier part of this century. He had, however, no appreciable influence on musical art, and has disfigured almost the

* We are not forgetting its enthusiastic reception on its first performance (at Vienna), but are speaking of the estimation in which it has been held since that time by the *majority*.

† Wagner acknowledges this freely, especially in reference to *Tannhäuser*, and calls Weber his 'first beloved model.'

whole of his works by an obstinate adherence to a chromatic mannerism. 'He never leaves a tone undivided if he can help it; never uses an essential note when he can put an altered one in its place.'

Franz Schubert, who was born when Beethoven was in his prime, and survived the great master by only a single year, was the musician *par excellence* of that revival of the Volkslied in Germany which took place towards the end of the last and the beginning of the present centuries. He has written numerous operas (many unfinished, few now known), much delightful pianoforte and chamber music, and several symphonies, as to which musicians now seem willing to endorse even the most enthusiastic verdict of Schumann; but his greatest works are his songs. It is owing to his genius primarily that *the song* has taken its present position as a work of art; and the attainment of this position by it 'marks an important step towards the ultimate amalgamation of poetry and music.'* Schubert was both bashful and indolent. He was neither remarkable as a performer on any instrument, nor as a conductor, and all these things combined to prevent his fame from spreading during his lifetime beyond a very limited circle. The music-publishers, too, evinced an unusually great reluctance to take up his songs, even after many of them were perfectly well known in Vienna drawing-rooms. They would not even purchase the *Erlking* itself, but left it to be published at the expense of some of his friends. Schubert was equally great in every form of song, whether he arranged the music in verses like the poem, or varied it throughout (as, for instance, in *The Wanderer*), to suit the words; or whether he wrote what Hueffer calls the 'declamatory song,' a highly poetic form, nearly approaching to that constantly used by Wagner. He lived only to the age of thirty-one, and was buried in Vienna, near the grave of Beethoven, his tombstone bearing the too true inscription (for his latest works were his finest)—'Rich in what he gave; richer in what he promised.'

Felix Mendelssohn-Bartholdy, the idol for so many years of Northern Europe, began to compose when Spohr's popularity was at its height. But the two could hardly exist together, and Mendelssohn's fresh and vigorous harmonies extinguished those of Spohr as daylight extinguishes a candle. He has left to us compositions in every branch of music except the dramatic, but probably his fame will ultimately rest in the main upon his oratorios. Here, he was no unworthy successor of Bach and Handel. He did not slavishly imitate their forms, but adapted them to the larger ideas of musical expression which had grown up since their time. The alternating recitative, aria, chorus, and so on, are found in *St Paul* and *Elijah*, as before: they are not here inconsistent with the highest development of the subject, as in the opera, but penitential confessions no longer are set to the principal subjects of lively fugues, nor does religious emotion express itself by a series of roulades. The composer's object has been to make *one whole* of the words and music together—the object of all the later German vocal and choral writers. Mendelssohn's orchestral works are familiar to all concert-goers in this country. It has been not untruly said of them that a certain lack of 'emotion, pathos, and tragical grandeur' may probably enough be due to the absence from the young composer's life of the trials and strugglings through which so many musicians have had to battle their way in life. The ever popular pianoforte *Songs without Words*, although not in themselves very remarkable, have yet done very important and useful work in familiarising the mass of people, whose position debars them from hearing orchestral music frequently, with poetic instrumental music, and so preparing the way for the appreciation of Schumann, and afterwards of the music-drama 'of the future.'

Before touching on this much-vexed question, there is one more musician to be mentioned, a man whose music has been most influential in forming public opinion in this country, and yet whose own position in reference to his art it is very difficult to define—Robert Schumann. Schumann was intended to be a lawyer; but after much entreaty, and after he had spent two years in pretending to study law at Leipsic and Heidelberg, his mother reluctantly consented to his giving himself up wholly to music. He was then twenty, and commenced studying the pianoforte with extra vigour, to make up for lost time. Had things gone on smoothly, he might have become a great pianist and musical critic, and nothing more; but fortunately for the world, he so injured the sinews of one of his fingers by the use of a mechanical apparatus he had devised for increasing the flexibility of his finger-joints, as to render it almost useless. Compelled to give up all thought of becoming a performer, he turned his attention in earnest to the study of harmony and composition, which until then he had disliked and neglected. His earlier compositions were all for the pianoforte. Some of them are now, happily, too well known to need description, but the rise of their popularity has been as recent as it has been rapid. His songs, although comparatively few in number, yet rival those of Schubert in poetic beauty. They were mostly written in the year of his marriage with Clara Wieck, 1840. His later and larger compositions consist of symphonies and chamber music; two cantatas, *Paradise and the Peri*, and the *Pilgrimage of the Rose*; one opera, *Genevieve*, a setting of Goethe's *Faust* and Byron's *Manfred*, &c. His choral compositions obtained foot-hold in this country first greatly through the exertions of Herr Manns of the Crystal Palace, a gentleman to whom, for this and other things, all lovers of music in England are deeply indebted. His symphonies, especially that in C, are wonderfully beautiful, both in subject-matter and in instrumentation. It is scarcely possible to understand how anything can ever have been said against them; but like so many other precious works, they had at first to withstand a shower of abusive adjectives from Philistine critics, of whom the majority have now found out the greatness of Schumann, and reserve their adjectives for Wagner; their capacity for giving any opinion whatever being precisely the same in both cases, and not easily discoverable in either. Much of Schumann's music is destined to be long and increasingly popular, yet when the history of the development of musical art in the 19th century comes to be written, it will probably be found that his great function has been the familiarising of

* Hueffer.

men's ears with that still more poetic music of which Wagner is the greatest exponent, and to which we must now turn.

THE MUSICAL DRAMA—WAGNER.

The great movement in favour of a more intimate connection between poetry and music with which the name of Richard Wagner is for ever indissolubly associated will, we believe, be looked upon by historians of music as the great glory of this century. Notwithstanding this, it is a movement which has excited both opposition and ridicule; the first mostly from those who could not or would not understand it, and the latter from the still larger class who *did* not understand it. Wagner is a writer and thinker as well as a musician, and has been the author of a number of books, in some of which he sets forth his own musical theories in no measured terms; while in others he extends his criticisms to political matters with equal dogmatism. In Germany it is probably these books, more than anything else, which have prejudiced so many musicians against him—for it must be acknowledged that he uses his pen in most unsparing fashion upon everything and everybody with whom he does not happen to agree. In England, however, this cannot have been the reason, for only two or three of his numerous works have been translated, and these only within the last two or three years; while, until the starting of the Wagner Society in London, his music was scarcely ever performed. It must be regretfully acknowledged, then, that the great mass of people who have thought it well in this country to sneer at the 'Music of the Future,'* have done so in absolute ignorance of what the thing was that they were criticising; ignorance so absolute as to be absurd sometimes, as when it has been gravely asserted that Wagner was wanting in melody, or that his orchestration was noisy!

It is of course impossible here to enter into the matter controversially; we can only give in a few sentences a summary of the leading ideas in Wagner's reform movement. Wagner takes Beethoven's ninth symphony (the choral) as his starting-point. Here, he says, the greatest of the world's musicians exhausted all the resources of his art; developed pure orchestral music to the highest point which it can reach; then having done all this, and being able to go no farther in the same direction, completed and crowned his work by combining poetry and music in the last, the choral, movement. The central idea of Wagner's reform grows out of this: he wishes to bring poetry and music into the closest connection—to make each one the exponent of the other—believing that each has been developed separately to the highest point which it can reach without union with its sister art. The spoken drama has long ago reached a perfection which may indeed be again reached, but which we cannot expect to see exceeded. The only hitherto existing musical drama, the opera, in which the music was everything, and the poetry nothing—where the librettist was compelled to torture his verses to make them fit the 'Procrustean bed of *aria*, *scena*, and *finale*,' the conventional forms in which alone the musicians chose to write—has shewn itself incapable of further progress, has indeed developed itself into *Robert* on the one side, and *La Grande Duchesse* on the other. Wagner wishes to combine poetry and music into what he has called the 'art-work of the future'—the *musical drama*. Here he would have first of all a poetic groundwork—a real drama in itself, and not a mere collection of jingling nonsense, which is only listened to for a moment because it is not understood. For the subject of this drama he chooses the *myth*, as that which is on every ground the most suitable. The verse must be such as is best adapted for musical declamation; and for this purpose, neither rhyme nor blank verse is well suited. Wagner adopts the old *alliterative* verse of the *Edda* in his later works, and, we think, with great success. Here, for instance, are a few lines from *Die Walküre* (the translation is from one printed for private circulation), which are sufficient to shew how well such verse can adopt itself to musical accents:

Was rechtes je ich rieth,
andern dünkte es arg;
was schlimm immer mir schien,
andre gahen ihm Gunst.
In Fehde fiel ich
wo ich mich fand;
Zorn traf mich
wohin ich zog;
gehrt ich nach Wonne,
weckt ich nur Weh';
drum muszt ich mich Wehwalt
nennen;
des Wehes waltet' ich nur.

The rule I counted right,
others reckoned for wrong;
the same deed I deemed false,
others found it was fair:
and war was with me
over the world;
rage rose on
every road;
prayed I to pleasure,
woe was awake;
I called myself Wehwalt therefore;
for woe was left me alone.

The music is to be neither more nor less important than the poetry, but to stand beside it, and to give to it its highest possible expression in the 'universal language' of sound. No conventional forms—no supposed necessity for solos, or duets, or concerted pieces—must stand in the way of this. This has proved a sad stumbling-block to Wagner's critics, who forthwith condemn him at once for 'want of melody.' Such a charge proves only in what a narrow sense that word has come to be used. By a strange contradiction, that music which contains one tune only, with nothing more than a rhythmic accompaniment, positively barbarous, is called *melodious;* while music in which every voice and every instrument is simultaneously singing its own beautiful song, is said to have 'no melody!' A beautiful simile of Wagner's gives some idea of the nature of the higher form of orchestral melody—it is as follows: A solitary visitor to a great forest upon a summer night leaves behind him the town noise, and 'overcome by the total impression, rests to collect his thoughts, and then, gradually straining the powers of his soul, distinguishes more and more clearly, as it were with new senses, the multitudinous forest voices. He hears songs such as he believes himself never to have heard before—multiplied they gain in strange power, louder and louder they grow; and however many voices or separate songs he hears, the overpowering clear swelling sound appears as the one great forest melody. . . . This melody will never cease to haunt him; but repeat or hum it he cannot; to hear it again, he must return to the woods on a summer night. Would it not be folly if he were to catch a sweet wood-bird, so as to train it at home to whistle a fragment of that great forest

* This epithet, 'in the sense of music that is ugly to us, but may possibly sound all right to our grandchildren, is a bugbear invented by an ingenious critic'—it does not come from Wagner or his friends, nor does it in any way indicate the drift of their wished-for reformation.

melody? And what would he hear if he succeeded? which melody?'*

It would be useless to attempt any description of Wagner's music; it must be *heard;* and it is a healthy sign that as yet neither the Verdi opera, nor the utterly bad opera bouffe of Offenbach and his followers, have taken very deep hold of our people; that whenever Wagner's music has been performed within the last few years—even though it has been shorn of all scenic accessories—it has been enthusiastically received. Wagner's greatest work, on the completion of which he is now occupied, is to be performed in 1875 at a special theatre erected for the purpose at Bayreuth in Bavaria. It is a gigantic music-drama, founded upon the old *Nibelungen-lied*, and is in the form of a trilogy, with an introductory evening, so that its performance will occupy four consecutive nights. It is only right to add, that the idea that Wagner considers himself to have produced *the* 'work of art of the future' is as unfounded as many other statements made about him. He hopes to have laid a foundation for others to build upon, but never asserts that he has perfected, as well as created, the musical drama.

THE TONIC SOL-FA SYSTEM.

It would be impossible to conclude a sketch of the history of music, however slight, without some allusion to the rise and progress of the Tonic Sol-fa method, a system which has done as much to popularise music in our own country during the last twenty years as had been done without it for the previous half-century. The central principle of this system is that of *key relationship*, that the relative position of the different notes in a scale to each other is precisely the same, no matter what the key-note of the scale may be. There is here nothing novel in itself: but in the working-out of the idea, and the development of a complete system founded upon it, there is much that is new, and of which the credit belongs to the Rev. John Curwen of London, who has lived to see the ideas which he originally taught to a small class of children become in a few years the means of bringing music within the reach of many hundred thousand of his fellow-countrymen.

The movement of which Mr Curwen is the head was at first the laughing-stock of musicians and newspaper critics, and it has made its way not only without any powerful or influential patronage, but in the teeth of the keenest opposition and ridicule, in a way which would have been impossible had the system not been founded upon an incontrovertible basis. Mr Curwen's Sol-fa *notation* has all along formed no unimportant part of his method. In it, the absolute pitch of a piece of music is determined by the name of the key in which it is to be sung being printed at its commencement. The notation itself is a purely *relative* one, each note being represented by the initial letter of its sol-fa name in the particular key in which the music is written.† The consequence is, that *the same phrase is always represented by the same signs*, no matter in what key it may be; and what is true of phrases is equally true of *chords*. The advantages of this scarcely need enlarging upon; and that they are practical, and not merely theoretical advantages, is shewn by the results.

It is in the National Schools, and among the middle classes, that the sol-fa movement has taken firmest hold, and it is this that has given it the national importance which it really possesses. *Over three hundred thousand* pupils pass through sol-fa classes every year, and of these it may be safely said that but a very small portion would otherwise have had any musical education whatever. The musical education of the majority of these pupils is no doubt limited, and it is also certain that in many cases the teachers themselves have more enthusiasm than knowledge, but the choice in these cases is not between a high and a low degree of culture, but between some culture and none at all. This being the case, we most heartily commend the sol-fa movement, as having been the means of giving the elements of musical knowledge to very large numbers of our people. It is strengthening and enlarging the foundations of the same edifice as that on which Beethoven worked, and to which even now the poetic school are striving to add new beauty. The different workers do not come in contact, do not even seem, at first sight, to have much in common, but none the less they are working for a common cause—the progress of musical art.

The sol-fa movement has been greatly helped, and its permanent usefulness much increased, by an elaborate system of graded certificates (to be obtained by examination) issued by the Tonic Sol-fa College. Of these, we see that nearly 130,000 have been issued since 1859. An immense mass of music, including Handel's and Mendelssohn's oratorios, and, in fact, all the standard choral works, is now published in Mr Curwen's notation, and there is also a sol-fa musical magazine issued fortnightly. The system has been adopted exclusively by the governments of New South Wales and Victoria, and also by the School-board of London. It is almost universally adopted in Wales; and in Scotland seems to have received the preference from most of the Boards that have interested themselves in music at all.

The following is a short list of books bearing upon the subject of this article which may be studied by those who wish to pursue the subject further: *Lectures on the History of Music* (two courses), by John Hullah (Longmans); *History of Music*, by Joseph Schlüter (Bentley). It will be seen that we disagree in some respects with the conclusions of these two writers, especially those of Dr Schlüter, who consistently rails at and misrepresents Wagner. *The Music of the Future*, by Wagner, translated by Edward Dannreuther (Schott & Co.). This pamphlet, in which Wagner gives his own ideas in a condensed form, is worthy of special attention. *Richard Wagner, his Tendencies and Theories*, by Edward Dannreuther (Augener & Co.). *The Music of the Future*, by Franz Hueffer (Chapman and Hall). This book contains criticisms on Wagner, Schumann, Schubert, Liszt, and Franz, and, although somewhat diffuse, is quite worth reading. *The Story of Tonic Sol-fa*, by J. Spencer Curwen (Tonic Sol-fa Agency).

* Dannreuther's translation of *The Music of the Future*, p. 48.

† The various details of this notation have been already described in the preceding number.

ARCHÆOLOGY.

ARCHÆOLOGY is the science which deduces the knowledge of ancient times from the study of ancient things. While History deals with the *records*, Archæology deals with the relics of bygone ages, and is thus in its methods and results akin to the sister science of Geology. By classifying and comparing the relics of man's existence, collected from drifts and turbaries, from caves and rock-shelters, from ancient dwellings and sepulchral deposits, it systematises the evidence which reveals to us the form and culture of the human life of the 'unrecorded ages.' Such questions as, how the people provided themselves with implements and weapons, with food and clothing, with dwellings and defensive structures; how they manifested their ideas of the life of the hereafter in the disposal of their dead; how the systems that grew up amongst them were modified by changing circumstances or by advancing intelligence; and how they were affected by contact or by conflict with alien races or religions—lie specially within the scope of its investigations. Thus occupying the whole field of prehistoric inquiry marked by the presence of man upon the earth, archæology begins by illustrating and supplementing the closing chapters of the *geologic record*, proceeds to unfold and decipher what is still decipherable of the unwritten history of the human race, and finally extends its aid to the historian, enabling him to complete and verify the scanty testimony of the earlier records.

RECENT ORIGIN OF THE SCIENCE.

The application of scientific methods to the study of the remains of the primitive periods is, however, of comparatively recent origin. Most of the writers of the last century have nothing better to tell of these relics than that they were regarded with unintelligent wonder or superstitious veneration. Flint arrow-heads, termed 'elf-bolts,' were

Fig. 1.—Arrow-heads of Flint:
a, Lozenge-shaped; *b*, Leaf-shaped; *c*, Barbed.

assigned to the fairies, and esteemed as charms against disease and misfortune of man and beast. Anselm Boetius, in his *History of Stones and Gems* (1609), figures five common varieties of the stone axe or 'celt,' and calls them the actual bolts or arrows of the lightning, adding, that should any one attempt to controvert this belief, he would be

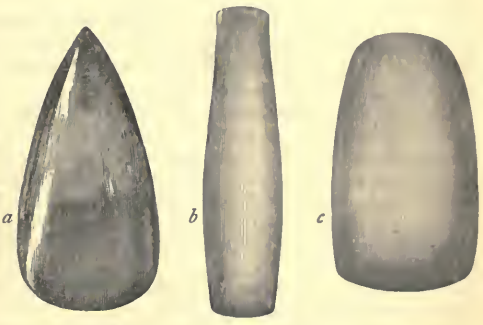


Fig. 2.—Polished Stone Axes or Celts.
a, 5½ inches; *b*, 13 inches; *c*, 5 inches long.

taken for a madman. Mercati, the physician to Clement VIII., at the end of the 16th century, was the first to maintain the view, that these so-called 'thunderbolts' were really the arms of a primitive people unacquainted with the use of metals.

Eccard, in his work on the *Origin and Manners of the Germans* (1750), was the first to announce the doctrine of the three Ages of Stone, Bronze, and Iron, and to shew that, as weapons of stone similar to those of the earliest times were still used among savages, they must have been common to all nations while yet ignorant of metallurgic arts. About the same time, Goguet, in his book on the *Origin of Laws and Sciences*, laid down the same rational basis for the prosecution of this inquiry. 'When I met,' he says, 'with an almost total absence of facts and historical monuments, particularly for the first ages, I consulted what the authors tell us of the customs of savage nations, for I judged that the habits of these people would furnish sure and correct information concerning the state of the first tribes.' But these men were far in advance of their age, and it is only of recent years that the wide and interesting field of inquiry they had thus indicated has begun to be cultivated.

It was reserved for M. Thomsen, the first conservator of the Royal Museum of Northern Antiquities at Copenhagen, to establish practically, as well as theoretically, the system of classification and induction which has since borne such prolific fruits. A thoroughly scientific method, and a practical classification, having been secured, the study made rapid progress.

CLASSIFICATION UNDER THREE AGES.

The chief result of the systematic prosecution of the study of archæology has been the general

adoption of a scheme of classification of the relics, illustrative of three distinct stages of culture, traceable in the progress of all civilised nations. The idea of the succession is:

1. There was a period for each given portion of Europe when the use of metals for cutting instruments was unknown, and man had to depend on stone, bone, and other readily accessible natural products, for his implements and weapons of the chase or war.

2. That this period was succeeded by one in which the use of copper or bronze (copper alloyed with tin) became known, and gradually superseded the use of stone.

3. That a time arrived when bronze, in its turn, gave way to iron or steel, as being a superior metal for all cutting purposes, and which, as such, has remained till the present day.

This classification, however, is not to be understood as implying any exact chronology. It is simply illustrative of successive stages of culture, or of progress towards the existing civilisation. Neither does it imply that all implements of stone are to be assigned to the Stone Age, or all implements of bronze to the Bronze Age; nor that the use of stone implements ceased on the introduction of bronze, or that those of bronze were at once superseded by those of iron.

Persistence of Forms.—As certain typical forms of animal life have been persistent through the long succession of the geological epochs, so certain typical forms of implements of stone have continued in use from the earliest human period until now. Speaking broadly, therefore, the Stone Age still continues, and thus includes the whole duration of the existence of humanity. While subject to fluctuations in respect of the areas over which it has manifested itself, and the grades of civilisation of which it has been characteristic, it has maintained its place in parallelism with the whole history of human progress, and co-existed in time not only with the lowest, but even with the highest civilisation of which humanity has shewn itself capable. It is thus obvious that, as the rates of progress have been very dissimilar among different sections of the human family, the Stone Age of one area may have been contemporaneous with the Bronze Age of another, and both of these with the Iron Age of a third. Hence, also, it follows, that unless we have some specialty of form, or some circumstance of association, to indicate the age of a particular implement of stone, it is almost impossible to say whether it belongs to the Stone Age of prehistoric times or not.

Theoretical Classification.—It is also evident that if we possessed the necessary criteria for their chronological arrangement, a theoretically perfect classification of the implements would present the following groups:

I. Stone Implements—*a*, of the Stone Age; *b*, of the Bronze Age; *c*, of the early Iron Age.

II. Bronze Implements—*a*, of the Bronze Age; *b*, of the early Iron Age.

III. Iron Implements—*a*, of the early Iron Age; *b*, of the later Iron Age.

Thus, each of the earlier groups overlaps the later, and gradually thins out, in consequence of displacement by the new material; but the minute and exact knowledge necessary for this detailed classification is not at present attainable.

Characteristics of the Ages.—In dealing with an unclassified deposit, in order to ascertain its relative chronological period, it is necessary to observe that each of these three ages, or stages of progress, is marked, not so much by the absence of the implements of the age which preceded it, as by the presence of its own special materials.

Fig. 3.—War-axes of Stone used in the Bronze Age:
a, Danish, 7 inches; *b*, English, 5 inches; *c*, Swedish, 8½ inches long.

For instance, the Bronze Age is determined by the presence of its own characteristic forms, and not by the absence of the stone axes and other implements of the previous age, which were in fact carried down into the Age of Bronze, and used until slowly displaced by the superior material.

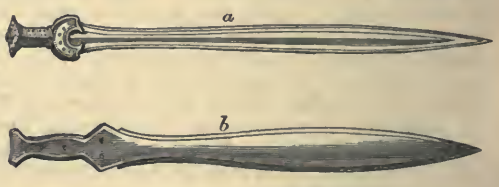


Fig. 4.—Bronze Swords:
a, Scandinavian, 36 inches; *b*, Scottish (Arthur's Seat), 26½ inches long.

Similarly, the Iron Age is not marked by the absence of bronze, or even of stone implements, both of which were continued down into it, and used for certain purposes long after iron and steel had become common. The early Iron Age, indeed, is remarkable for the richness and profu-

Fig. 5.
a and *b*, Flint Scraper, front and back, 4 inches; *c*, Flint Flake-knife, 3¼ inches long.

sion of its ornamental bronzes; and for commoner purposes, tools and weapons of iron and bronze were for a time contemporaneously in use. In fact, it was always easier to cast the implement

in bronze than to forge it in iron; and the early untempered sword of iron was actually an inferior weapon to the sword of bronze.

The characteristic implements of the Stone Age were the celt or imperforate axe of stone (fig. 2), the spear or arrow-points of flint (fig. 1), the scraper, and the knife. In the Bronze Age, perforated axes of stone (fig. 3), and flint arrow-points with some of the finer varieties of flint weapons, continued in use; but its characteristic

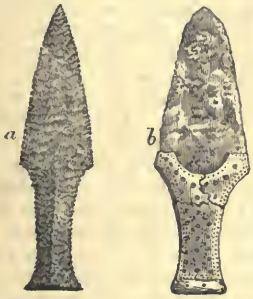


Fig. 6.—Knife-daggers:
a, Flint, 8½ inches; *b*, Bronze, 7½ inches long.

forms were the small, thin knife-dagger, the celt of bronze (fig. 7), a simple wedge of metal (moulded in the first instance obviously on the model of a celt of stone), the palstave or flanged celt, the

Fig. 7.—Celts of Bronze:
a, Flat; *b*, Flanged; *c*, Socketed.

socketed celt, socketed spearheads, always unbarbed (fig. 18), and leaf-shaped bronze swords (fig. 4). In the early Iron Age, swords, spears, and battle-axes of bronze, and certain varieties of implements of stone, were still used. The transition from bronze to iron is not only marked, as in the great cemetery at Hallstadt, by finding bronze and iron swords in graves, which are shewn by their accompanying remains to be of the same age; but still more clearly by the occurrence of iron swords which are exact copies of the older form in bronze, and swords with iron blades, but similarly handled in bronze to the ancient blades of that metal. The transition occurs in different countries at different periods. Greece had already entered on its Iron Period in the heroic ages, though the Homeric swords and spears were still of bronze. In Central Germany and France, the transitional swords appear with objects dating from the 5th to the 3d century before the Christian era. In Scandinavia, the Iron Age is reckoned as commencing about the beginning of the Christian era; and in Britain, it had commenced when Julius Cæsar landed his legions on our shores.

ANCIENT FLINT WORKING.

When men made use of stone as the material for their implements and weapons, their forms were of necessity few and simple. Flint was used by preference, on account of the facility with which it could be flaked and chipped to almost any desired form. As flint weapons are found everywhere, while flint itself only occurs naturally in chalk districts, it seems that there must have been in the earliest times a large dispersion either of the raw material or of the manufactured articles from the centres of production. In several localities in chalk districts, as at Brandon in Suffolk, the shafts and galleries of ancient flint mines have been discovered. They have been worked at a depth of 40 feet below the surface, and this at a time when the miners' tools were picks made of deer's horns and wedges of stone. In many districts, also, the sites of ancient 'flint factories,' or places where the surface-flints have been gathered and chipped into implements, are still recognisable by accumulations of chips and flakes, mingled with implements that have been broken or spoiled in the process of manufacture.

The ancient flint-workers of Europe must have employed some, and probably used all, of the processes still practised by modern savages in the fabrication of their stone implements. Catlin and Schoolcraft describe the methods in use among the North American Indians. They both agree in stating that the making of arrows was a work of skill, the employment of particular adepts, chiefly old men, who were past hunting. The arrow-maker, seating himself upon the ground, with a stone on his knee for an anvil, placed against it a flake of obsidian, and with a series of rapid and continuous blows of an agate pebble, held between the thumb and fingers of his right hand, he gradually worked it into shape, occupying about an hour in the process. The Apaches have a different method, which requires two workmen. One places the flake to be worked on the open palm of his left hand, holding it firmly down with two fingers, while with the other hand he places a small punch, made of the tooth of the sperm whale, against the part to be flaked. An assistant strikes the punch a smart rebounding blow with a mallet, driving a small chip off the under side of the flake, which is then turned and chipped from the opposite side, and so on till the desired form is obtained. The Indians of South California do the rougher flaking with a round-faced stone, and then notch the edges with a piece of horn, having a small narrow notch, as a glazier chips glass with a key. The Esquimaux use a tool consisting of a deer-horn point, inserted into a handle of fossil ivory, with which they apply strong pressure to the edges of the flake, which is laid across a small spoon-shaped cavity in a block of wood, thus producing arrow-heads with serrated edges.

CLASSIFICATION OF STONE IMPLEMENTS.

Stone implements and weapons, whether of ancient or modern times, may be classified in two great groups, according to the style of their manufacture, namely: (1) Those that are merely chipped into shape; (2) Those that, after the chipping process, have been either ground to a sharp

and smoothened edge, or completely polished. This classification, however, has no bearing on the chronological relations of the implements individually. Certain forms, such as the flint arrow and spear head, were never ground in any age, and the common form of 'celt,' or wedge-shaped stone axe, is almost universally polished when made of other materials than flint. When flint is the material, chipping is the rule, and polishing the exception. While it is true that the earliest implements are also the rudest, it does not by any means follow that the rudest are all of the earliest age. The utmost that we can say of any unpolished implement is, that the process of polishing has not been applied to it. By no method of examination can we extract from it the information whether the art of polishing was known or unknown at the time when it was made.

The Palæolithic and Neolithic Periods.—On the assumption that the art of chipping stone into shape must have preceded the art of grinding its edges and polishing its surface, it has been proposed to subdivide the Stone Age proper into two periods, supposed to have been characterised by these two styles, namely, the Palæolithic, or Older Stone Period; and the Neolithic, or Newer Stone Period. But, as has been already indicated, while this may be true of the *styles*, it cannot be applied to the individual implements. The absurdity which would result if it were so applied, may be shewn by a simple illustration. On the reasonable assumption, that dry-built walling preceded the art of cementing, we may subdivide the structural period of human history into: (1) The Palæolithic Period—uncemented structures; (2) The Neolithic Period—cemented structures. But if we now proceed to arrange the structures themselves under these two classes, we shall have to place in the class representing the Palæolithic period all the recent dry-stone dikes in the country. And this is exactly the mistake we should commit if we were to pronounce any specimen of a stone implement 'Palæolithic,' because it is unground and unpolished. Mere rudeness or style of finish is in itself no certain indication of the age of an implement.

Association the Test of Antiquity.—It is only when we proceed to apply the test of *association* to the implements of different types, that we obtain definite results as to their relative antiquity. Thus we find, by collating a long series of observations, that the implements imbedded in the river-drifts of England and France are exclusively of the rude unpolished types, and that they are associated with the bones of animals that are now wholly extinct. We also find that the implements from the caves of England, France, and Belgium are for the most part of types similar to those found in the drifts, though accompanied by forms of finer finish, and that they are associated with rare instances of the extinct animals, but with abundant remains of others, which, though not extinct, had wholly disappeared from these countries long before the dawn of the historic period. Again, we find that the implements recovered from the barrows, cairns, and other sepulchral deposits, from the upper strata of the caves, and from sites of ancient dwellings, encampments, and sea-side resorts of prehistoric times, while not always of the more highly finished types, are yet, for the most part, ground or polished, and are never associated with remains of extinct animals, but always with those of the domestic or wild species still inhabiting the country. Thus, we have the palæolithic types of rude implements associated with extinct animals exclusively, and the neolithic types exclusively associated with animals that are still existing.

THE RIVER-DRIFT PERIOD.

Implements.—In examining the characteristics of the implements from the river-drifts, the most noticeable is their extreme rudeness, rendering it difficult at first to recognise them as really the work of human hands. Yet of most of them it may be truly said, in the words of Professor Ramsay, that 'they are as clearly works of art as any Sheffield whittle.' It is noticeable also that we find among them no such forms as those which are so common in the surface 'finds,' or in the later cave-deposits—no arrow-heads, very few of the long, ridged flakes, and but few even that seem well adapted for spear-points. The commonest forms are: (1) A roughly chipped elongated or tongue-shaped implement, with an irregularly rounded butt, and tapering more or less sharply and regularly to a point; (2) A flattish discoid or ovate form, usually with an irregular edge all round, though sometimes edged only on one side. Ten or a dozen sub-varieties have been made out of these two, but it is perhaps easier to describe than to identify them.

Fig. 8.
a, Tongue-shaped Implement, 6½ inches; *b*, Ovate Implement, 6 inches long.

Generally speaking, these implements are so clumsily shaped that it is difficult to imagine any kind of useful purpose for them. Mr Evans has suggested 'piercing, digging, or boring' for the tongue-shaped, and cutting or scraping for the discoid variety. Some shew obscure signs of use of some kind on their edges, but none of them exhibit any indications of having been intended to be fixed in handles.

These implements occur in the gravels of the valleys of the Great and Little Ouse, the Waveney, the Thames, the Medway, the Itchen, the Test, and the Avon, in England. They have not been found farther north than the Ouse in Yorkshire, or farther west than the Avon in Wiltshire. In France, they occur most abundantly in the valleys of the Somme, the Oise, and the Seine.

Antiquity.—In estimating their antiquity, we are met by the difficulty (which is peculiar to the implements of the drift), that they are not found in

association either with the remains of man himself, or with any other relics of his handiwork. In the Valley of the Somme, they are found in a band of gravel lying some 200 feet above the present river-bed. At the time when this gravel was deposited, the river must have flowed at a level of 200 feet above its present bed. Hence the time required for the Somme to excavate its 'valley of erosion' 200 feet vertically, is the measure of the antiquity of the implements. It has been attempted to calculate the time required for the river to make this excavation of its bed, by estimating the present rate of erosion; but the erosive power of a river is dependent on so many circumstances of torrential action, varying level, and distribution of the volume of water discharged from a given drainage area, that all such calculations are illusory.

Association.—On the other hand, the implements undoubtedly occur in true geological association with remains of the mammoth (*Elephas primigenius*), the woolly-haired rhinoceros (*Rhin. tichorinus*), the hippopotamus (*Hip. major*), and other animals now wholly extinct. We have no means of ascertaining the mode, or the period, of the extinction of these great mammals and their co-existing *feræ naturæ*, still less of estimating how long they may have been the contemporaries of man. It has been argued that the presence of the mammoth and the woolly-haired rhinoceros indicates a much colder climate than that now prevailing in England; but, on the same grounds, it might with equal fairness be argued that the presence of the hippopotamus indicates not only a warmer climate, but a much greater body of water in our English rivers, and consequently greater and more rapid erosion. Whatever the climatic conditions of the river-drift period may have been, it is evident that they were not so unfavourable as to prevent an abundance of animal life, or to stint the supply of vegetable food; while it is equally evident, from the character of the gravels of the different valleys, that the watersheds and the general configuration of the surface were the same as now—in other words, that no great geological changes have taken place in these areas since man and the mammoth were their contemporary inhabitants.

Antiquity of Man.—In dealing with a question so unproductive of definite results as 'the antiquity of man,' the attempt to substitute an absolute for a relative chronology is not only futile, but hostile to the best interests of science. In all such speculations there is a strong tendency to state mere theories as if they were ascertained and unchallengeable facts, and to deal with the 'ages' as if they were periods of time of practically unlimited, because of unknown duration. Thus it becomes possible to speculate regarding the existence of man in the glacial epoch of the geologist, and to deduce a chronology of the human period from the precession of the equinoxes. But till the glacial drifts themselves yield evidence of the existence of man, either in the shape of his bones or his implements, we may truly say of these rude implements of the river-drifts, that they are the oldest relics of man upon the earth, although we may never be able to say what is their age in years or centuries. In the meantime, we are unable to correlate them with the dwellings or the graves, or indeed with any other relics whatsoever of the men who made them; and, until the missing links are found which shall connect them with the rest of the prehistoric series, they must stand apart, undetermined even as to their relative antiquity, if their analogy with some of the cave types be not held to link them with that series.

The method most convenient for a general survey of the remains of prehistoric times, necessarily brief and rapid, is to divide them into two groups, the one illustrative of the habits and circumstances of life, and the other, of the sepulchral usages characteristic of different periods. The first group will thus include the dwellings and defensive structures; and the second, the sepulchral remains of the Stone, Bronze, and Iron periods respectively.

CAVE-DWELLINGS.

The earliest habitations of men hitherto discovered are subterranean caverns, which the human occupants in some cases appear to have tenanted alternately with the wild beasts. A series of such caverns in the Valley of the Vézère, in the department of Dordogne, France, which have been systematically explored and described by Messrs Lartet and Christy, afford the best materials for a brief summary of the facts relating to the early cave-dwellers of the south of France.

These caves and rock-shelters are grouped within a range of five miles along both banks of the Vézère, which flows through a deep and narrow valley, flanked by precipitous cliffs, hollowed into caves and recesses by the unequal weathering and decay of the soft calcareous rock. The principal caves are those of Le Moustier, Gorge d'Enfer, and Les Eyzies. Besides these, there are the rock-shelters of La Madelaine, Lower and Upper Laugerie, and Cro Magnon, which are not caves in the ordinary acceptation of the term, but simple recesses in the face of the cliff. Le Moustier is at an elevation of 90 feet above the river, while some of the others are still within reach of very high floods.

Contents.—In every case, the original floor of the cavern is covered with a deposit of the refuse of the food, the waste of the manufacture of stone implements, and lost or rejected implements themselves, accumulated during a lengthened period of human occupancy. 'These deposits,' say the authors of the magnificent work devoted to their illustration,* 'consist usually of accumulations of broken bones; various-sized pebbles of stone extraneous to the local formation, and collected from the river-bed; nodules of flint from which flakes have been struck; innumerable fragments or chips detached in the first dressings of these cores; and countless thousands of blades of flint, varying in size from lance-heads long enough and stout enough to have been used against the largest animals, down to lancets no longer than the blade of a penknife, and piercing instruments of the size of the smallest bodkin. These remains are usually intermixed with charcoal in dust and in small fragments, and extend to a depth, in some cases of eight to ten feet, and a length of sixty to seventy feet. Besides these, there have been found a multitude of implements formed of bone

* *Reliquiæ Aquitanicæ.* By Edouard Lartet and Henry Christy. London, 1865–74, in 4to.

or deer-horn, and equally proved to have been made there, by the presence of the remnants of the bones and horns from which they had been sawn, and by numbers of the implements themselves being in an unfinished state. They consist of square chisel-shaped implements; round, sharp-pointed, awl-like tools, some of which may also have served as the spikes of fish-hooks; harpoon-

Fig. 9.—Barbed Bone Harpoon, 3½ inches long.

shaped lance-heads, plain or barbed; arrow-heads with many, and sometimes double barbs, cut with wonderful vigour; and, lastly, eyed needles of

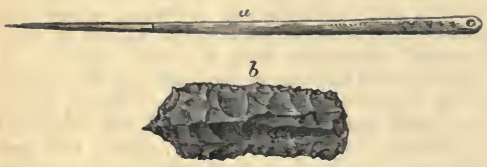


Fig. 10.
a, Needle of Bone, 3 inches; *b*, Eyeborer of Flint, 2 inches long.

compact bone, finely pointed, polished, and drilled, with round eyes so small and regular that some of the most assured and acute believers in all other findings might well doubt whether, indeed, they could have been drilled with stone, until their actual repetition by the very stone implements found with them, dispelled their doubts.'

Relative Ages.—Differences are detected in the character of the remains from the different caves of this valley, which are thought to imply that they are not all of the same age. The French savants have divided the whole period represented by their occupation into four 'Ages,' but it may be doubted whether this large generalisation from the remains in such a limited locality is fairly warranted.

Thus, the progress of the civilisation of the caves is sought to be traced, through a series of ages, from the completely uncivilised troglodytes of Le Moustier, who had few or no implements beyond the rudest types in flint, to the more advanced inhabitants of La Madelaine and Les Eyzies, who had not only arrived at great perfection in the manufacture of their implements of flint, but had attained to an important evolution in industry, in the application of their flint tools to the fabrication of other tools of bone, and had also developed an artistic taste, which led them to lavish their labour in the production of ornamental designs.

Peculiar Characteristics.—Three striking peculiarities are specially observable in the group of implements from these French caves: First, the entire absence of implements of polished stone; second, the extreme neatness of form and finish, and the adaptive ingenuity displayed in the implements of bone; and third, the extraordinary faculty which the cave-dwellers have manifested in their carvings and etchings, or engravings on bone. These engravings and carvings are not peculiar to the French caves, but they have been discovered in great numbers since their first

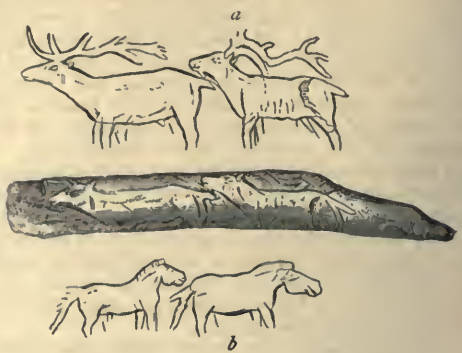


Fig. 11.—Baton of Deer-horn, with Figures of Animals.
a, Reindeer, on obverse; *b*, Horses, on reverse side.

appearance excited a new sensation in the archæological world. The catalogue now includes representations in bone or deer-horn of almost all the animals whose remains are found in the caves,

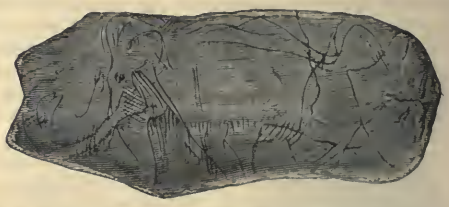


Fig. 12.—Piece of Fossil Ivory, 10 inches long, with engraved Figure of Mammoth.

including, of animals now extinct, the mammoth, reindeer, cave-lion, cave-bear, and aurochs; and of existing species, the stag, the horse, the goat, birds, fishes, and reptiles. Nor is the list limited to the portrayal of the lower orders of creation. Representations of 'the human form divine,' as it is supposed to have manifested itself in the 'age of the mammoth and reindeer,' are not wanting. And it is hard, indeed, to understand how the man endowed with the active mind in which the conception originated, the observant eye which caught the pose and contour of the figure, and the capable hand which not only executed the carving with really artistic grace and spirit, but extemporised the graving tools from the materials immediately at command, should have been incapable of taking the one single step which divides the rudest from the most advanced type of stone implements.

Grade of Civilisation.—Disregarding this manifestation of a certain degree of artistic skill as a feature occasionally exhibited by savage races, the grade of civilisation and social condition of these cave-dwellers seems not without a parallel at the present day. In a *Description of the Nations of the Empire of Russia*, published at St Petersburg in 1776, the tribes of the Tchouktches, who occupy the most easterly promontory of Siberia, lying between the Northern Ocean and the Pacific, are described as living in communities, sometimes comprising a hundred individuals, in underground

houses or in caverns in the rocks, having no implements of metal, but using knives of stone and awls of pointed bone. They had no pottery, and their household utensils were made of wood or leather, their arms were the bow and arrow, and javelins headed with pointed bone. Their women dressed the skins of animals killed in the chase, and sewed them into garments with needles of bone. They knew neither letters, nor writing, nor chronology, and had no traditions of their tribal history. They had no domestic animal except the dog, and one peculiar variety of their food, of which they made great use, was a soup prepared from broken bones. Judging from the evidence afforded by the caves of the Valley of the Vézère, every one of these traits must have had its parallel among their occupants in the early ages.

A large number of ossiferous caverns have been explored in other parts of France, and in Belgium, Switzerland, and Savoy, which have for the most part yielded similar results.

Kent's Cavern, in Devonshire,* which was for a number of years systematically worked by Mr Pengelly, has yielded evidence that in this country the earlier cave-dwellers were contemporary with the same group of extinct animals as in France, and the implements obtained from it are strikingly similar in type to those obtained in such abundance from the French caves. The Brixham Cave, near Torquay; the Hyena Den of Wookey, near Wells; King Arthur's Cave, in Herefordshire, and several others both in England and Wales, also belong to this earliest series.

On the other hand, the ossiferous caverns of Scotland have neither yielded remains of extinct animals nor implements of the stone period. The most remarkable of these, at Borness, Kirkcudbrightshire, has yielded a group of implements similar to those from the Settle caves in England, which are assigned to the Romano-British period.

That the first occupation of these ossiferous caverns was within the period represented by the river-drift implements, is obvious from the fact that a large proportion of the cave-implements are of drift types. The animal remains associated with both these groups of implements are also to a certain extent the same. It is customary, however, to discriminate between the two periods, and to speak of that represented by the drift as the period of the Mammoth, and that of the caves as the period of the Reindeer. This distinction, however, does not necessarily imply an absolute chronological sequence; in fact, it rather seems that we must regard the implements of the drift and those of the caves as at least partially contemporaneous.

Antiquity.—What measure of antiquity is implied in the presence of the extinct animals, and the absence of the domesticated species (which are characteristic of the later prehistoric times), we have no means of determining. It has been attempted to be estimated by calculating the rate of accumulation of the stalagmitic layers under which the earliest cave-deposits are found. But we are warned, on the authority of Mr Evans (himself an able geologist, as well as an accomplished advocate of the antiquity of man), that 'the rate of deposit of stalagmitic matter varies so much with different conditions, that its thickness affords no true criterion of the length of time during which it has accumulated.' On the other hand, the Brown Bear (*Ursus arctos*), which in the earlier caverns is contemporary with the mammoth and other extinct animals, occurs in the Settle Cave in the Romano-Celtic layer; and Mr Boyd Dawkins states that it was undoubtedly living in this country during the Roman occupation; while M. Dupont affirms that it existed in Belgium till the 10th century. It is recorded in the *Orkneyinga Saga* (written about 1225 A.D.) that the reindeer—also a contemporary of the mammoth, and the characteristic animal of the cave-period—was hunted by the earls of Orkney in their dominion of Caithness in the middle of the 12th century. Its remains, which are found in the refuse-heaps of the 'Pictish towers' or burgs of Caithness and Sutherland, attest the truth of the record. If, therefore, we have two of the group of the extinct animals of the caves surviving to historic times, we cannot deny the possibility of the survival of their earlier contemporaries to a time much nearer the historic period than is usually assigned to them. Nevertheless, these caves remain, as we have said, the earliest habitations of man in Europe of which we have any knowledge.

It would be wrong, however, to suppose that all deposits found in caves are necessarily of this primitive period. The habit of cave-dwelling is neither exclusively prehistoric, nor peculiarly characteristic of a period marked by a low type of civilisation. In almost every age of human history, hermits, banditti, and outlaws have adopted it from choice; or kings, princes, and persecuted men have been driven to it from necessity. In this very district of Perigord, in France, where the early cave-dwellers have left such abundant traces of their existence in the reindeer period, there are caves of medieval occupation; and the habit of burrowing in the rocks is not entirely abandoned in the Valley of the Vézère at the present day. In the neighbourhood of Chartres, in the very centre of France, according to Mr Barnwell, there are many thousands of human beings still living in dwellings in the rocks. Nor is the habit quite extinct in Scotland. The writer is familiar with two natural caves in the Bay of Wick, which have been inhabited for many years by five or six families of gipsies, and the parish registers bear entries in recent years of births and deaths (they do not register their marriages) occurring in caves.

We learn from the life of St Kentigern and other sources, that the clerics of the early Scottish church were in the habit of retiring to caves and solitary places, which they termed *deserta*, for religious meditation and seclusion from the world. The name Dysart, in Fife, still commemorates the *desertum* of St Serf, where he encountered the devil in his cave, and worsted him, as Wyntoun tells. So St Adrian and his followers occupied the caves at Caiplie, Wemyss, and St Monance; and the wide-spread nature of the custom is attested by the occurrence of caves traditionally connected with the early leaders of the Scottish Church on many other parts of the coast. The caves themselves tell of the vigils of the clerics or their followers, by the innumerable crosses and

* An account of the excavation of Kent's Cavern is given in the tract entitled 'The Ancient Cave-men of Devonshire,' forming No. 76 of Chambers's *Miscellany*.

curious symbols carved on their rocky sides. But what is still more suggestive, is the fact, that the refuse-heaps in them are indistinguishable in their character and contents from those of other caves assumed to belong entirely to prehistoric times.

COAST-STATIONS OR KITCHEN-MIDDENS—DENMARK.

In early times, before men had permanently settled themselves in circumscribed localities, to prosecute the cultivation of the soil, there were certain stations or camping-grounds which they frequented, with a view to their convenient access to natural supplies of food. In Denmark, especially, this was the case with the early population, who frequented stations on the sea-shore, where they lived on the produce of both sea and land. No vestiges of their dwellings remain. Their huts seem to have been of the frailest description ; but the refuse-heaps which have been accumulated around them are often of vast extent. These refuse-heaps, or kitchen-middens, as they have been termed by the Danish antiquaries, are similar to those of the caves, in so far as they are accumulations of the refuse of the daily food of the people, mingled with their broken tools and the waste refuse of their manufacture. But they contain no bones of the extinct animals, and the group of tools and implements is altogether of different types from those of the caves.

The characteristic implement of the Danish kitchen-middens is a rudely chipped and wedge-shaped flint axe, with a thick and often square-ended butt. They are usually flatter on one side than the other, and the cutting edge is formed by a plane meeting the flat side at a considerable angle. In this respect, they are more adze-like than axe-like ; but no indication of the way in which they have been hafted has been discovered. Flakes of large size, sometimes six or eight inches in length, are abundant, and scrapers and boring-tools are common. Only one or two fragments of polished implements have been found.

The animal remains of the Danish kitchen-middens indicate the existence of the stag, the roe-deer, and the wild boar, the great wild ox or urus, the bear, the wolf, the fox, the marten, the beaver and otter, the lynx and wild cat, and shew that the people used the flesh, the skin, and other products of all these creatures. They had also domesticated the dog, using it, probably, to assist them in the chase ; but there is no indication of any other domestic animal, and no sign of a knowledge of agriculture.

Their grade of civilisation and social condition seems to have resembled that of the Fuegians, who frequent particular stations on the sea-shore, subsisting entirely on shell-fish and the products of their hunting and fishing, having no knowledge of agriculture, and no domestic animal except the dog, constructing their huts of branches, and their weapons of stone or bone, while their scanty clothing is made from the skins of the animals they kill.

Antiquity.—With regard to the antiquity of the shell-mounds of Denmark, it is agreed that they are the sites of the most ancient habitations known in that country ; but opinions differ as to their place in relation to its other antiquities. Professor Steenstrup sees no good reason to regard them as necessarily older than the polished stone weapons of the dolmens or great stone sepulchres. As the people who accumulated these mounds were able to hunt and kill the bear, the seal, and the urus, they must have been possessed of better weapons than those found in their refuse-heaps, which may have been implements for other purposes than those of the chase or of war. In the dolmens, we have the tombs of chiefs, and the relics of the richest and greatest of the time ; while in the kitchen-middens we have only the refuse of the domestic life of the poor. We do not expect to meet with the most precious of a man's personal possessions among the casual refuse of his daily domestic life ; but we know that it was the custom to bury with him his most costly belongings, and chief among these have always been his weapons of war. We do not know how, or where, the people of the shell-mounds buried their dead ; and though the rude axes of these mounds are not found in the dolmens, nor the polished weapons of the dolmens in the shell-mounds, there is nothing to forbid the supposition that they may have been contemporary.

These coast-stations of early times, marked by great accumulations of food-refuse, are not confined to Denmark ; they occur also on the coasts of Norway, France, and Britain. In Scotland, they are found at the mouth of the Ythan, in Aberdeenshire, and in several places along the coast of Morayshire and Caithness. Rude pottery, pins and needles of bone and bronze, and relics indicating occupation in comparatively recent times, are found in them. In point of fact, the kitchen-midden is a thing of all ages, and these refuse heaps must be judged like the caves—each on its own internal evidence of antiquity.

Shell-mounds, as well as caves, have had their ecclesiastical connections. On the west coast of Galway, there is a large shell-mound which is yet in process of formation, and is yearly being added to by the pilgrims to St Columbkille's Well. Similar mounds are found in connection with early ecclesiastical sites in the north of Scotland, of which that at Keiss, in Caithness, is a noteworthy example. It extends for twenty or thirty yards, and is over six feet in depth, consisting principally of periwinkle and limpet shells, largely mixed with splintered bones of the domestic animals, bone pins, and fragments of coarse pottery, resembling the 'crogans,' or hand-made jars of the Hebrides—a species of domestic pottery which has not yet gone altogether out of use in Scotland.

PILE-DWELLINGS—SWITZERLAND.

It is difficult for us to realise the conditions of life under which communities of men have been induced to forsake the land, and rear the laboriously constructed pile-dwellings which are the peculiar features of the Swiss lakes. Whatever may have been the reason of this preference of the water to the land, it seems that the habit, when once formed, was not easily eradicated. Notwithstanding that many of the Swiss pile-settlements seem to have been destroyed over and over again, they were as often rebuilt ; and the system of semi-aquatic residence was continued through the ages of Stone, Bronze, and Iron down to the Roman period in Switzerland, and probably

at least till the commencement of the Christian era. Herodotus, in the sixth century B.C., describes a Thracian tribe on the borders of the Lake Prasias as living in communities on pile-dwellings constructed in the lake; and the fishermen on the same lake still live in houses similarly constructed. Pile-dwellings or villages are described by travellers as existing among the savage tribes of New Guinea, Celebes, the Caroline Islands, and Borneo, as well as in Africa and America.

Construction.—The lake villages of Switzerland were reared on platforms of wood, supported on piles driven into the bottom at no great distance from the shore. Sometimes mounds of stones were sunk between and around the piles, to add stability to the structure; and in other cases the platform rests on a basis of fascines, built up from the bottom, and strengthened by piles driven through it. The huts were of wattled twigs, coated both on the inside and on the outside with clay. They were rectangular in form, thus differing from the early habitations reared on land, which were always circular. The floor was spread with clay, and in the centre of each hut was a hearth of slabs of stone.

Underneath and around these pile-dwellings there occurs in the bed of the lake an accumulation of the refuse of the food of the inhabitants, mingled with the waste of their daily life—their broken and lost tools, and household utensils. These submerged 'middens' have been diligently dredged up by the Swiss antiquaries, and have yielded materials for a pretty full history of the civilisation of the lake-dwellers.

Implements.—The stone implements obtained from the Swiss lakes are characterised by certain peculiarities which render them easily recognisable as a group. The hatchets or celts are mostly of small size, and rarely of flint, which is not found abundantly, or in blocks of any size, in Switzerland. The principal material is a tough, bluish-green sandstone. Many are of a fine jade-like stone, which does not seem to be true nephrite, however, but is derived in all probability from the silicious veins of the local serpentine. The hatchets are usually wedge-shaped, or chisel-

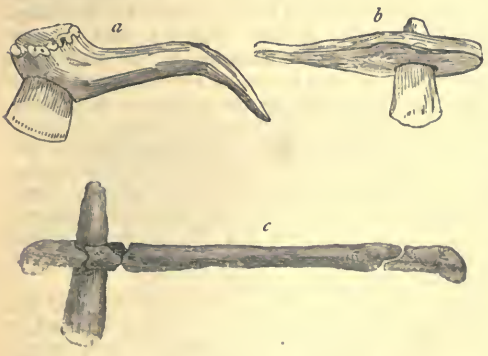


Fig. 13.—Hafted Stone Axes or Celts.

a, hafted in deer-horn; *b*, hafted in wood (Swiss lakes); *c*, in wooden handle (Solway Moss).

shaped, and vary in length from eight inches to tiny things of an inch long, by little more than half an inch broad. As the material of which they are made does not flake like flint, the process of manufacture was as follows. A boulder of the requisite size was selected, and sawn partially through on opposite sides with a flint saw, used with sand and water. It was then broken in two by a blow, and the hatchet was ground into shape upon a grinding slab of sandstone. When finished, the axe-head was hafted either in stag's-horn or wood, or it was fixed in a short socketed handle of stag's-horn, and used as a chisel. Hafted stone axes, however, are extremely rare. A few have been found in the lake-dwellings. Solitary instances occur in England and Scotland. The Scottish example, which was found in the Solway Moss, is shewn (fig. 13), for comparison with the Swiss mode of hafting. Flat bronze celts were hafted like those of stone; while flanged and socketed celts of bronze were hafted on bent branches, in the manner here shewn.

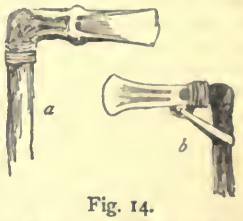


Fig. 14.

a, Flanged Bronze Celt, hafted; *b*, Socketed Bronze Celt, hafted.

Arrow-heads, knives, saws, borers, and scrapers of flint are also common. The arrow-heads are mostly furnished with barbs, and a tang for insertion in the shaft. Bows of yew-wood have been found at Robenhausen, and in one case a flint arrow-head was still attached to the shaft with bitumen, and bound round with cord. Javelin-heads, neatly chipped, and of larger size than the arrow-heads, are not uncommon. The knives and saws were formed of long thin flakes, neatly worked, and inserted into wooden handles, in which the back of the implement was fixed longitudinally.

The tools of bone are chiefly pointed implements made of the bones of the red-deer, roe-deer, and other animals, even of birds. They are found in large numbers, and of a great variety of shapes. A few bone arrow-heads have been found with the bitumen still remaining by which they were affixed to the shaft. Needles, bodkins, awls, piercers, fish-hooks, and a small variety of barbed harpoons, probably for spearing fish, are among the commoner varieties of implements of bone.

Spindle-whorls of clay or stone, and clay loom-weights, are abundant, and flax is found in all stages of manufacture, from the unworked stems, with the seed-capsules still on them, to specimens of plaited or woven cloth. At Wangen, the flax was found in certain well-defined spaces in the different stages of manufacture—in the raw state,

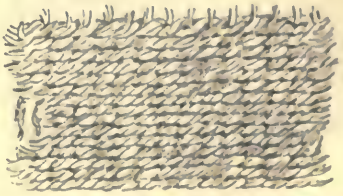


Fig. 15.—Woven Fabric of Flax (Robenhausen).

in bundles or 'heads,' in clews of thread, and plaits of cloth—indicating that there were special workshops for the manufacture. At Robenhausen,

again, six huts were found, in each of which there was a stone corn-crusher or mealing-stone, a quantity of corn, a store of raw flax, clay loom-weights, and woven cloth, indicating the domestic industry of the several families.

Civilisation.—Thus the lake-dwellers of Switzerland present a condition of civilisation greatly in advance of the people of 'the kitchen-midden period' of Denmark. The construction of their pile-dwellings not only implies great labour, but a large amount of social organisation and concerted effort, as well as individual ingenuity in the construction and use of such rude tools and appliances as were then at the workman's command. They were not only expert hunters and fishers, but also agriculturists and stock-keepers in the earliest stage in which we know them. Even in the oldest settlements, the bones of the cow, the sheep, the goat, and the pig, are found abundantly among the refuse of the people's food, as well as bones of fishes and animals of the chase. In every lake-dwelling there were corn-crushers and rubbing-stones for bruising grain—nay, the carbonised fragments of their bread itself are found among the remains of those settlements that have been destroyed by fire. Though their implements of husbandry must have been of the rudest and simplest construction, they seem to have arrived at a high degree of skill in agriculture compared with their advancement in other arts. They cultivated wheat and barley (of which they had several varieties), millet and flax. They gathered and stored up for winter use large quantities of apples and nuts. Their diet was thus partly of animal food and partly of vegetable materials, among which corn-meal held the chief place, and fish and milk must have been abundant with them. Their clothing was probably partly of skins and partly of flax, which they spun into threads, plaited into mats, and wove into textile fabrics of various kinds. They also made ropes and lines of *bast*, or twisted fibres of various plants, and fishing-hooks of boars' tusks. Their domestic utensils were scooped out of wood, or fashioned by hand of prepared clay; and though rude in form, and rudely ornamented with the finger-nail, as shewn in the accompanying wood-cut, their vessels of domestic pottery were well baked and serviceable utensils.

Fig. 16.—Fragment of Ornamented Pottery (Robenhausen).

Antiquity.—It seems probable that isolation rather than absolute antiquity may be the explanation of this singular conjunction of an exceptionally high degree of advancement in other arts, with the exclusive use of implements of stone and bone for all the ordinary purposes of life. Dr Keller, speaking of the probable antiquity of the settlements of the Stone Age in the Swiss lakes, says, that 'with respect to their age we have not a single safe datum to guide our determination, so that it is quite impossible, with any probability, to decide even approximately the century or centuries when they existed.' Yet even granting some degree of uncertainty as to the flint and stone implements (for they lasted in some cases through several periods), he concludes that we must ascribe to them a very high antiquity, though the age in which he ventures to place them is one 'when iron and bronze had been long known, but had not come into our districts in such plenty as to be used for the common purposes of household life, and at a time when amber had already taken its place as an ornament, and had become an object of traffic.'

Occupation to Historic Times.—Perhaps the most interesting circumstance connected with the lake-dwellings of Switzerland is the fact that, originating in the Stone Age of the people, they continued to be occupied throughout the typical three stages of their advancement; and there is indubitable proof that they were still used when the inhabitants of Switzerland were known in history as the Helvetii, and were actually under the Roman rule.

Lake-dwellings of the Bronze Age.—The lake-dwellings of the age of Bronze do not differ materially in construction from those of the age of Stone. They are, however, placed farther from the shore, and the piles are smaller and more numerous. The pottery is much more abundant, better made, and of more varied and elegant forms. The tools were of cast bronze, consisting of flanged and socketed celts or axes; palstaves; long heavy knives with thick backs and gracefully curved blades; socketed chisels; scythes or sickles; and wide thin blades of bronze with a notch in the back, which are evidently for the same purpose as those called 'razors' of the Age of Iron. The weapons are swords of cast bronze, of the graceful leaf-shape, with bronze hilts adorned with a double volute, riveted to the blade; spear-heads with hollow sockets; and arrow-heads with tangs for insertion in the shaft. A great variety of pins, bracelets, ear-rings and neck-rings of bronze, testify to the existence of a cultivated taste, which lavished a profusion of ornament, not only on objects of personal attire, but even on such articles as knives and reaping-hooks. The presence of moulds for casting these articles shews that the bronze was manufactured on the spot, although the tin, at least, which enters into its composition must necessarily have been obtained by commerce.

Of the Iron Age.—In the lake-dwellings of the Iron Age, though bronze was still largely used, it was different in composition, and differently manufactured. In the Bronze Age proper, the objects are all cast. In the Iron Age, the bronze was worked as well as cast, and beaten and embossed patterns are used, as well as those that are produced in the mould or dug out in the solid metal by the graver. Lead was not present in the bronzes of the Bronze Age except as an accidental

impurity. It was only in the Iron Age that lead and silver came to be generally used. The presence 'of lead in bronzes,' says Morlot, 'in such proportions as to denote that it has been designedly introduced, seems a sufficient criterion for recognising these alloys as proceeding from civilised populations, and not from those of the Age of Bronze.' All the bronzes containing zinc also pertain to later times, and were unknown in the Age of Bronze, properly so called. The arms of the lake-dwellings of the Iron Age consist principally of long, slightly tapering, double-edged swords of iron, obtusely pointed. The centre of the blade is always composed of very fibrous iron (which appears in wavy lines, giving it the appearance of a damascened blade), while the edges are strips of soft iron welded on. The sheaths were of bronze, highly ornamented with peculiar patterns. Spear-heads of iron with hollow sockets, and leaf-shaped, or waved, and indented blades, shield-mountings of iron, tools of almost every description, and ornaments of many varieties, mark the age as one of considerable culture, civilisation, and energy; while the Roman and Gallic coins which are found with the relics indicate that the closing period of the Swiss lake-dwellings was not altogether unknown to history.

The lake-dwellings of Northern Germany and Pomerania, in some of which the reindeer has been found with implements of bronze, belong to the later Bronze Age, and to a period bordering on historic times.

CRANNOGS.

Although pile-dwellings seem to be unknown in the lakes of England, islands wholly or partially constructed of piled work are common in the lochs of Ireland and of Scotland, where they are called crannogs, from the Celtic *crann*, a tree. Perhaps the most interesting group of crannogs in Ireland is that in the Ballydoo Lough and Lough Eyes, in the county of Fermanagh. The largest crannog in the first-mentioned loch is of oval form, 80 feet by 60, and composed of a substructure of heath, brambles, and brushwood piled up from the bottom, and stockaded all round. The remains of a wooden house, about 18 feet square, were found on it; and the whole surface was a refuse-heap of bones of the domestic and wild

Fig. 17.—Clay Cooking-pot, from an Irish Crannog, 13 inches diameter.

animals now living in the country. The pottery of this crannog was the most interesting feature connected with it. It was remarkably well made, of drab-coloured clay, unglazed, but highly ornamented. The vessels were finely shaped, but hand-made, and a number of them were pots with triangular ears for suspension, similar to those of our culinary pots of metal. Upwards of thirty-five different patterns of ornamentation were found, chiefly consisting of oblique rows of impressions of a toothed punch in the soft clay. Precisely the same kind of punch had been used to produce this identical pattern on some of the very beautiful sepulchral urns which were dug up in the tumuli of the neighbourhood. The character of this ornamentation belongs to the late pagan times in Ireland. No crannogs exclusively of the Stone Age have been found in Britain. Those of Ireland are known historically to have been occupied till very recent times. The earliest notice of them in the Irish annals records that the crannog of Lagore (which was one of the first to attract the notice of antiquaries, from its exploration by Sir W. Wilde, in 1840) was plundered and burned by one of the petty Irish kings, in 848 A.D.; and again in 933 A.D., by the Norwegian invaders under Olaf, son of Ivar. Brian Borumha is said to have fortified many of them, in 1043 A.D. Crannogs are noticed by the annals at intervals from that time till the end of the 16th century, when the O'Neill is described as 'having his lodging in the fen where he keeps his catell and all his men,' and as depending only on fortifications in 'sartin ffresh-water loghes in his country, and in ye said fortified islands lyeth all his plate, which is much, and money, and prisoners, and gages.'

Crannogs were first discovered in Scotland in 1812, by Mr Mackinlay, a member of the Scottish Society of Antiquaries, who sent an account of two in the island of Bute to George Chalmers, author of *Caledonia*. They have since been found in many of the lochs of Scotland, especially in the south-western counties; but few of them now exhibit remains of the dwellings. They are often connected with the shore by causeways, and in general they seem to have been islands, or shallows, adapted, enlarged, or fortified by piling and stockades. No implements characteristic of the Stone Age have been found in any of them. The piles of such a settlement of the Bronze Age were standing in Duddingston Loch in the end of the last century; and a large quantity of arms, including bronze swords and spear-heads, and with portions of large bronze caldrons, were dredged out of the loch in 1780. These are still preserved in

Fig. 18.—Bronze Spear-head (Duddingston Loch), 11 inches long.

the National Museum of the Antiquaries of Scotland, at Edinburgh. In the same collection there is an interesting series of relics from a crannog on Dowalton Loch, in Wigtownshire. Among the articles found in this loch are bronze basins diligently clouted, as things too valuable to be thrown away when they became the worse for wear, and a beautiful bronze saucepan tinned in the inside, and bearing on the handle the stamp of P·CIPI·

POLIBI, a Roman or Romano-British maker, whose saucepans have been found both in England and on the continent. The crannog builders of Scotland used canoes dug out of oak-tree trunks. Five of these, varying from 20 to 25 feet long, were found in Dowalton Loch. The largest canoe hitherto discovered in Scotland, was found in August 1874, in the Loch of Lotus, Dumfriesshire. It was 45 feet in length, and 5 feet wide at the stern, from which it tapered gradually forward, terminating in a raised and projecting prow, roughly fashioned in the form of an animal's head. In the Hebrides, as in Ireland, crannogs appear to have been used till very recent times. In the Register of the Privy-council, there is an instruction to Angus M'Coneill of Dunnyvaig, and Hector M'Cloyne of Dowart, dated 14th April 1608, 'that the haill houssis of defence, strongholds, and *cranokis* in the Yllis pertaining to them and their foresaidis sal be delyverit to his Majestie.'

HUT-CIRCLES AND HILL-FORTS.

Hut-circles, or traces of the foundations of circular dwellings, usually 20 to 30 feet in diameter, are not uncommon in many parts of Scotland. An extensive group of these at Strathardle, in Perthshire, is associated with a group of sepulchral cairns. The doorway usually fronts the south-east, and in the centre of the floor there is sometimes a hole for a post to support the roof. Round houses with conical roofs are represented on the Antonine column as the houses of the Gauls. In one of the Strathardle huts there was found a long-handled comb of deer-horn—the implement with which the threads of the weft were beaten together to form the cloth in the primitive loom. Groups of these hut-circles are also found within the area of many of the hill-forts. When thus surrounded by a rampart in a defensible position, they represent an ancient town—the permanent headquarters of the tribe that occupied the neighbouring district. Sometimes both huts and rampart seem to have been merely of turf, but more usually either wholly or principally of stone. In the territories of the ancient Britons, such fortified settlements were termed *Caers;* and in the Celtic portions of the country, *Duns* or *Raths.*

Underground Houses or Weems.—Underground structures of a peculiar form, which occur very frequently on the eastern side of Scotland, anciently possessed by the Picts, stretching from the Forth northwards, are on that account sometimes termed Picts' Houses. They are long, narrow, and low crypts, solidly built, and roofed with great flat stones. The entrance is like the mouth of a drain, widening and rising in height, till it ends in a pear-shaped expansion, four or five feet high, and not much wider than its height. The form is almost always curved, and sometimes there is a small cell or chamber on one side. These underground structures are not unfrequently found in connection with hut-circles, and may have been used as winter-dwellings, or as places of temporary concealment. Such retreats were known as 'earth-houses' among the Northmen. The Saga of Gisli the Soursop records that after he became an outlaw, 'he was always in his earth-house when strangers came to the isle;' and describes the earth-house of Vadil as having one end opening on the river-bank, and the other below the ordinary residence. A group of about 50 of these underground structures was discovered at Kildrummy, in Aberdeenshire, having been traced by the remains of the low foundations of the overground houses to which they seem to have been attached. Another group of less extent occurs at Airlie, in Forfarshire. Occasional instances occur as far south as Berwickshire, and as far north as Shetland, but they are specially characteristic of the region lying between Forth and Spey. Roman pottery, of the kind called Samian ware, has been found in several of them. In one at Newstead, Roxburghshire, stones with Roman mouldings were found to form part of the structure; and in one at Crichton Mains, Mid-Lothian, stones shewing the diagonal hewn work characteristic of Roman buildings had been used in the construction of its walls. These facts point to a period subsequent to the Roman occupation of Scotland. In Ireland, many of the 'raths' have underground structures within their area, and an example of this occurs in the fort or rath which crowns the top of Dunsinnane Hill, Perthshire.

Vitrified Forts.—Dunsinnane is also partially vitrified, as so many of the Scottish stone forts are, but it has not yet been decisively settled whether the vitrification has been intentional and structural, or whether it may be merely the result of accidental circumstances. The most noted of the vitrified sites in Scotland are Knockfarril, in Strathpeffer, Rosshire; Craig Phadric, Inverness; the Top o' Noath, Aberdeenshire; Finhaven Hill, Forfarshire; and Dun Mac Uisneachan, near Oban, Argyllshire. Detailed plans of these structures, and systematic excavation by investigators capable of recording facts without reference to a theory, are still required to clear up the mystery of their construction. With regard to their date, however, it may be safely affirmed that they belong to the more recent, and not to the more remote division of prehistoric times. Defensive structures of such magnitude as these vitrified forts, or like those of the ordinary construction, as the Caterthuns, Benachie, and the Barmekyne of Echt, are not the work of isolated tribal communities, but of consolidated nationalities, waging warfare on a grand scale, and they belong, undoubtedly, to the dawn of the historic period in Scotland.

DUNS OR BROCHS.

The region lying to the north and west of the Caledonian Valley is characterised by a peculiar variety of duns, now called, in the districts formerly occupied by the Northmen, 'brochs,' from the Norse 'borg,' a stronghold. These 'borgs,' duns, or 'Pictish towers,' are circular structures usually 30 feet diameter internally, and composed of a wall 15 feet thick, through which there is only one opening to the outside, in the form of a doorway, often flanked by one or two guard-chambers in the thickness of the wall, opening on opposite sides in the passage. This entrance-passage leads quite through the wall into the central area, which, like the bottom of a well, is walled all round, but uncovered above. Sometimes there are one or more chambers opening into the thickness of the wall on the ground-level; in other cases, the wall is carried up solid for a height of about ten feet, but having a narrow opening on the ground-level to the foot of a staircase leading to the upper stories.

These are formed by the centre of the whole circular wall being left hollow, so that between the inner and outer shell there is a vacant space of three to four feet. Across this vacancy there are laid at different heights level ranges of flat slabs, which bind the two walls together, while the upper side of each range forms a floor, and the under side a roof, to the respective galleries. These galleries extend round and round the building between the concentric walls. The stair goes up at a considerable slope, and thus traverses nearly half the circumference of the structure, giving access to the different galleries as it crosses them.

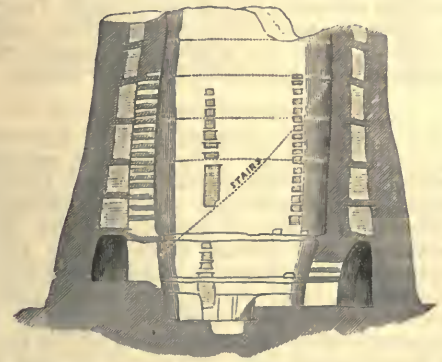


Fig. 19.—Section of Mousa, shewing Structure of a Broch, 45 feet high.

Vertical ranges of windows open from the galleries and from the wall of the staircase to the inside area only, thus providing light and air with security, and shewing that the central area was not intended to be covered in. Although nearly 400 examples are known in the north and west of Scotland, the borg of Mousa, situated on a small island off the Mainland of Shetland, is the only well-preserved specimen of its class. It is still 45 feet high, and has six galleries remaining above the chambers on the ground floor. Three of the structures in Glenelg were nearly as perfect as Mousa, but were sadly destroyed in the end of last century. They are most numerous in Shetland, Orkney, the Western Isles, Caithness, and Sutherland, and less common in Ross and Inverness. One example occurs at Coldoch, near Doune, in Perthshire; another at the Tappock, Torwood, Stirlingshire. One at the Laws, near Monifieth, Forfarshire, is surrounded by extensive ramparts; and another of great size on Cockburn Law, in Berwickshire, is similarly defended. Reindeer remains have been found in the refuse-heaps of those of Caithness and Sutherland; but, as has been already noticed, there is an historical record of the hunting of the reindeer in Caithness in the middle of the 12th century. We have also notices in the Sagas of two occupations of Mousa in the 10th and 12th centuries. The architectural features of the structures imply that they were the work of a people possessed of some measure of civilisation; while the contents of their cells and refuse-heaps shew that their inhabitants were cultivators of grain, kept flocks and herds, and were able to command considerable supplies of venison, that they practised the arts of spinning and weaving, worked in metals, melting and moulding bronze (but a bronze alloyed with zinc, and thus of the Iron Age, which they imported in the manufactured state), and smelting and forging iron.

Nurhags and Talayots.

The nurhags, a singular class of round towers, of which upwards of 3000 exist in Sardinia, and the talayots of the Balearic Islands, bear a close

Fig. 20.—Nurhag of Goni, Sardinia.

resemblance to the Pictish towers of Scotland in their external form and dimensions, though structurally they are totally dissimilar. The Pictish tower is a hollow shell, with all its chambers in the thickness of the wall surrounding the central area. The nurhag is a solid cone of masonry, with vaulted apartments occupying its centre, and placed vertically above each other, which are reached by a corkscrew stair or ramp, winding round between the chambers and the exterior of the tower. The galleries in the brochs were lighted by windows opening to the central area; the chambers of a nurhag seem to have had no opening save the door. Captain Oliver, the latest investigator of the nurhags, considers them defensive strongholds, in which the people shut themselves up in times of danger; and in this they are exactly analogous to the brochs. Among the Mainotes, says a recent traveller, every house was a fortress, and the whole country was a country of towers. In the Caucasus, the valleys are dotted with stone-built towers. The Koreish Arabs live in towns of lofty castle-like houses of six to eight stories, with rooms so low that one is barely able to stand upright in them. Similar conditions of life no doubt produced the brochs in Scotland, and the nurhags in Sardinia.

SEPULCHRAL REMAINS.

In dealing with the sepulchral remains of the early races, we have more definite data for their chronological arrangement than in the case of the relics from early habitations. In caves and crannogs which have been frequented from the earliest to the most recent times, the distinction between the relics of different periods is often obscured. But the deposit in the tomb was much more rarely disturbed by the intrusion of a later occupant.

It has been said that man is a burying animal; but we have yet to discover, or at least to identify,

the burials of the men who made the rude flint weapons of the drift and the caves. It has been tacitly assumed that the rock-shelters of Aurignac and Cro Magnon were burial-vaults of the cave-men; but the evidence of their sepulchral character is far from conclusive. We do not yet know how the people of the Danish 'kitchen-midden period' buried their dead, and the sepulchral remains of the Swiss lake-dwellers are still undiscovered. This want of evidence for the correlation of the sepulchral remains of the different countries with the remains of their earliest habitations, leaves it still an open question whether the earliest known sepulchres may not be those of the earliest inhabitants.

Grave-chambers.

In primitive times, the idea of inhumation appears to have been unknown. The earliest graves, as a rule, are structural—'houses of the dead.' The natural development of the grave-chamber seems to be from a simple cist or inclosure of great stones, covered with a slab of corresponding size, to a chamber constructed with walls of single stones set at intervals, and filled in with masonry, roofed either by an enormous block, or by overlapping of the successive courses of stones, to form a rude vault or dome. In the larger chambers, a door-way and passage were necessary for access, and the whole was usually covered by a heap of stones or earth, often of enormous size. They are known as dolmens, cairns, or barrows, according to the peculiarity of their external form. The dolmen is a chamber formed by immense stones, set in the ground as

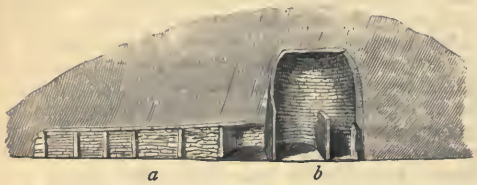


Fig. 21.—Section of a Chambered Cairn, Caithness: *a*, passage, 25 feet long; *b*, chamber, 10 feet high.

supports to a single covering-stone of enormous size. The cairn is a heap of stones covering

Fig. 22.—Dolmen, 'Kit's Coty House,' Kent.

either a cist or chamber. Sometimes the cairn is round or oval, at other times oblong, and occasionally there are groups of cists, or several chambers in the same cairn. Barrows are mounds of earth heaped over cists or chambers in the same way as cairns. Besides these, there are cisted graves sunk in the earth, and marked by a single tall unhewn pillar-stone, or by two pillar-stones, or occupying the centre of a circle of pillar-stones.

The dolmens and the long barrows appear to be the most ancient of the sepulchral monuments, in Britain at least; but each sepulchral structure must be judged by its own internal evidence, and not by its external form. In England and Wales, as also in Ireland, the dolmens are usually free-standing, or uncovered by a mound, as seen in the preceding engraving; while in Denmark, France, and Belgium, they are generally buried under mounds of earth. As a rule, they contain only deposits of stone implements and rude pottery.

Modes of Burial.

Stone Age.—The common form of interment was to place the body in the chamber, unburnt, sometimes in a sitting position; but burning seems also to have been practised contemporaneously with unburnt interment. The long barrows of Great Britain, which contain either megalithic cists or chambers, placed in the higher and wider end of the barrow, exemplify this intermixture of burnt with unburnt interments. In a large proportion of the long barrows, the skulls are found to have been cleft during life, and the conclusion is, that they are those of victims immolated at the funeral of the chief in whose honour the barrow was reared. This custom of killing the wives and slaves, or dependents of the dead, that he might not be unattended in the future existence, is known to have prevailed widely among the ancient heathens. Dolmens are rare in Scotland: long cairns, characterised by a peculiar crescentic expansion at either end, occur in Caithness.

But while great men were buried with the pomp and circumstance befitting their condition, meaner men appear to have been consigned to a simple cist, often with nothing above-ground to mark their resting-place. Where such cists contain no implements, the mode of interment will sometimes be sufficient to determine their age. Unburnt interment in a short cist, in which the body lies doubled on itself, is the earlier mode. Throughout the Stone Age, burying seems to have been more common than burning. With this class of

Fig. 23.—Food-vessel Urn, 5 inches high.

unburnt burials in Britain, two forms of urns are associated, which have been termed, from their supposed purposes, 'food-vessels' and 'drinking-cups.'

The food-vessel type of urn (fig. 23) is somewhat flower-pot shaped, but usually with a highly ornamental upper part, which formed a kind of perpendicular collar above the sloping sides. The 'drinking-cup' type of urn (fig. 24) was more can-

Fig. 24.—'Drinking-cup' Urn, 6½ inches high; and Ladle of Ox-horn.

shaped than the food-vessel, taller in proportion to its width, broader in the base, bulging in the lower part, and sloping outwards above the constriction where the bulging of the side met the sloping portion. These urns are sometimes found set at the shoulder of the skeleton, sometimes at the feet. In one remarkable case at Broomend, in Aberdeenshire, one of these drinking-cups was found with a ladle or spoon of ox-horn, the handle of which had been placed in the urn, and the bowl hanging over the side. The accompanying remains were those of a full-grown person and an infant, and the larger body had been wrapped in an ox-hide.

Bronze Age.—In the Bronze Age, burning the dead body was the more common practice, though the custom of burying unburnt bodies was continued along with it. Most of the round barrows of England, and some of the great circular cairns of Scotland, may be referred to this period. The results of excavations in the stone circles of Scotland have shewn that, in many cases, they were places of sepulture of the Bronze Age, with deposits of urns and burnt bones in the inclosed areas, accompanied by relics of bronze. The only stone implements found in them are arrow-heads, flakes, and perforated axes, all of which were in use in the Bronze Period. These stone circles reach their highest development in Great Britain, where they are more numerous and more imposing than in any other country of Europe. In Scotland they are very numerous, especially in the north-eastern districts. The larger of the two

Fig. 25.—Stonehenge.

circles at Stennis, in Orkney, has a diameter of 366 feet. The great circle at Stonehenge, on Salisbury Plain, which has its upright pillars linked together by lintel-stones, is 106 feet in diameter. But these are far surpassed by the greatest of all the stone circles—that at Abury, also in Wiltshire, which is 1080 feet in diameter, and incloses two smaller circles, each 330 feet in diameter.

Usually, the bodies seem to have been burned on the spot where the barrow was reared. Sometimes the incinerated bones were simply placed in a cist without any accompanying urn, but more generally they were placed in an urn of a different type from those previously described. The true cinerary urn was usually of the flower-pot shape, and larger, heavier, and of coarser make than those of the 'food-vessel' and 'drinking-cup' type. They are less elaborately ornamented, and distinguished by a heavy overhanging rim. Sometimes they are inverted on a flat stone, on which the ashes have been gathered in a heap; at other times, the ashes have been placed in the urn, and a cover of thin slaty stone roughly chipped to a rounded shape placed on it. Sometimes the urn is inclosed in a cist under a tumulus; at other times, simply set in a hole in the ground. In Britain,

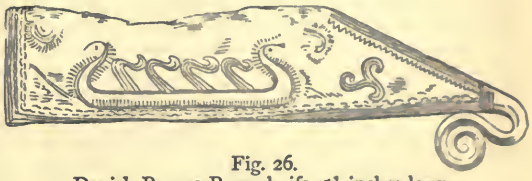


Fig. 26.
Danish Bronze Razor-knife, 5½ inches long.

bronze knives or razors and bronze daggers are occasionally found in these urns among the burnt bones, or deposited along with them; and in Denmark are similarly found razor-knives and implements of the toilet, arrow-heads and scrapers or 'strike-lights;' and sometimes knives of flint—which continued in use, even in the height of the Bronze Age—are also found with

Fig. 27.—Dress of a Female—Bronze Age.

such interments. Bronze swords, spear-heads, and celts seem only on the rarest occasions to

have been interred with their owners, in Britain at least. It is doubtful if a single well-authenticated instance of a bronze sword associated with a British interment can be produced. But in Denmark, unburnt interments of the Bronze Age, in which the body was inclosed in a coffin made of a hollowed tree-trunk, have been found with the arms (including swords of beautiful finish), the personal ornaments, and even the clothing of the deceased, in the most perfect state of preservation.

Iron Age.—In the Iron Age, although the earlier mode of unburnt sepulture had again become more common, cremation still continued until finally extirpated by the rigorous prohibitions of the early Church. In France, it had not wholly ceased in the time of Charlemagne, as we learn from one of his capitularies that those who persisted in the pagan custom of cremation were to be punished with death. The Scandinavian Northmen clung to the barbarous rites of sepulture by cremation, and immolation of victims at the rearing of the barrow, till a very late period. Sometimes the heathen Viking was burned in his ship; sometimes a barrow was raised over his unburnt body, placed in the vessel he had commanded during his lifetime. Such a vessel of the Viking period was recently disinterred from a barrow at Tuné in Norway, and is now preserved in the Museum at Christiania. Sometimes the burnt bones were placed in a stone cooking-pot, and over them was laid the long Viking sword, bent and twisted three or four times on itself.

Roman.—In England, besides the earlier sepulchral structures and interments of prehistoric times, we meet with corresponding burials of the Roman, Romano-British, and Anglo-Saxon pagan periods. Among the Romans in Britain, though the practice of burning the dead appears to have predominated, simple burial was also common. Cemeteries, in which the *ustrinum*, or public burning-place, was distinctly marked, have been found in several places in England, as at Littlington near Royston, and the ancient Isurium at Aldborough, in Yorkshire. When the Emperor Severus died at York, his body was burned, and the ashes placed in an urn of alabaster, which his sons carried with them to Rome. Roman graves are distinguished by the absence of weapons, by the elegant form and finer texture of their urns, which were of various shapes and sizes, wheel-made, and well burnt. With them were also deposited groups of vessels, such as unguent-bottles, glass-vessels called lachrymatories or 'tear-bottles,' pateræ, lamps, &c. When the body was buried unburnt, it was inclosed in a coffin, sometimes of wood, sometimes of lead, and occasionally of clay or earthenware; or placed in a stone sarcophagus, or a cist made of bricks or tiles. Sometimes they buried in barrows similar to those of the earlier time. A remarkable group of Roman barrows occurs at Ashdon in Essex. They are called the Bartlow Hills, and are conical in form, the largest being 45 feet in height, and about 150 feet in diameter. It contained a chamber constructed of wood, in which was a large square-shaped bottle of glass, a bronze patera with a reeded handle, terminating in a ram's head, a bronze dish and lamp, a pair of strigils, and other articles of distinctively Roman type.

Romano-British interments are often found in groups or cemeteries of oriented graves, which never contain anything but the skeleton.

Anglo-Saxon.—Anglo-Saxon graves of the period of their heathendom are recognised by their accompanying weapons when unburnt, and by their peculiar urns of globular shape, ornamented with impressed stamps, and usually having knobs or projections on the sides. With the unburnt interments are found the long double-edged sword, the peculiar ploughshare-like knife, or *scramasax*, long narrow spear-heads, axe-heads, and bosses of shields, all of iron, with fibulæ of bronze of various forms, often beautifully enamelled, adorned with interlacing patterns, and terminating in devices resembling the heads of animals.

Scandinavian.—Anglo-Saxon graves of the heathen period are not known in Scotland; but in its northern districts, graves of the Scandinavian Vikings are occasionally found, characterised by their long heavy double-edged iron swords, with short guards and heavy pommels, their peculiar oval and bowl-shaped or 'tortoise' brooches of brass, and iron shield-bosses of semi-globular or cup-like form, with long round-backed combs of bone, and other distinctively Scandinavian relics.

Christian.—In the canons of the early churches, the Christians are forbidden to use the burial-mounds of the pagans, and commanded to abstain from burying with the dead, arms, clothing, horses, and accoutrements, as had been the custom of the heathen. Yet, while Christianity abolished the custom of burying the warrior's panoply with the dead, it retained, with a strange inconsistency, the ancient practice for the consecrated orders of the Church militant. The bishop was buried with his crosier and comb, his chalice and vestments; and even the funeral urns and stone cists of the pagan period have their parallel in the earthenware jars which were deposited as incense-vessels in the stone coffins of late mediæval times, and are so often exhumed among the churches of France.

In this brief review, attention has been confined to Western Europe, where the progress of discovery has been rapid and the materials are most abundant. But in the New World, as well as in the Old, the history of human progress is exemplified in similar stages, from the savage condition of the early mound-builders of the great valleys (whose rude implements of flint are in some of their types indistinguishable from those of the European drift) to the comparative civilisation of the bronze-using races of Mexico and Peru, finally overwhelmed and supplanted by the imported civilisation of the fully developed Iron Age.

RHETORIC AND BELLES-LETTRES.

RHETORIC is a branch of knowledge and practice having reference to spoken and written compositions, and to the means of employing language so as to produce its greatest possible effect on the minds of men. While the rules of grammar are intended to secure correctness and uniformity in inflecting words, and in joining together the parts of speech in sentences, according to the established usages of each separate language, Rhetoric considers the meaning and form of the composition, and the total effect upon the persons addressed.

Belles-lettres, or *Polite Literature*, expresses a class of literary productions whose subjects are the principal matters of human interest occurring in the world, and which are adorned with the utmost elegance and polish of style and treatment. They correspond to what is universally interesting —the conversation of the most cultivated classes of society. The chief works contained under this branch of composition are the productions of the poetic art, together with prose narrations, expositions, and criticisms in reference to nature and human life; including histories, annals, and biographies; discussions of the doctrines bearing on human welfare; criticisms and judgments of the characters, works, and ways of men, calling forth the attendant emotions of reverence, admiration, esteem, love or hatred, sympathy or antipathy. The greater portion of our periodical literature comes under this head. Such productions are contrasted with works of science; for these are supposed to inform us, once for all, on some branch of nature; whereas works of literature are intended to supply an undying appetite for intellectual and emotional excitement.

THE ATTRIBUTES OF STYLE IN GENERAL.

The leading attributes of style that are of a Rhetorical kind may be set forth under the following heads; it being assumed that grammatical and idiomatic purity and correctness have been previously secured by the appropriate means:

Simplicity.

By Simplicity we are to understand what is easily comprehended, or what is level to the ordinary capacity of men. It is opposed not so much to the complex as to the *abstruse;* and implies a mode of address that does not require severe effort, or a special training for its comprehension. The possibility of being simple in this sense will of course depend much upon the subject-matter; but we can nevertheless consider, in general, what things are requisite to bring out the quality.

Simplicity is twofold—simplicity of terms, and simplicity of structure.

Terms are simple, in opposition to abstruse, on various grounds:

1. They may be the names of common and familiar objects and actions, instead of such as are rare or remote. 'He that doeth these sayings is like to a man that buildeth his house upon a rock;' in this sentence, every one of the terms has the simplicity that attaches to meanings common and familiar. Objects of a *technical* description, or such as come under the notice of only limited classes of people, cannot enter into simple composition.

2. The terms may relate to things that are in their nature palpable and conceivable, rather than obscure or invisible. The world is partly made up of objects of a kind to act upon all our senses, such as the solid masses that support and surround us; and partly of subtle and impalpable agents, like electricity, or the mysterious attractions and repulsions that keep up the activity of the sensible masses. Now, all references to the one class of things are universally intelligible, while allusions to the others are understood only by such as have received the artificial training necessary to grasp them. The common objects of the landscape are simple in this sense: the discussions about gaseous bodies, gravity, elasticity, vitality, and the like, are necessarily abstruse.

3. What are called *concrete terms* are, in general, more intelligible than the names of *abstractions*. A concrete object is a thing as it exists in nature, with all its parts and peculiarities—such as a mountain, a river, a metal; while an abstraction is some property of these artificially conceived apart from the rest—such as height, density, velocity, liquidity, lustre, specific gravity. Now, the gross object is usually more conceivable by the mind than its separate properties; hence, although this abstract mode of viewing things is essential to the thorough comprehension of the world, yet for popular composition the terms of the other class are more suitable. There is, however, the greatest possible difference in the intelligibility of abstractions: while some are within the reach of the least cultivated minds, others, such as the subtlest ideas of mathematics, chemistry, and physiology, presuppose a long course of laborious studies. Height, depth, strength, whiteness, virtue, are popular abstractions; polarity, infinitesimal, ellipsoidal, express notions that can never enter into popular composition.

Simplicity of structure means such an arrangement of terms in clauses, and of clauses in sentences, as renders the meaning comprehensible without severe attention or special study. When the clauses succeed one another in the exact order in which the ideas can be best apprehended; when what is necessary to complete a meaning is not too long delayed, nor interrupted by other distracting meanings; when only a moderate number of particulars is required to make up one complete statement; and when no circumstances are present to produce complexity, distortion,

confusion, or overloading—the structure is likely to be simple. The difficulty of attaining simplicity of structure arises from the nature of the subject: the stream of composition can consist of only one thread, whereas it may be desirable to narrate a complex tissue of events, or to represent a number of things all happening at once, as in historical composition. In such cases, the skill and art of the writer are shewn by his being able to embody his matter in a series of clauses and sentences where the particulars are arranged without perplexity. Short sentences are necessarily simple; long sentences may be either simple or not. Some writers, such as Addison, Bolingbroke, Johnson, Hall, who use long sentences, construct them nevertheless with great simplicity of arrangement; others, of whom Milton is the most remarkable example, delight in a highly involved and complex kind of composition.

Clearness.

This attribute is opposed to indistinctness, faintness of meaning, vagueness, ambiguity, uncertainty. It implies that the forms and images presented to the view shall be sharp, clear, and unmistakable. It is a merit that cannot belong to the style, if not first possessed by the thought; but it is possible that the clear thoughts of one man may not be clearly conveyed to another man. As already observed on simplicity, clearness depends partly on the terms, and partly on the structure. Not only must terms be used that express well-ascertained and certain ideas, but they must be so joined that the result shall indicate only one meaning. Since words have often more than one sense, it belongs to the composition to join them together, so that every interpretation shall be excluded except the one intended. To effect this, in treating difficult subjects, is nearly the hardest task that occurs in composition. In poetry, Homer and Dante are remarkable for the surpassing clearness of their images. In prose exposition, Hobbes is a pre-eminent example.

Strength.

Strength, vigour, and force are attributes of style, as well as of every other form of human activity.

The quality of strength must mainly depend upon making choice of such terms as by their sounds, or by the images associated with them, echo the powerful objects and actions of nature or of human life. The effect of employing, as illustrations, the mighty agencies of the thunder, of the ocean, the cataract, the wild beast, and the like, is known to every one.

Strength is likewise produced by the use of language strongly suggestive of the circumstance and detail of actions and events, in place of their weak generalities. Thus, when we speak of killing or taking away life, the effect is very feeble; but when the specific act of violence is alluded to, as: 'The men whose daggers stabbed Cæsar!' a far stronger impression is conveyed.

Apart from the choice of terms, the quality of strength is brought out by peculiarities of structure and arrangement. The placing of the forcible word of a sentence in the position of natural emphasis adds to the effect—as '*Great* is Diana of the Ephesians.' The figure of interrogation has also a striking effect—'Breathes there a man?' and so forth.

In general, brevity is a feature of strength; it is hardly possible, by a diffuse verbosity, to give an energetic impression, whatever other beauties may be embodied upon that kind of style.

Milton is perhaps the greatest example of the quality of strength that the English language presents; for although Shakspeare produces strokes that could hardly be surpassed, it is a sustained peculiarity in the writings of the author of *Paradise Lost*. English literature abounds with energetic compositions: the well-known names of Barrow, Bacon, Dryden, Pope, will present themselves to most readers.

Liveliness, vivacity, animation, express a mode of strength or energy, and depend in the very same manner upon the choice and arrangement of terms.

The most difficult variety of style under this head is what is called Soaring or taking a flight, which must be carefully managed, so as to avoid a break, a fall, or, technically—a *bathos*. Our greatest poets and prose writers have furnished successful instances of this quality: it is also a frequent accompaniment of the higher kinds of oratory.

Feeling.

This term is used here in a restricted sense, to express the quality of touching the warm feelings, affections, and tenderness of humanity. It involves the use of phrases to suggest genial and homefelt attachments and associations—family, country, friends, and all the force of sentiment that is wound up in the sociability of our nature. There are a certain number of the relationships of life founded upon natural tenderness, and the terms expressing them naturally come to excite a certain glow of this feeling when they are properly used. Child, parent, fatherland, native country, are all terms suggesting tender emotion; and there are an infinity of occurrences in life that involve this class of phrases; and according as they are employed with skill and keeping, in any kind of composition or address, the style is said to possess feeling.

It necessarily happens that the native terms of the English language, which were formed and fashioned by the native English heart, are more impressive than the phraseology of foreign natures and remote climates, such as the Latin, Greek, and French portion of our language. But the cultivation of our schools and colleges has made foreign idioms, and the associations and history of ancient and distant nations, as full of tenderness and warmth to the educated classes as any of our native compositions. The effect of this, however, is to constitute two different kinds of style: the homely and the popular on the one hand, and the learned and classic on the other. The wide interval that may separate these two styles can be judged of by comparing the *Pilgrim's Progress* with the *Paradise Lost*.

Expressiveness.

This is a quality of style resulting from the power of words to echo by their sound and mechanical effect the meaning or sentiment that they are intended to convey. The suiting of the sound to the sense gives additional weight to the

meaning, and therefore furthers the main object of the address. Many of the words of our language have a natural expressiveness, and they may be so joined in composition as to have an expressive structure. Pope has been admitted to have been often very happy in bringing out this quality. The following is an example :

'If nature thundered in his opening ears,
And stunned him with the music of the spheres,
How would he wish that heaven had left him still
The whispering zephyr and the purling rill!'

Expressiveness is often preferred to elegance, as in cases where some coarse phrase carries with it a vigorous meaning. No one would object to Cromwell's saying of his Protectorate, that it was a device that had been before resorted to 'when this land was under the like hurliburlies.'

Freshness.

This much desired quality in all things presented to the senses or the mind of man may belong in very unequal degrees to modes of address. It is produced partly by mere novelty; partly by what, although not new, is in permanent contrast to routine or commonplace; partly by what is genial, loving, and hearty; and partly by high and consummate art. There are compositions which are fresh for the hour, and others that are so to every new generation. It is indeed possible to render the greatest compositions stale by harping too much upon the letter of them; but when moderately enjoyed, the creations of Homer, Aristophanes, Chaucer, Shakspeare, or Goethe have an everlasting relish. The freshness of loving warm geniality attained its perfection in *Don Quixote*, which will remain an eternal example of the qualities that make either a man or a book universally agreeable. Addison and Cowley are examples of the same fine-toned style of thought and feeling.

The revelations of the mystery and workings of nature break out with perpetual freshness upon the mind, just as its scenic beauty is a charm to every new-comer. Hence scientific compositions have all the delight of novelty at their first perusal. In like manner the practical devices of human life, the machinery, apparatus, and inventions of man for overcoming nature and organising human society, are a source of similar interest. The works that describe the ongoings of distant countries, as well as those relating to past ages, have the advantage that newness and strangeness of matter give to literary compositions; but in such cases, the subject-matter, rather than the style, is the source of interest.

All expressions and descriptions that direct the view upon the outer world, have a healthier and fresher action on the mind than such as relate to inward feelings and emotions, or require an introspective effort. Self-consciousness, although as necessary in human life as sight or hearing, is naturally a weakening and debilitating action, and should be exercised only in a small proportion to the efforts of outward attention and regard. Shakspeare's description of Dover Cliff contains some examples of the inward or subjective reference, which will serve to illustrate what is here meant by it :

'Come on, sir; here's the place—*stand still. How dreadful*
And dizzy 'tis to cast one's eyes so low!
The crows and choughs, that wing the midway air,
Shew scarce so gross as beetles. Half-way down
Hangs one that gathers samphire: dreadful trade!
Methinks he seems no bigger than his head!
The fishermen that walk upon the beach
Appear like mice: and yon tall anchoring bark
Diminished to her cock; her cock, a buoy,
Almost too small for sight. The murmuring surge,
That on the unnumbered pebbles idly chafes,
Cannot be heard so high. I'll look no more,
Lest my brain turn, and the deficient sight
Topple down headlong.'

A combination of freshness, animation, and ease, will produce what is called the *light* in style, so much desiderated by all who aim at securing the patronage of the reading public.

The group of qualities next to be discussed, which allude to the various kinds of artistic effect, likewise contribute essentially to the result that we have last been considering.

Taste, Elegance, &c.

The qualities of Taste, being qualities superadded to the conveyance of meaning, are the secondary attributes of compositions whose object is to give direction or information, although they are the principal characteristics aimed at in the poetic and literary art. They are intended for the immediate gratification of a wide surface of varied human susceptibility, while the other purposes of speech relate to the practical ends of life, which may not be capable of taking on forms calculated to give artistic enjoyment. Neither elegance nor sublimity of expression is sought for in an act of parliament or a deed of conveyance.

The artistic qualities of style may be illustrated under the following heads :

Melody.

The melody or music of articulate speech arises from the proper choice and ordering of melodious words and phrases. Certain combinations of letters have a more musical effect upon the ear than others; and the due alternation of long and short, emphatic and unemphatic syllables, under the guidance of an ear for the music of style, is calculated to gratify the sense of articulate melody. The following sentence from Milton has often been quoted as an instance of melodious composition: 'We shall conduct you to a hillside, laborious, indeed, at the first ascent; but else so smooth, so green, so full of goodly prospects and melodious sounds on every side, that the harp of Orpheus was not more charming.'

Comparison—Metaphor.

The employment of comparisons serves the purpose of imparting clearness to composition in cases when a familiar and distinct image is employed to illustrate what is indistinct or obscure, as when the action of breathing is expressed by the example of a common bellows. But comparison has an artistic effect also, in consequence of the emotion that is produced by identifying and harmonising the remote and the unlike. The following lines from Chaucer, in his description of the squire, contain several highly artistic comparisons :

'Embroided was he, *as it were a mead,*
All full of freshē flourēs white and rede;

He sung and fluted gayly all the day,
He was as fresh as is the month of May.'

Metaphors are a species of comparison, where the likeness is not formally expressed, but implied by the actual use of the comparison in the room of the original expression. The necessity for metaphors arises from the difficulty of inventing terms in any other way for the more abstract and subtle kind of notions. Thus, we speak of the 'head of a state,' the 'tail of a party,' the 'stream of time,' 'a sea of troubles,' 'the light of the world.' Like all other kinds of comparisons, of which many species have been detailed by rhetoricians, metaphors may conduce either to clearness and force of meaning, or to ornament merely.

Epigram.

Epigram is pre-eminently an attribute of style, and not at all a quality of the thought to be expressed. It is a species of play upon words calculated to surprise and impress the mind in an agreeable way. It comprises antitheses, apparent contradictions, similarities, and contrasts of sound and sense; paradoxes, alliterations, puns, and some of the most striking felicities of metrical composition. 'When you have nothing to say, say it,' is an epigram; likewise, 'I am content, and I don't like my situation.' Butler, Pope, and Dryden abound in this peculiarity. A well-known passage of Barrow, professedly illustrative of wit, applies almost exclusively to what we here understand by 'epigram.'

Metonymy—Circumstance—the Picturesque.

Metonymy is the name given to an effect produced by departing from the strict use of language, for the sake of singling out prominent circumstances—as, 'the *city* was put to the *sword*,' instead of 'the inhabitants of the city were slain.' Cromwell is said to have set up parliaments '*by the stroke of his pen*, and scattered them with *the breath of his mouth*.' Instead of the main agent in producing an effect, some collateral or associated object is chosen, so as to make a more vivid image than a strictly accurate statement could produce.

Of the many figures of speech enumerated by the ancient rhetoricians, Metaphor and Metonymy are the only ones that express wide and comprehensive meanings; especially when Metaphor is generalised into *comparison*, and Metonymy into *associated circumstance*. These two ideas of comparison and contiguous association ally themselves with the two fundamental laws of the human intellect, expressed by the terms Similarity and Contiguity, and to this they owe the comprehensiveness of their grasp.

The choice of 'circumstance,' or of collateral particulars suitable to bear out the meaning of a principal term, or to assist in illustrating an idea, is a main point in literary art. Thus, to take an instance in description:

'The whining school-boy, *with his satchel*
And shining morning face, creeping like snail
Unwillingly to school.'

Or, still better, the illustration of the fop:

'And as the soldiers bare dead bodies by,
He called them untaught knaves, unmannerly,
To bring a slovenly unhandsome corse
Betwixt the wind and his nobility.'

As another instance of circumstances powerfully built up for effect, take the following from Milton:

'Nor uglier follow the night-hag, when called
In secret, riding through the air she comes,
Lured with the smell of infant blood, to dance
With Lapland witches, while the lab'ring moon
Eclipses at their charms.'

The *Picturesque* in literary execution is attained when the expression has been so conceived as to bring out a vivid picture:

'The sixth age shifts
Into the lean and slippered pantaloon.'

To make words *paint*, as if with brush and canvas, is a very high effort of literary art; seeing that their nature is to drop a series of impressions into the mind, and not to hoist instantaneously an expanded scene before the view.

Sublimity.

This effect is produced by an expression of extreme power, grandeur, loftiness, expansion. Strength carried to its utmost pitch, and supported by adequate language, becomes sublime. When large and overpowering objects are set forth in terms equal to their character, they excite the emotion of sublimity. The *Paradise Lost* is full of sublime effects: were it not so with such a subject, it would be unendurable. As an example of a single stroke, we cannot do better than quote the following image from Shakspeare, which has never been surpassed as an expression by 'circumstance' of utter ruin:

'*Though the treasure*
Of nature's germins tumble all together
E'en till destruction sicken: answer me to what I ask you.'

Beauty.

This is a very wide word, and if used in its utmost latitude, would cover everything included in artistic effect in general, so that the other particulars under the present head would be but varieties or forms of beauty. The beauties of style are unquestionably for the most part the result of harmony, fitness, and keeping in the various parts of the composition. The adaptation of the whole to its end, the order and harmony of all the particulars, the suiting of the style to the matter, and of the sound to the sense, all combined with the choice of images pictorially beautiful, and of words and cadences musically melodious, are the leading particulars that constitute the beautiful in literary art. When composition, considered as a fine art, perfectly succeeds in its aim, it must needs be beautiful. There may, however, be partial beauties, and beauties of many kinds. Every writer who has ever attained to the rank of a great classic, has owed a part of his success to the circumstance that his composition was such as to be considered a work of art. For the highest beauties of style, we need only refer to Milton, Massinger, Addison, or Cowley, among the many great examples in English literature.

Pathos.

This is an effect depending on the tender susceptibility of human nature, on which are founded the warm affections of the heart, and which flows freely on occasions of misery, calamity, and pain.

This susceptibility can be reached by verbal expression as well as by other means. Any literary work that delicately stirs the fountains of tenderness is denominated pathetic. This class of compositions, unfortunately, has had occasion to be very numerous. The woes and sorrows, and the tragic doom of mortal men, have inspired lamentations and pathos, elegies and mourning, in every language under heaven. By the ordination of nature, the current of human tenderness is made to flow whenever distress has settled upon a fellow-man, and proves one of the great solacements of affliction. When either sorrow or compassion is aptly expressed in language, we have a stroke of pathos. Burns's *Man was made to Mourn* is a highly characteristic example. The writings of the Old Testament, especially the book of Job, the Psalms, and the Prophets, furnish abundant instances of the same nature. Nothing could exceed the pathos of Jacob's expression to his sons—'If mischief befall him [Benjamin] by the way in which ye go, then shall ye bring down my gray hairs with sorrow to the grave.' The *Bridge of Sighs* is a well-known modern example. When what we have previously denominated 'Feeling' is called forth by a tragic occasion, and expressed with becoming art, it produces pathos.

Ludicrous—Wit—Humour.

The feeling of the ludicrous being one of the emotions whose stimulus is highly gratifying to human nature, such a stimulus is frequently attempted by means of speech. As a *spectacle* that causes the ludicrous requires to be made up of some intimate conjunction of the dignified, lofty, or grand with what is vulgar, mean, or contemptible, so the production of the like effect through *language* must generally imply the embodying of images or actions that possess the same mixture of incongruity. For example, when Molière presents the celestial messenger of the gods sitting tired on a cloud, and complaining of the number of Jupiter's errands, Night expresses surprise that a god should be weary, whereupon Mercury indignantly asks: 'Are the gods made of iron?'

But confining our view strictly to style, a ludicrous effect is produced when the language is at variance with the matter on the score of dignity; when a mean subject is treated in dignified terms, or a high subject in mean terms. Philips's parody of Milton in the *Splendid Shilling* is an instance of the first method; Lucian's *Dialogues*, and Swift's *Tale of a Tub*, exemplify the second.

Humour is the ludicrous with an infusion of the tender or the loving, and is a far more exquisite effect than the ludicrous alone. *Don Quixote* is probably the greatest work of humour that the literature of the world has produced. Addison is also a very high example of the same combination.

Cumulative Richness.

A composition may contain few or many artistic excellences: it may be lean and thin, though not destitute of all merit; or it may be rich, copious, and luxuriant—overflowing in comparisons, pictures, sublimity, beauty, pathos, and humour. The taste of the writer may be severe and exclusive, or it may allow of all kinds of effects that can possibly sit upon a literary work. Of rich and massive productions, we have great examples in those of Rabelais, Shakspeare, Ben Jonson, Richter, and Swift. In the compositions of the seventeenth century in this country, a far greater luxuriance and richness was exhibited than we are accustomed to in the present day.

We proceed now to the various forms of verbal address and composition.

COMMUNICATION.

This branch of the subject divides itself into three subordinate heads—Narration, Description, and Exposition: the first two are exemplified in travels and histories, the last deals with science.

Narration may be said to be the simplest and easiest effort of communication. A stream of words has a natural analogy to a stream of events or actions: hence narrative is the kind of address most easily invented. Ballads, songs, and heroic adventures, where the narrative is stirring and musical, like the conception of the deeds, are in all countries among the most primitive forms of composition.

Description, or pictorial expression, is a more difficult effort of invention, from there being a fainter and less suggestive analogy between still-life and a flow of articulate utterance. The painter's canvas is the appropriate means of representation in this case. Besides the faintness of the analogy between the subject and the expression, there is the difficulty already alluded to of raising in the mind the image of expanded space by a dropping current of verbal impressions. Under the heads of *Travels* and *Historical Composition* we shall advert to the leading points involved in narrative and pictorial description.

Of Travels.

The *traveller's point of view* furnishes the most natural way of conceiving places and transactions. The *panoramic* display of a country, or the gradual unfolding of scene after scene, is more impressive than any other method of bringing before us a wide and varied scene. The other methods of storing up in the mind the entire expanse of a town or a province, are the *map*, the *bird's-eye view*, or mountain prospect, and the *statistical catalogue*.

To gratify the longings of men to enter into the living experience that lies behind the detail of exports and imports, of cargoes of tea and sugar, of silk and gold, of latitudes and longitudes, monsoons and rainy seasons, Defoe constructed his admirable fiction of *A Voyage Round the World*, where he exhibits the entire ongoings of the seafaring and trading life through all the incidents of a circumnavigation of the globe. In this, and in *Robinson Crusoe*, and in all his other life-pictures and histories, the author has adopted the point of view of a traveller, or of a single eye-witness, whose company the reader is supposed to keep. As one person can see as much as one other person can, this mode of description is perfectly adapted to the natural comprehension of men; while to compare and join together the observations of several persons standing in different positions, is a very distracting operation. The life and manners of the heroic Greeks could not have been painted so vividly and intelligibly in any other form as in the adventures of Ulysses

The most fascinating poems and romances are those that run upon the thread of a single personage, as in *Don Quixote*, or the *Æneid* of Virgil.

With regard to *description*, as applied to the exterior world, or the appearances presented by surrounding scenery, the representation of which must be the basis of all other descriptions, the following points must be kept in view:

1. In describing any complex thing whatsoever, we ought to commence by stating some great general or comprehensive feature of the whole, on which to distribute or attach the subsequent details. If there be anything that confers a unity on the object, that unity should be set prominently forth, and the individual parts should all point towards it. Naturalists commence with the *backbone* in the description of the animal frame. The primary conception of the earth is *a huge ball*, with rolling motion and variegated surface. The first epithet to be used in speaking of a mountain should give the general outline—such as, a vast conical hill, a steep ascent, a long ridge, a low flat eminence. In a mountainous country, we fix upon the largest mountain-range as the backbone, and represent the inferior chains as its members, and we derive from these the starting-points to the valleys, plains, and rivers; and in this way the detailed features preserve their places in our view of the whole. The word-painter shews his art in discerning, in the midst of complexity and detail, some comprehensive feature that gives wholeness or unity to the scene.

The *basis* of the description, or the leading feature to which all the rest has to be related, may be either an *outline* or a *centre;* it may proceed upon a general figure of the circumference and inclosure of the whole, or from some prominent and commanding point in the interior. The inside of a building requires to be described by outline: we must give, in the first place, the form and size of the floor, the height and the form of the roof, with some striking comparison or expression that may serve to bring out the feeling of the solid expanse in the reader's mind. This will be followed up by the orderly detail of the contents; and it is well to repeat and indicate in various ways the great primary notion of the form; for if this once drops out of the view, the whole picture crumbles into confused fragments. Satan's palace in *Paradise Lost* is admirably pictured by the appropriate expression of space and outline:

> 'The ascending pile
> Stood fixed her stately height; and straight the doors,
> Opening their brazen folds, discover wide
> Within, her ample spaces, over the smooth
> And level pavement; from the archèd roof,
> Pendent by subtle magic, many a row
> Of starry lamps and blazing cressets, fed
> With naphtha and asphaltus, yielded light
> As from a sky.'

A plain inclosed by mountains is a proper subject for *outline* description. Seas and lakes, encampments, and all kinds of scenery and expanse whose character and internal arrangement are determined by their inclosing boundary, or by the form of their surface, must be treated in the same manner.

In picturing towns, the basis ought in general to be a *centre*, or some prominent object that governs all the rest, or that is sufficiently important to fix the attention as a leading feature of the scene. The river running through or past a town is usually fixed on for this purpose; or if on the sea-shore, the line of coast may be chosen. Next to these, a great natural valley or a central eminence will serve the purpose; or lastly, some of the great thoroughfares of the interior. After choosing out a main trunk in this way, and impressing it sufficiently on the mind, we naturally follow out, first its larger, and then its smaller branches; but on all occasions we are to keep starting from the *great centre*.

2. In description, as practised under the traveller's point of view, it is an important maxim never to let the reader lose hold of the dominant circumstances that rule the perceptions and feelings of the observer. There are certain points that determine, in preference to all others, the state of the mind in any given situation. If we wish to make a second person, as it were, stand where we stood, and see what we saw, we must, *in the first place*, make him clearly to conceive the *footing* or support, the nature of the ground, and the manner of resting upon it. We should indicate whether our footing was firm or loose, rough or smooth, ascending or descending, and whether we walked, stood, lay, rested, or rode. There will of course be the supposition that we were sustained somehow; but it is essential to let it be distinctly understood what was the exact circumstance of this first and most indispensable contact with the outer world; and the more surely and vividly this is conceived, the more perfect will be the understanding and conception of all other things.

In *the second place*, there should be no mistake about the state of the *light* that prevails at the time, whether clear sunshine in a blue sky, or otherwise; or if, in reference to the night, whether the moon or stars were visible. The poets are particularly attentive to this particular—

> 'He ceased, the whole assembly *silent sat*,
> Charmed into ecstasy by his discourse,
> Throughout the *twilight hall*.'

In *the third place*, it is necessary to indicate decisively the *forward prospect*, which, next to the actual footing, engrosses the solicitude of the mind, and determines the bent of the feelings. It ought to be pointed out whether the prospect is free and open, or shut and encumbered; whether it spreads out far, or closes near at hand; whether it rises or descends. In our onward movement, this determines our hopes and fears, or the complexion of the future; and if we are at rest, it controls our vision and the trains of thought suggested to the imagination.

In *the fourth place*, and next to the forward prospect, the writer should make known the *side hedging* of his path, the close confinement, or free expansion on the right and left; for this, too, will affect his feelings and meditations.

In *the fifth place*, the roofing overhead should be included. In the open air, this would refer to the state of the sky; but it becomes a more essential point of description if under a roof.

To these five points may be added the *sounds* that salute the ear, and any other sensations that are material under the circumstances. No human

being can escape from the effects of the various influences now enumerated: they press most intimately upon the whole being; and one person cannot enter into the mind and feelings of another in a different position, without conceiving all of them exactly as they existed. While they remain uncertain and unfelt, all subsequent description of spectacle, motion, sound, and life is mere fancy-work or aërial pictures, which a second party has no personal relation to, no human sympathy with, no feeling of bodily presence among.

With regard to description in general, as applicable to all cases where a complex object or scene has to be represented to the view, the leading maxim, as already hinted at, is to combine a *type* of the whole with an *enumeration* of the parts. Some comprehensive designation that may spread out the main features of the object is indispensable to the description; and within this the details may be arranged in proper form and order. The following is a very simple instance from Milton, which seems as if it could not have been stated otherwise than he has done; but it shews itself in carrying into complicated cases the method that appears self-evident in easy cases. The words in italics mark the comprehensive designation or type, the rest of the description giving the details:

> 'They plucked *the seated hills*, with all their load—
> Rocks, waters, woods—and by the shaggy tops
> Up-lifting, bore them in their hands.'

Carlyle's description of the town and neighbourhood of Dunbar, the scene of Cromwell's decisive victory over the Scotch, is rendered vivid and conceivable, in consequence of his always introducing particulars and details by terms and epithets that are at once comprehensive and picturesque:

'The *small* town of Dunbar stands *high and windy*, looking down over its herring-boats, over its grim old castle, now much honeycombed, on *one of those projecting rock-promontories* with which that shore of the Firth of Forth is niched and Vandyked as far as the eye can reach. A beautiful sea; good land too, now that the plougher understands his trade; *a grim niched barrier of whinstone* sheltering it from the chafings and tumblings of the big blue German Ocean. Seaward, St Abb's Head, of whinstone, bounds your horizon to the east, not very far off; west, close by, is the deep bay and fishy little village of Belhaven: the gloomy Bass and other rock-islets; and further, the hills of Fife, and *foreshadows of the Highlands*, are visible as you look seaward. From the bottom of Belhaven Bay to that of the next seabight St Abb's-ward, the town and its environs form a peninsula. Along the base of which peninsula, "not much above a mile and a half from sea to sea," Oliver Cromwell's army, on Monday, 2d of September 1650, stands ranked, with its tents and town behind it, in very forlorn circumstances.

'Landward, as you look from the town of Dunbar, there rises, some short mile off, *a dusky continent of barren heath hills;* the Lammermoor, where only mountain sheep can be at home. The crossing of which by any of its boggy passes and brawling stream-courses, no army, hardly a solitary Scotch packman, could attempt in such weather. To the edge of these Lammermoor heights David Leslie has betaken himself; lies now along the utmost spur of them, a long hill of considerable height. There lies he since Sunday night, in the top and slope of this Doon Hill, with the impassable heath continents behind him; embraces, as with outspread tiger-claws, the base-line of Oliver's Dunbar *peninsula*.'

Of Historical Composition.

Narration is, in the simplest class of cases, an easier effort than description; inasmuch as we have merely to enumerate the objects or events one after another as they rise to the view. But since, in the greater number of instances where narration is of any importance, the successive events present individually a wide and complex surface, there is demanded for each an appropriate description; and a succession of descriptions will thus make up the narrative.

This is particularly true of historical narration, or the detail of the larger transactions of masses of men on the face of the globe. History is properly a compound of narration and description: it has to express the mighty march of nations through the ages of time.

There is, however, this peculiarity in the case, that the scene of action remains the same in all its larger features. The surface of the earth, the mountains, valleys, plains, and rivers, where men live and act, continue the same; and they have, therefore, to be made known once for all in the case of each separate people that remain attached to one territory. Although this diminishes the difficulty of the historian, yet there is required considerable exertion on his part to make an ordinary reader conceive with perfect clearness the features of a foreign country. The following are a few of the requisites of historical composition, considered in its purest form; or with as little reference as possible to the expositions of doctrines and opinions, and the criticisms of character and conduct, that mix so largely in the greater number of historical works:

1. It is essential that the ground where the transactions have occurred should be distinctly pictured forth at the outset, and maintained steadily in view by the subsequent references; in other words, the geography should be fully comprehended by the reader before commencing the history. There will, of course, be certain portions of the geography more pertinent to the narrative than others, and these will naturally be the most insisted on. Thus, if the country subsists largely upon its mining operations, the mines must be prominently described in the preliminary survey. With regard to geographical description in general, in which our school-books err deplorably, the principles of description already laid down must be faithfully observed. We must start with a comprehensive sketch of the surface, by stating the great outlines and the prominent central points, and branch out from these in every direction, in a regular order, and with constant reference to the main features. The *expanded space* occupied by the country should be steadily maintained in the view, there being a constant tendency in the uncultivated mind to allow the territorial expanse to collapse into a jumble of confused particulars, and thus destroy the chief grandeur of the scene. The description of a country by a bare catalogue of its coasts, mountains, rivers, islands,

chief towns, &c. is to be considered as a gross violation of every principle of descriptive or expository art. In some of the larger geographical works, such as Ritter's, and the articles on Geography in the *Penny Cyclopædia*, the *proper order* of description is in general well exemplified.

The full geographical detail includes, in addition to the situation, features, and climate of the country, the nature of the soil and strata, the vegetable and animal life that flourish in it, and the population considered as to its race and connections with the great human family.

2. The second principle of historical composition relates to the tissue and substance of the narrative itself. *A history ought properly to be a series of pictures or cross sections of a nation's existence appropriately selected from different epochs, with an intermediate narrative to explain how the one became transformed into the other.*

It is to be understood that mere existence does not furnish matter for history. If a people have got themselves into a quiet routine of being born, growing up in the exact footsteps of their fathers, and dying, to be succeeded by others like themselves, and continuing thus from generation to generation without progress or change—all that can be stated of such a people is, how they exist at any one time, or what are the incidents of a single generation : there is no material for a continuous narrative. There are many societies very nearly in this predicament : the Chinese are an example of a people with a high civilisation, but with very little tendency to change ; and most of the savage tribes of America and Africa, and the wandering hordes of Asia, are still more destitute of the subject-matter of a history. Progress, change, expansion, development, all that we mean by civilisation, form the substantial matters of historical narration.

The most prominent spectacle usually presented by nations is their quarrels with their neighbours, with the struggles and wars that ensue, and the loss or gain of territory incident to contests. Every kind of strife, contention, and combat, where large interests are at stake, and the human powers exerted to their very utmost, has an exciting effect on the beholder, and makes a stirring narrative to a reader. The historian, anxious to make his work as little dull as may be, is glad to have such matters to throw into it ; indeed, they are apt to be the chief things to seize his own attention. Hence the real substance of history has often been concealed by the prominence of the exciting and bustling drama of battle, victory, and death. The internal struggles of a nation for the possession of the sovereign power have the same dramatic interest, in addition to their importance in the real history of the people.

Although it is impossible to lay down a universal formula for historical composition, it may nevertheless be shewn that conveniently chosen epochs for cross sections, or complete pictures of the total life and existence of each people, ought to be the great divisions of the history ; and that the narrative should dart between these, so as to explain upon general laws of progress and change how one came to be transformed into another. The selection of the epochs will be determined by the character of each case ; the number of them will be greatest in the histories where progress has been most rapid, as in the history of Greece ; and the period assumed must depend on the time that would best represent a full and average natural existence. Guizot's *History of Civilisation in France* exemplifies in some degree this choice of epochs for a detailed picture of social existence.

One of the best examples of the detailed analysis and portraiture of a people at some one epoch is afforded in the first book of Mill's *History of British India.* The display of the institutions and whole existence of the Hindus in that book will render the scope of the above remarks perfectly intelligible to any one desirous of studying the subject. So little have the Hindus changed within historical periods, that Mr Mill finds one display of their existence to be sufficient ; but in a growing country, the array of social existence would have to be gone over more than once. In England, there are various epochs that could be fixed upon : a Saxon epoch, a Norman epoch, one at the reign of Elizabeth, a Puritan epoch, and one in the early half of the last century, would be essential ; and a considerable amount of explanatory narration would be requisite to connect each of these with the preceding in the way of causation.

These remarks refer to the total march of an entire people, and apply only in a small degree to partial histories, such as histories of science, art, commerce, medicine, &c. ; but wherever the stream of events is massive or complicated, the plan of treating it by well-chosen cross delineations is advisable.

History, from the largeness of its subject, is capable of a very wide variety of treatment ; and many successful works have been produced, both in ancient and in modern times, although with very different kinds of merit. It is not a little remarkable that the oldest historical composition of pagan antiquity—the work of Herodotus—should come up more nearly than almost any production that could be named to the standard of composition now laid down upon the most advanced scientific considerations that we are able to bring to bear upon the subject. In that great epitome of the ancient world, all the nations known to a Greek inquirer of the fifth century before Christ are pictured forth with vividness and precision, and the classification of details is quite equal to anything employed in the greater number of works of subsequent ages.

Of recent historical compositions, Mill's *British India* is the greatest English work, viewed according to the exposition now given of the proper tissue and structure of history. Guizot's *History of Civilisation in France* is the most remarkable foreign production on the same model. The *History of Greece*, by Grote, is allowed to be a work worthy of the greatest people that has yet appeared on the face of the globe.

Exposition.

The leading maxims to be observed in the exposition of the abstract sciences—such as mathematics, physics, &c.—must be ruled by the consideration, that each of them contains a series of artificial notions or conceptions that can work themselves into the human brain only by a slow and deliberate process. Hence the strictest orderliness must be observed in arranging their constituent ideas, so that each may be presented only after all others necessary for conceiving it have

been fully mastered. Scientific acquisition is a work of severe discipline; and the simplest steps should be securely fixed before any attempt is made to go beyond them. The art of the teacher lies wholly in attending to this. The greater number of the abstract sciences fall properly to be taught by the schoolmaster, and not by unassisted books. But when it is desired to make science possessible by a reader going through a book at an ordinary pace, the following procedure must be adopted:

1. The propositions or abstract notions must be stated in the clearest possible form.

2. Each proposition may be expressed in two or three various forms of language, but there should be some one form adopted for remembering it by. A vivid epigrammatic statement of a proposition, either before, or to sum up and condense, the exposition, is always very effective, and indeed necessary for the sake of the memory.

3. It being understood that only one proposition or abstraction is stated at a time, each must be followed up by a series of *examples* or instances chosen from things familiar to the reader. The examples at first should be extremely simple, but in the end they should become more difficult, so as to shew the power of the principle to throw light upon them.

4. Besides explaining by examples or cases in point, we may explain by *illustration*, or by similes or parallels, from some class of subjects more palpable to the understanding than the one treated of; as when we illustrate the conflict of motives in an individual mind by the visible contests of animal strength. The caution in the use of illustrations is to see that they do not bring in confusing ideas.

The writer of a manual for schools, or of such a book as Euclid's *Elements*, gives a whole string of definitions, containing strange and unfamiliar notions, without the slightest pause; but the popular writer must take care to bring upon the stage only one new notion, or technical phrase, at a time; and each must be spread out, repeated, exemplified, and illustrated, by easy exposition, before the writer ventures upon a second. One of the great burdens and pains of human life is to work with half knowledge or half capacity; and this is never more felt than with the reader of a scientific book, where novel conceptions flow in upon him faster than he can fix them.

It has been thought that the concrete objects of the world are not sufficiently kept before the mind in abstract expositions. This is true to a certain extent; for the doctrines of addition, subtraction, multiplication, &c., and the theory of decimal notation, which is the entire foundation of arithmetic, might be rendered much more intelligible by the use of objects—such as wooden cubes made up into rows and squares. This method has been carried out in the system of Pestalozzi. On the other hand, the necessity there is for creating ciphers, symbols, and other artificial apparatus, shews that we are committed to a peculiar region of things; and we must make up our minds to comprehend and use the abstractions themselves, independently of the concrete forms. In the most popular scientific book of our day, Dr Arnott's work on Physics, where concrete illustration is carried as far as it has ever been in an abstract exposition, the author, instead of proceeding gradually from the concrete to the abstract, finds that the nature of his subject requires him to place at the very threshold the four most abstract notions that his subject contains—namely, atom, inertia, attraction, repulsion; and he calls upon his reader to comprehend these, as a preliminary to all the rest.

In the other class of sciences—such as Natural History, Geography, Morals, &c., which, instead of being universal and theoretical in their subjects, are more or less either local or practical—a different style of treatment is possible. In the exposition of these there are two great maxims never to be lost sight of:

1. In endeavouring to make the reader comprehend a class of objects—of animals, trees, shrubs, rocks, strata, or whatever else—it is essential to fix the attention first upon some one actual specimen, and to describe it on all sides, with such a degree of explicitness and fulness, that the entire object shall be completely familiar to his mind. This being once done, other individuals can be defined and made known by their *differences* from the typical one; and whole classes can be chalked out and discriminated. If one individual has been thoroughly conceived in all its parts, then every other individual may be conceived with the same fulness when its difference is made known. Thus the knowledge of the vertebrate series of animals is best secured by a profound acquaintance with the *human* anatomy: this once achieved, it requires only an attention to the points of distinction to have an equally profound and thorough acquaintance with every individual of the vast series. Now that a universal nomenclature has been completed by the labours of Professor Owen, such a transition from the human type to the vertebrate series is rendered a comparatively easy task. But the grasp of the whole will never be secure unless the knowledge of the *typical instance* is certain.

2. In bringing before us some object that can be represented only by a series of descriptive references to other things, it is necessary to commence with the known, and proceed by known connections to body forth the unknown. The exact state of mind, in respect to knowledge, and interest or likings of the person addressed, must be clearly kept in view. The interest of a description increases by the number of ways that it connects itself with our personal experience. Thus, to describe a manufacturing process—say the manufacture of soda—the method is to commence it at the stage where the hearer is familiar with the things employed—namely, at the employment of sea-salt and oil of vitriol—and then give every successive action in language that recalls familiar objects.

The description of animals is rendered intelligible and interesting by dwelling upon the points that have a parallel in human life; as where they get their living, how often they eat, when they sleep, how they spend their day, the length of their life, their hardships and difficulties, their pairing, procreation, and parental solicitudes, their faculties and capacities, their means of defence and offence. The vegetable and mineral world has an interest by relation to human uses and wants, as well as to the uses of the animal creation at large. If there is any animal or vegetable familiar to us—such as our household quadrupeds and insects—the naturalist has a good hold on our attention,

if he wishes to lead us into the hidden minutiæ of their structure and existence. The natural history of household animals would make a work of universal and unfailing interest.

Besides the subjects slightly alluded to in the foregoing remarks, exposition includes a vast range of compositions in politics, law, theology, morals, and many other sciences, besides the wide domain of practical business, where it is required along with the other literary efforts of narration and description.

PERSUASION.

We are now to consider the forms of address suitable to influencing the conduct or activity of men. In addition to the spontaneous impulses of any given individual, there are many ways of acting upon him from without that are equally effectual in determining what he shall do or abstain from doing. He may be made to act through external compulsion, for example, or by the command of his superior, which is moral compulsion. But apart from these, he may be led into action by sympathy with others, and likewise by the influence of the mere will and presence of one who has no means either of coercing or of commanding. But persuasive address differs from all these modes of inducing action upon human beings. It implies that some course of conduct shall be so described or expressed as to coincide, or be identified, with the active impulses of the individuals addressed, and thereby command their adoption of it by the force of their own natural dispositions. A leader of banditti has under him a class of persons whose predominant impulse is the attainment of plunder; and it becomes his business to shew them that any scheme that he desires them to carry out will achieve this object. A people with an intense overpowering patriotism, like the old Romans, can be acted on by shewing that the good of their country is at stake. A Christian assembly is supposed to be capable of being roused into action by the prospect of extending the power and influence of Christianity in the world. In a comprehensive survey of the Art of Persuasion, the following things deserve to be considered:

1. The ends most usually sought by means of persuasive address. These are innumerable in their detail, but the purposes of an exposition will be served by singling out a few of the more prominent. In the oratorical professions of the preacher, the pleader, the leader of political assemblies, the newspaper writer, there are certain well-known objects sought to be attained. In opposition to individual egotisms and peculiarities, it is desired to induce a course of action conducive to the interests of the world, or the community at large, or of some part or section thereof, or, it may be, of some single person. In moral and religious address, the larger and nobler ends of one's being are sought to be impressed and made predominant over present and passing impulses. At other times, the thing aimed at is to make the reason, which embraces the comprehensive good of the whole, to prevail over the passions and instincts. It is often desired to produce *belief* or conviction in men; which means, not immediate action, but a general disposition to act in a particular way when certain occasions arise; as when we wish to prove that the most effective kind of local government is a combination of local authority with the wisdom and experience supplied by a central power. And when men are agreed as to the thing that they should do, much dispute may arise as to the manner of doing it; and the author of each different scheme has to devise ways and means of carrying the minds of the audience with his proposal in preference to the others. There can be no doubt as to the highest and noblest ends of persuasion—which are to sway the minds of men in favour of the universal, the eternal, and the true, as opposed to the sectarian, the temporary, and the false. To induce men to act upon a delusion is a poor triumph. The projectors of bubbles, the inventors of quack medicines, the dealer in puffery and unsubstantial commodities, the panderers to the mob, are all highly persuasive with little art—it being one of the weaknesses of humanity to be impressed by dazzling hopes and prospects. It requires greater genius and skill to induce men to adopt what will succeed in the end.

Although the usual end of persuasive address is to turn the existing dispositions of men to some immediate account, it yet falls within the scope of such address to inflame and cultivate the dispositions themselves, as in the work of the preacher and teacher.

2. It is essential to persuasion that the speaker should be accurately acquainted with the minds and dispositions of his hearers. The perception of character is indispensable to an orator's success: if he mistake his audience, he cannot hope to move them by his address. This thorough knowledge of character is an attainment come at in various ways. The primitive source of our knowledge of our fellows is the consciousness of ourselves, and the assumption that other persons are made after the same fashion. A clear and vivid consciousness of self—that self being abundantly rich and varied—is the foundation of all accurate knowledge of other men's minds. Next to it is sympathy, which implies that we readily fall into the states of mind indicated by the outward expression given forth by those about us. Like the primitive consciousness of self, this differs very much in different individuals. It is the chief corrective of the false assumption that all other men are exactly what we find ourselves to be. The third source of knowledge, and the next to sympathy as a means of enlarging the narrow primitive conception, is the steady observation of men's whole actions and ways, and of everything that shews their dispositions and characters. We have to note the things that attract and repel them, their usual incentives to action, together with their own expression of what influences and guides them. We can go still farther, and experiment upon all these points by endeavouring ourselves to control their actions by suitable management. This combined observation and experiment is the usual recognised source of a knowledge of mankind. Abundant opportunities of seeing men, and acting with them, against them, and on them, are supposed to be the true and only means of being accomplished in this knowledge. But, after all, it is only a valuable supplement of self-consciousness and sympathy. The fourth source of the knowledge in question is furnished by the generalised laws and properties of mind included in the science

of mind. But for the purposes of oratory, as practised in our day, this source of knowledge need not at present be discussed. It is evident, on the whole, that a clear consciousness, sympathy, and observation of the impulses and active dispositions of men, confirmed by repeated experimenting upon those very dispositions, are indispensable to persuasive address. These are the sources of oratorical *tact*.

It is a necessary consequence of this knowledge that it should enable a person rapidly to discern a character from its appearances, so as to perceive the dispositions of strangers in a very short time, and to trace instantaneously the effects produced on an audience in the exercise of the oratorical art.

3. Next to a distinct end, and a thorough perception of the moving forces of the assemblage to be wrought upon, comes the great constructive process of the art, which is so to shape the statement of the end, that it may connect itself with the most powerful impulses and convictions of the party addressed. The capacity for this must spring from a rich and accomplished mind, able to discern all the connections and aspects of a subject that are likely to touch the motives or coincide with the dispositions of an audience. Thus, if we examine Milton's *Apology for Unlicensed Printing*, we shall find that the vast range and compass of his knowledge and conceptions enabled him to lay out with unparalleled fertility the whole subject of the connection of a free press with the welfare and the elevation of the human kind. We may find men more at home in adapting a subject to the exact standard of the ordinary class of minds, so as to be capable of securing a great extent of practical conviction; but nowhere has any one addressed with more varied and powerful persuasives all that is high, generous, and noble in humanity, than Milton in this instance. A practical, business orator would not have struck so high a key; his object being to gain an end solely, he would have confined his arguments and address to that side of his audience that they could be drawn by. The successful pleaders at the bar furnish the best examples of this last species of oratory.

It being assumed that fertility of intellectual views, with a capability of expressing them in language, are at the basis of persuasive power, it is possible, nevertheless, to assign the precise peculiarities of art which affect a speaker's success.

1. The persuasive mode of composition must frequently be based on some of the preceding modes of simple communication—namely, narration, description, and exposition—but in such a case, these will be so shaped as to influence the minds of the persons addressed towards some particular end. Thus the narration of the facts in an ordinary law-pleading is usually conducted so as to produce a bias in favour of one side; the circumstances that have this tendency being put prominently forward, while the others are kept in the shade. In like manner the exposition of doctrines or principles is involved in a great number of the attempts at persuasion. A beautiful example of an exposition, conducted with high oratorical effect, is furnished in the following extract from one of the speeches of Demosthenes. It professes to be a definition of Law:

'The whole life of men, whether the state they live in be great or small, is governed either by Nature or by Law. Nature is irregular and capricious; Law is definite, and the same to all. When the natural disposition is evil, it frequently urges to crimes; but the laws aim at the just, the good, and the fit: these they search out, and when determined, they publish as the regulations to be followed by every one alike. To these obedience must be rendered on many grounds; but most of all on this—that *law is the invention and gift of the gods, the resolution of prudent men, the corrector of voluntary or involuntary wrong-doers, and the determination of the state at large, which is necessarily binding on all its citizens.*'

Here the high function and claims of law are stated and enforced by being allied with the most commanding and august sanctions that the world can furnish.

The following is a modern instance of the same mode of address, where an exposition is the basis of an appeal to the convictions and active principles of men. It is on the subject of slavery; and the author (Robert Hall) intends to produce in his readers a strong feeling of hostility to the slave system by a mere exposition of its essential character:

'That slavery is the most deplorable condition to which human nature can be reduced, is too evident to require the labour of proof. By subjecting one human being to the absolute control of another, it annihilates the most essential prerogative of a reasonable being, which consists in the power of determining his own actions in every instance in which they are not injurious to others. The right improvement of this prerogative is the source of all the virtue and happiness of which the human race is susceptible. Slavery introduces the most horrible confusion, since it degrades human beings from the denomination of persons to that of things; and by merging the interests of the slave in those of the master, he becomes a mere appendage to the existence of another, instead of preserving the dignity which belongs to a reasonable and accountable nature. Knowledge and virtues are foreign to his state: ignorance the most gross, and dispositions the most depraved, are requisite to reduce him to a level with his condition.'

2. Argument, or proof, which is the medium of bringing the conviction of truths home to men's minds, must be a frequent means of persuasion. If the persons addressed were always of a strictly logical turn of intellect, then the soundest reasons would be the most persuasive; and the rhetorical method would strictly coincide with the logical. But as this is not the case, there are various resources used in the statement of arguments that do not belong to rigorous demonstration. Indeed, there are certain devices, known by the name of arguments, that do not in any degree imply proof—as the *argumentum ad hominem*, and the *argumentum ad verecundiam*, or appeal to authority, neither of which concern the absolute truth of the question at stake. It is very common also to appeal to the inconsistency of some practice, or to shew the impossibility of carrying out the principle in all cases. This ought to have more weight than it usually has with the mass of men, who care for immediate objects more than for rigorous thorough-going consistency.

In conducting a chain of arguments, it is usual

to begin with a full and explicit statement of everything that is admitted by all parties. There is a great advantage in doing this, as it may be possible to shape such a statement so as to suggest inferences of use to the cause in hand.

There is always a powerful effect produced by stating a case so as to appear not only highly credible and probable, but also exceedingly *plausible*, which is done by making the whole case appear to coincide with the familiar experience and natural expectations of the hearers.

3. Another important device consists in summing up an exposition or a chain of reasoning in some short or epigrammatic statement, that will be remembered and circulated. Such statements are adapted to cling to the mind when the whole of a diffuse explanation has vanished. 'Property has its rights as well as its duties,' is a good example. Something of the same effect is produced by compositions that all centre upon some one or a few distinct ideas that are repeated and impressed by every part of the illustration. Dr Chalmers has largely exemplified this mode of exposition and persuasion; Malthus's work on Population is also a remarkable instance of the concentration of a large mass of illustration upon one idea, and the effect upon the reader is correspondingly powerful. The science of Astronomy in any exposition that does it justice has the same effect; it being the working out of the one great idea of Gravitation.

4. The mode of demeanour observed by a speaker or writer, although not relevant to the soundness of his arguments, is important in regard to the effect that they may produce upon the persons addressed. This is one of the many considerations as to acting on the feelings, which have to be set forth in a treatise on the whole art of persuasion. The chief point respecting demeanour is to avoid the appearance of dictation or command when addressing people who are free to adopt or reject the proposals recommended to them. Dictation, with the majority of men, raises a feeling hostile to the speaker; whereas, by a respectful tone of address, by hinting and suggesting, instead of commanding, a prepossession is created in favour of what is urged.

5. The foregoing remark illustrates only one of a comprehensive class of requirements of persuasive address—namely, those referring to the repression of the peculiar feelings and egotistic peculiarities of the speaker, in so far as they clash with his objects. It is one of the standing weaknesses of men to be completely occupied and engrossed each one with his own feelings, and to assume that these are not incompatible with other people's feelings or peculiarities. In the whole intercourse of life, repression of self and regard to other men's likings are essential, but most of all in the attempts that one person makes to influence the wills of others. We are apt to assume that what impresses ourselves will impress our fellows; and it requires a cool observation of the effects that we actually produce on other men's minds, to convince us that we are mistaken in this matter. The success of a speaker will be determined in a great measure by his ability to restrain himself, and assume the exact point of view, as well as the peculiar likings and dislikings, of his audience.

6. The known character and dispositions of a speaker have always a high influence. The respect entertained for him, the belief in the integrity and soundness of his judgments, and the affection and attachment that he is able to inspire, are well known to be conducive to the weight of his address.

7. There may be a special attempt made to induce a favourable state of mind in the hearers towards the speaker. He may expressly lay himself out to indulge their known tastes, likings, and humours, and to adapt himself to their peculiarities and habits. He may, for example, adopt a homely familiar style in addressing the uneducated, and in all cases shape his appeal so as to touch the favourite associations of whatever class he has to deal with.

8. The mere action of sympathy goes some way in every address—that is to say, there is a tendency in every man to give way to the expressed feelings of another when no obstacle stands in the way; consequently, a speaker who feels and expresses his feelings intensely, has an influence through this sympathetic action, or by a sort of infection or contagion; and with an audience not indisposed to fall into the current of his emotion, he may be extremely effective. All men of naturally strong earnest emotions, *coupled with the adequate power of expression or infection*, have been powerful orators.

The expressed will and energetic determination of a man has always great weight in affairs, from the disposition of men to succumb to heavy pressure, when they are not sufficiently excited to resist it. It is a matter of daily observation in assemblies, that a man of strong persevering will carries a great many points that would not be conceded to a person less boisterous and troublesome: mere physical strength of voice and gesture contribute to this effect.

It is constantly seen in the world that there are men and women of naturally powerful and commanding *presence*, who have a far greater facility in bending the wills of those about them than other people who are equally knowing and talented. Teachers, heads of families, persons in authority, are occasionally met with having the natural gift of securing obedience from mere personal ascendency; and the same bodily constitution has its influence in addressing multitudes. Lord Chatham was evidently an example of a man of a great natural ascendency of character, apart altogether from the value of his ideas or the intrinsic weight of his language.

It has been found that boldness and loudness of assertion go for something with an audience, however little the assertion may be supported by evidence or proof. Loud-spoken praise on the one hand, or energetic denunciation and abuse on the other, are never altogether devoid of influence.

9. There are certain of the strong emotions of humanity that may be singled out as having great power in producing active impulses when they are once brought into play. Pity, tenderness, compassion, and the warm affections, when roused in favour of a cause, will be found to be strong auxiliaries. In like manner, the ludicrous—humour, mirth, and ridicule—have very great influence. To these we may add the passions of anger, resentment, and indignation, or the whole range of *antipathies*, which may be roused, by appropriate representations of a case, to the very

great damage of the person or cause against whom they are directed.

10. The gratifying of the emotions of taste and of the love of ornament and beauty, is a useful accompaniment of the persuasive art, and disposes the hearers in favour of the speaker. An ornate speaker like Burke, or a writer like Bacon, will gain influence over a class of minds by the enjoyment that each of them imparts through his style and treatment. The highest poetic art may be brought to the aid of an argument; and an appeal to the taste may go a great way, as well as an appeal to the heart or the head. The author of enjoyment will always gain influence over the people that he delights, and he may use this influence to suit his other purposes.

11. There is a certain kind of persuasive address that so completely enters into the heart and feelings and entire being of an audience, that it carries them away as if by irresistible enchantment. If a speaker has the power of inspiring this overwhelming enthusiasm in the minds of an audience, he may do with them as he pleases; he works not by reason, but by infatuation. By intensely exciting and gratifying all the powerful impulses and most exquisite susceptibilities of an individual or a multitude, such an inestimable boon is conferred upon them, that the author of the enchantment may ask what he will, and it will be given him. Men will rush with eagerness to listen to a speaker or to join a cause that can inspire all their highest emotions to the utmost pitch. Indeed, an orator or leader can hardly expect to be extensively popular without some power of inspiring an enthusiasm of feeling or sentiment on the side of his cause. It is this that properly constitutes *eloquence*. A spiritual reward has to be given in return for obedience. The influence of an orator is thus of a piece with the influence of a favourite or an object of affection; an influence, not of reason, but of fascination, infatuation. When such powers of fascination concur with truth and right, they are an inestimable blessing to the world.

The progress of civilisation modifies the tone of oratory and eloquence by changing the tempers and aims of men's minds. In a rude primitive age, the passions required to be strongly roused; but in an advanced period of the world, and in calm, routine, comfortable times, cautious prudence and worldly interest exert a powerful sway, and require to be kept in view in persuasive efforts.

POETIC AND LITERARY ART.

The compositions that go under the name of poetry are so various, that a difficulty has been experienced in determining what feature is common to them all. The metrical form is evidently not the boundary of the species, as there are many compositions in prose that are felt to have a highly poetical character, while many that are cast in a metrical dress do not deserve to be ranked in the class.

The definition given by Coleridge, if it does not completely narrow the idea of poetry to its strict limits, at least goes a great way to do so. According to him, poetry is the contrast, not of prose, but of science. Science analyses and separates the appearances of nature into their ultimate and indivisible parts; in other words, it deals in abstractions, and in certain artificial modes of viewing the world that are adapted for explaining the order of cause and effect, or invariable conjunction therein; while poetry deals in aggregates or combinations, and endeavours to produce such combinations as are of a harmonious kind. Science deals with a majestic river by resolving it into the forces of gravitation, cohesion, liquidity, optical transparency, solubility, &c.; poetry, in common with painting, views it in its full body and entire aspect, and, instead of decomposing, *combines* it with other objects of the landscape. To harmonise combinations of different objects and effects is the aim of art in every region; *to harmonise the images and thoughts that can be conveyed by language with one another, and with the language itself*, is a general description of the poetic art. But in accomplishing its end, poetry has to select appropriate *subjects;* for it is not everything expressible in language, however harmonious, that will constitute the matter of a true poem. Accordingly, there is a certain range of materials adapted for poetic treatment, and reproduced in the literatures of all ages: being the objects in the outer world, and the occurrences and situations of human life that most profoundly stir and agitate the minds of men. The eternal struggle of humanity with the world around, and the dread powers above; the tragedy and the triumph of human life; the all-ruling passion of love, and the intense aspirations of men towards the great, the lofty, and the infinite; the magnificence, the variety, the complexity, and the mystery of nature and of being; the divinities that are recognised as ruling in the sphere of the supernatural; the great aspects and scenery of the firmament above, and of the earth beneath; the revolutions of time and seasons; the mode of existence, the achievements and the vicissitudes of human societies, and of their leaders and heroic men; and, in general, all objects that address themselves to the feelings and susceptibilities that we term sublime, awful, grand, venerable, beautiful, melodious, pathetic, stirring, humorous, or picturesque. The mere vulgar utilities of life, although indispensable to the existence of men, and therefore the objects of their solicitude, do not stir and occupy their entire being so effectually as these matters of extraneous interest, and are not included among poetic subjects. The exclusion also extends to scientific abstractions and technicalities, to tables of logarithms, calculations of annuities, and atomic weights, although expressing some of the gravest facts of creation.

No better short example of the peculiar matter of poetry, adorned with the highest felicity of treatment, could be given than in the following lines:

> 'How sweet the moonlight sleeps upon this bank!
> Here will we sit, and let the sounds of music
> Creep in our ears; soft stillness and the night
> Become the touches of sweet harmony.
> Sit, Jessica; look how the floor of heaven
> Is thick inlaid with patines of bright gold;
> There 's not the smallest orb which thou beholdest,
> But in his motion like an angel sings,
> Still quiring to the young-eyed cherubim.'

The metrical form of language has always been felt to be the appropriate accompaniment of a certain elevation of subject; while the prose form

suits a state of mind more free and composed, as in the ordinary routine business of life. As the dance is to walking, so is the poetical measure to prose. But since the age when prose began to be a form of literary composition, and to be cultivated with artistic skill, innumerable works have been produced which have seized upon the fittest subjects of poetry, and embodied them with a dress and treatment such as to produce effects equal to the finest metrical compositions. The speeches, histories, and moral and critical works of the ancients, which, along with poetry, constituted their polite literature, are adequate to produce the same deep intense human interest that is sought in the greatest productions of poetic genius. And in modern times there are large classes of prose works that draw upon the sources of highest poetic emotion, and differ only from poems in departing from the measured stateliness of metre to adopt a freer and more varied flow of melodious expression. The whole of our romances, novels, and unversified plays, together with much of our history, biography, criticism, sermons, and moral disquisitions, are distinguished by the poetical, in opposition to the utilitarian or scientific aim, and endeavour to stir, cultivate, and inspire the warm susceptibilities and generous enthusiasm of humanity.

Among the many varieties of poetical composition, there are a few that are marked by wide characteristic distinctions which deserve to be specially alluded to.

Lyric Poetry or Song.

This is among the most primitive of literary compositions. The strong predominating feeling of a moment—whether love, heroic resolve, anger, exultation, courage, admiration, grief—in a mind gifted with the outpouring of song, expresses itself in fervid and lofty phrase, which thrills the ears and hearts of men, inspiring them with the like emotion. It is, however, only a very select and limited class of minds whose creativeness takes the lyric form, and they are often incapable of any of the other great poetic efforts. But if we range over the extant literature of the world, we shall find that the most exquisite effusions of song have never been wanting to any cultivated people. The Jews, Greeks, and Romans have contributed a large proportion of those that still delight our modern ears. England, Scotland, Ireland, France, Germany, Italy, Spain, have each produced lyric poets of the finest mould; and in all these countries the mass of the people, who are too rarely reached by works of genius, have had their lives cheered, enlivened, and invigorated by congenial song.

As an exquisite example of the matter of song, and of the cheering turn that it can give to our views of life, we quote the following from Goethe, as translated by Carlyle. The title is *The Freemason:*

'The mason's ways are
A type of Existence,
And his persistence
Is as the days are
Of men in this world.

The future hides in it
Good hap and sorrow;
We press still thorough—
Naught that abides in it
Daunting us—onward.

And solemn before us
Veiled the dark portal,
Goal of all mortal:
Stars silent rest o'er us,
Graves under us silent.

But heard are the voices,
Voice of the sages,
The world and the ages;
Choose well; your choice is
Brief, and yet endless.

Here eyes do behold you
In eternity's stillness;
Here is all fulness,
Ye brave, to reward you:
Work, and despair not.'

Epic Poetry.

The epic poem or stirring narrative, with its 'beginning, middle, and end,' its regular development, and appropriate conclusion, which, when recited in early times by the wandering rhapsodist, himself perhaps the composer, proved the charm of many a social hearth or assembled village, has in these latter days been transformed into the novel or romance. Sir Walter Scott, for example, has come in place of Homer; *Don Quixote* is a modern *Æneid;* and for *Paradise Lost* and *Regained*, we have *Zanoni* or *Wilhelm Meister's Apprenticeship.*

Plot-interest is the life and soul of the epic, of whatever country or time. A narrative of stirring transactions, with hairbreadth 'scapes, and moving incidents by fire or flood, full of breathless interest and painful suspense, with trials and difficulties getting thicker and thicker around the path of hero and heroine, to be triumphantly and marvellously dispersed in the end—these are the magician's materials for engrossing minds young and old, and for converting sober reality into a fairyland of day-dreams. The wide variety of this species of literature, and the changes that it has undergone between Homer and Virgil, and downward through medieval romance to the novels of the day, would require an elaborate delineation, which has been repeatedly attempted in the more lengthened works on the history of literature. The greatest and most important peculiarity in the recent course of such productions, is the endeavour to make what is exciting in plot and character coincide more and more with what is real in life; so that the readers may not have their minds preoccupied with false and deceptive notions as to the current of the world and the characters of men. As all such works deal in representations of the transactions or doings of men and women, and put the air of reality upon these as much as possible, their readers cannot help being impressed with the view of life that they set forth; and if this proves coincident with what they actually experience when they come into similar circumstances, they have been instructed and forewarned as well as delighted. To combine truth with intense human interest is the perfection of every form of literature.

The Drama.

This mode of composition grows out of the picturesque and striking aspects of human society and life. It represents the interesting and exciting intercourse of man with man, and the outward

expression and behaviour of men in trying circumstances. Dialogue is the main tissue of the composition; and the predominating interest ought to lie in *the action and reaction of the personages on one another*. Other points of interest are introduced in subordination to the proper dramatic encounter: there is generally some plot, as in the epic; the thought and sentiment throughout require to be poetic and striking; the characters must be attractive and well sustained; and the drift and moral of the piece should not shock our sentiments of truth or propriety. In order to bring out the grandest and most powerful aspects and displays of humanity, it is found that conflict, disaster, and calamity are better adapted than positions of prosperity or good-fortune are for this purpose; hence tragedy is the most exciting of dramatic writings.

The pleasure derived by all nations from tragic compositions, which delight in setting forth events of direst misery and ruin, has been one of the most puzzling questions that rhetoricians have had to resolve. It seems very strange that human beings, who are so intensely repelled by any pain or suffering that approaches themselves, should crowd with eagerness to see representations of agony and irretrievable calamity, where no crime has been committed. But if we search deep enough among the fountains of human emotion, we shall find that there is a spring in our nature that leads to this paradoxical conduct, and that the love of tragedy is not the only way that it shews itself.

If we once extricate ourselves from the narrow notion, that the things commonly meant by pleasure and pain express all that attract or repel us, we shall be so much nearer the understanding of this question. There are many things that attract, interest, engross, arrest, and fascinate the human mind, that can hardly be said to be 'pleasing,' as the word is commonly understood. There are objects and emotions that have an irresistible interest and fascination, and yet are such as to tear and agonise the human breast. The gloomy, the awful, the terrible, the mysterious, are capable of arresting and engrossing men's thoughts, without conferring any addition to their happiness. The spectacle of punishments, executions, or death-agonies, takes a deep hold of the mind, and is sometimes with difficulty prevented from becoming a taste: in uncultivated minds, such things are often a positive recreation. The huge car of Juggernaut crushes the bones of living men, hurried by fascination to throw themselves in its way; and we have often heard of self-destruction becoming a rage with a certain class of minds. It is superfluous to adduce any more facts to shew that there is a tragic emotion in human nature, which gives an interest to things tragic, although we are possessed of other and more healthy impulses which tend to repel such objects.

If to this susceptibility to the tragic we add the multitude of other points of interest created by the genius of the poet, we shall have no difficulty in understanding the popularity of tragedy, both in the drama and in the religion of a people. There is no man living that is not occasionally arrested and enthralled by the great fact of DEATH; and the most gross and reckless of mankind have been wakened to seriousness by the presence of the Destroyer. But the interest inspired by tragic consequences is infinitely heightened, as well as made more rich and mellow, by high displays of character and conduct, by manfulness and noble bearing, by intellect and soul, and all the high qualities that are brought out in great and gifted minds engaged in a mortal struggle. Moreover, tragedy is a truth, a fact of our daily existence, which we have to learn how to encounter. Human life is partly based on the more pleasant epic result of virtue triumphant, and partly on the tragic model of disaster and ruin, which no human power can avert, and where there is nothing left to man but to act a heroic part.

Comedy is the light and mirthful form of the drama. It sets the fear of Heaven and the solemnity of life on the left hand, and enjoys all the encounters of wit and soul that are at once picturesque and exhilarating. Dialogue, both in the letter and in the spirit, is essential to true comedy; monologue or autobiography is the very antithesis of every form of the drama. The interesting and exciting flashes of address and retort, the agreeable complications of mixed interests, plots and counter-plots, misunderstanding and side-play, are the materials of genuine comedy. Both the tragedy and the comedy, as well as the epic, require the seasoning of a love-tale, which is as essential in the world of fiction as in the world we live in.

The following extract from one of the comedies of Aristophanes is an example of the genuine dramatic style, where the effect lies in the action and reaction of the characters. Bacchus had gone down to the Shades in search of a dramatic poet, and on his arrival found a dispute commencing between Æschylus and Euripides as to who should possess the tragic throne. Bacchus acts as umpire:

'*Bacchus.* Come, now, begin—dispute away; but first I give you notice
That every phrase in your discourse must be refined, avoiding
Vulgar absurd comparisons, and awkward silly jokings.
Euripides. At the first outset I forbear to state my own pretensions:
Hereafter I shall mention them, when his have been refuted;
After I shall have fairly shewn how he befooled and cheated
The rustic audience that he found, which Phrynicus bequeathed him:
He planted first upon the stage a figure veiled and muffled—
An Achilles, or a Niobē, that never shewed their faces;
But kept a tragic attitude, without a word to utter.
Bac. No more they did; 'tis very true.
Eu. In the meanwhile the chorus
Strung on ten strophes right-on-end; but they remained in silence.
Bac. I liked that silence well enough: as well perhaps or better
Than those new talking characters.
Eu. That 's from your want of judgment,
Believe me.
Bac. Why, perhaps it is—but what was his intention?
Eu. Why, mere conceit and insolence; to keep the people waiting
Till Niobē should deign to speak—to drive his drama forward.

Bac. Oh, what a rascal!—Now I see the tricks he used to play me.

[*To Æschylus, who is shewing signs of indignation by various contortions.*]

What makes you writhe and wince about?

Eu. Because he feels my censures.

Then having dragged and drawled along, half-way to the conclusion,

He foisted in a dozen words of noisy, boisterous accent,

With lofty plumes, and shaggy brows, mere bugbears of the language,

That no man ever heard before.

Æs. Alas! alas!

Bac. [*To Æschylus.*] Have done there.

Eu. He never used a simple word.

Bac. [*To Æschylus.*] Don't grind your teeth so strangely.

Eu. But bulwarks, and samanders, and hippogriffs, and gorgons,

'On burnished shields embossed in brass' bloody remorseless phrases,

Which nobody could understand.

Bac. Well, I confess, for my part,

I used to keep awake at night with guesses and conjectures

To think what kind of foreign bird he meant by griffin-horses.

Æs. A figure on the heads of ships: you goose, you must have seen them.

Bac. Well, from the likeness, I declare I took it for Eruxis.

Eu. So figures on the heads of ships are fit for tragic diction!

Æs. Well, then, thou paltry wretch, explain—what were your own devices?

Eu. Not stories about flying stags, like yours, and griffin-horses;

Nor terms nor images derived from tapestry, Persian hangings.

When I received the muse from you, I found her puffed and pampered

With pompous sentences and terms—a cumbrous, huge virago.

My first attention was applied to make her look genteelly;

And bring her to a slighter shape by dint of lighter diet:

I fed her with plain household phrase, and cool familiar salad,

With water-gruel episode, with sentimental jelly,

With moral mince-meat; till at length I brought her into compass:

Cephisophon, who was my cook, contrived to make them relish.

I kept my plots distinct and clear, and to prevent confusion,

My leading characters rehearsed their pedigrees for prologues.'

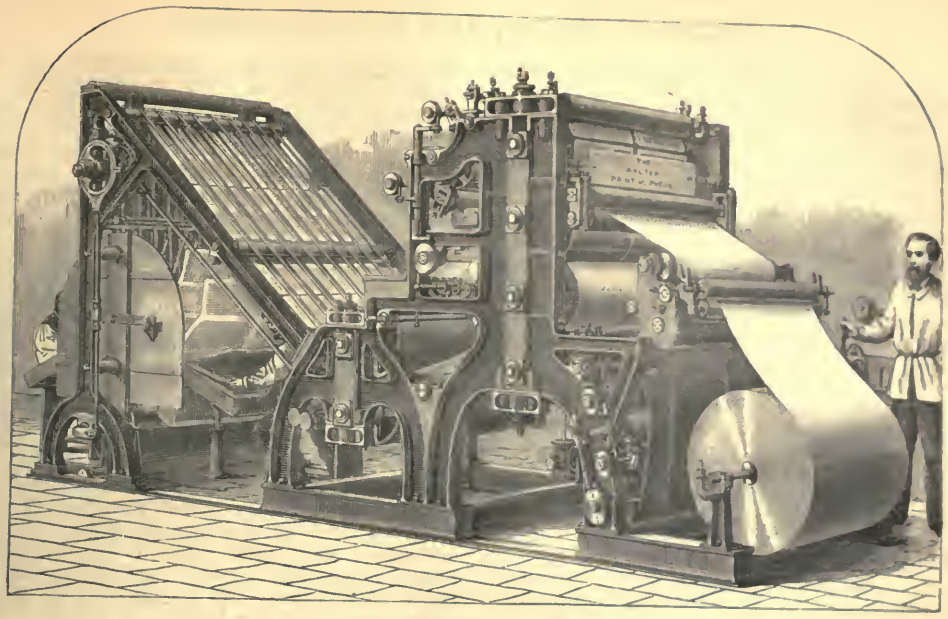
THE VENTING OF EMOTION.

When the mind is powerfully moved with passion or emotion, the bodily organs are indispensably engaged, along with what is considered the more peculiarly mental part of our organisation, in sustaining the current of feeling. Whatever power of expression, natural or artificial, belongs to man, is called into play when a strong stimulus stirs up his being; and the more completely the various organs and impulses are made to harmonise with each other, the more are painful impressions relieved, and the excess of joy moderated. Many compositions owe their origin to this necessity of giving an outward vent to inward emotion. The poet writes an ode or a sonnet; the religious man utters a prayer; the man in general addresses his friend, or contents himself with a soliloquy, or an apostrophe to the universe in general. Exclamations, ejaculations, oaths, and such-like outpourings, are among the forms of language employed to lighten the pressure of calamity, or calm the torrent of excitement. The more highly cultivated, and the more artistic and exquisite the language at command, the more effectually does it answer this end. The poetic genius can convert an occasion of grief into a mild and soothing sorrow which does not refuse to be comforted; and in the high outbursts of joyous elation, the same genius can transform a tumultuous stream into a gentle current of luxurious and prolonged satisfaction. To give an intellectual form to emotional excitement of every kind is a great advance in refinement as well as in human happiness; and to convert the inarticulate howl of the savage into the tranquil stream of melodious numbers and touching images, is a vast stride in human civilisation. To have, therefore, a language and a form for expressing all the various feelings that may swell the human breast, is one of the essentials of a community. The poetic literature of each nation generally contains examples of this among its other products; and we have many exquisite specimens of the express effort of venting emotions in appropriate language, without especially addressing any other person. The sonnets of Shakspeare seem to have purely this character.

But as, in addressing fellow-beings, the expression of individual feeling is one of the leading subjects of the communication, it happens that in the drama, and in many other modes of poetical and prose composition, there are abundant examples of the embodiment of feeling, for the purpose of relieving or gratifying the individual emotions and inward longings. How immeasurable the interval between the wail of savage grief at the prospect of death, and the embodiment of the feeling in the lines of Shakspeare!—

'Ay, but to die—to go we know not where;
To lie in cold obstruction, and to rot:
This sensible warm motion to become
A kneaded clod; and the delighted spirit
To bathe in fiery floods, or to reside
In thrilling regions of thick-ribbed ice:
To be imprisoned in the viewless winds,
And blown with restless violence round about
The pendent world; or to be worse than worst
Of those that lawless and uncertain thoughts
Imagine howling! 'Tis too horrible!
The weariest and most loathèd worldly life
That age, ache, penury, and imprisonment
Can lay on nature, is a paradise
To what we fear of death.'

An expression of this character helps to raise humanity above the terrors of evil, and to conquer misery by the grandeur of intellect.



The Walter Printing Press.

PRINTING—LITHOGRAPHY.

PRINTING.

PRINTING is the art of producing impressions from characters or figures, movable and immovable, on paper or any other substance. There are several distinct branches of this important art—as the printing of books with movable types and stereotype plates, the printing of engraved copper and steel plates, and the taking of impressions from stone, called Lithography. Our object, in the first place, is to describe the art of printing books or sheets with movable types or stereotype-plates, generally called *letter-press printing*, and which may undoubtedly be esteemed the greatest of all human inventions.

ORIGIN AND HISTORY.

The art of printing is of comparatively modern origin: little more than four hundred years have elapsed since the first book was issued from the press; yet we have proofs that the principles upon which it was ultimately developed existed amongst the ancient Chaldean nations. Entire and undecayed bricks of the famed city and tower of Babylon have been found stamped with various symbolical figures and hieroglyphic characters. In this, however, as in every similar relic of antiquity, the object which stamped the figures was in one block or piece, and therefore could be employed only for one distinct subject. This, though a kind of printing, was totally useless for the propagation of literature, on account both of its expensiveness and tediousness. The Chinese are the only existing people who still pursue this rude mode of printing by stamping paper with blocks of wood. The work which they intend to be printed is, in the first place, carefully written upon sheets of thin transparent paper; each of these sheets is glued, with the face downwards, upon a thin tablet of hard wood; and the engraver then, with proper instruments, cuts away the wood in all those parts on which nothing is traced; thus leaving the transcribed characters in *relief*, and ready for printing. In this way as many tablets are necessary as there are written pages. No press is used; but when the ink is laid on, and the paper carefully placed above it, a brush is passed over with the proper degree of pressure. A printing-office, however, has been in operation in the Imperial Palace of Pekin for many years, in which a large number of works are printed upon movable types, manufactured substantially as they are with us.

Among the first attempts at printing by means of wood-engraving (see No. 101) which can be traced to have been made in Europe, was the making of playing-cards for the amusement of Charles VI. of France, towards the end of the 14th century. Thereafter came prints from wood-blocks of human figures, single or in groups; one of the earliest existing specimens of which was found in a convent not far from Augsburg, with the date 1423 upon it. It is a representation of St Christopher, by an unknown artist; and is now, or was lately, in the possession of Earl Spencer. These prints were at first without any text, or letter-press, as it is termed; but after the groundwork of the art had been completed, its rise towards perfection was almost unparalleled in rapidity. Its professors composed historical subjects with a text or explanation subjoined. The pages were placed in pairs facing each other; and as only one side of the leaf was impressed, the blank pages came also opposite one another; which, being pasted

together, gave the whole the appearance of a book printed in the modern fashion.

The next step in the art of typography was that of forming every letter or character of the alphabet separately, so as to be capable of rearrangement, thereby avoiding the interminable labour of cutting new blocks of types for every page. The credit of discovering this simple yet marvellous art is contested by the Dutch in favour of Laurence Coster, between 1420 and 1426; and by the Germans, on behalf of Johannes or Henne Gutenberg or Gensfleisch, about 1438. In all probability, the discovery was made almost simultaneously—such a theory being consistent with the general social progress at the period, and the secrecy which both inventors at first maintained respecting their art. Gutenberg was born at Mainz (Mayence) between 1395 and 1400. He was sprung from a patrician family, which took the names of Gutenberg and Gensfleisch, from two estates in its possession. Of his early life no particulars are known, but it seems probable that he devoted himself at an early age to mechanical arts. In the year 1434 he was living in Strasburg, and there, in 1436, made a contract with Andrew Dryzehn or Dritzehn, and others, by which he bound himself to instruct them in all his 'secret and wonderful arts,' and to employ these for their common advantage. This undertaking, which comprehended the first steps in the art of printing, was frustrated by the death of Dryzehn. When and where the first attempts in the art of printing were made, cannot with certainty be ascertained, as the works printed by Gutenberg bear neither name nor date; this much is, however, certain—namely, that movable wooden types were first employed by him about the year 1438. In 1443, he returned from Strasburg to Mainz, where, in 1449 or 1450, he entered into partnership with Johannes Faust or Fust, a wealthy goldsmith. Faust furnished the money required to set up a printing-press, in which the Latin Bible was printed for the first time. This partnership was, however, dissolved after the lapse of a few years. Faust had made large advances, which Gutenberg was now to refund, but as he possessed neither the power nor the inclination, the matter was brought before a court of justice. The result was that Faust retained the printing concern, which he carried on and brought to perfection, in conjunction with Peter Schöffer of Gernsheim. By the assistance of Conrad Hummer, a councillor of Mainz, Gutenberg was again enabled to set up a press, from which proceeded the *Catholicon* (1460), and, in all probability, *Hermanni de Saldis Speculum Sacerdotum*, printed in quarto, without date or name. According to some, four editions of the *Donatus* were likewise printed by Gutenberg, while others ascribe them to Faust and Schöffer. Gutenberg's printing establishment existed till 1465 in Mainz. He died, as is generally believed, 24th February 1468. The evidence in favour of Gutenberg's being the inventor of printing, is considered by his countrymen quite conclusive, though it is not denied that he may have received the first hints of his invention from the Dutch wood-engraving.

Gutenberg's celebrated Bible, which was the first important specimen of the art of printing, and which, judging from what it has led to, we should certainly esteem as the most extraordinary and praiseworthy of human productions, was executed with cut-metal types on six hundred and thirty-seven leaves; and, from copies still in existence in the Royal Libraries of Berlin and Paris, some of them appear to have been printed on vellum. Besides those on vellum, there are several copies on paper in Germany, France, and England—all of which are justly esteemed as the highest bibliographical treasures.

Laurens Janszoon Coster, for whom the Dutch claim the honour of the invention, was born at Haarlem about the year 1370. The time of the invention ascribed to him must have fallen between the years 1420 and 1426. Coster at first worked in secret, because, he being a sacristan, his art, if known, would have brought him into unpleasant collision with the manuscript-writing clergy, whose productions he tried to imitate, even to the abbreviations; thus his name did not appear on the productions of his press. As custom increased, Coster had to take apprentices; and one of them, a German, Johann, making use of the confusion occasioned by Coster's death in 1439, is said to have purloined the greater part of his master's types and matrices, and to have fled to Mainz, where he brought the hidden art to light. This Johann was probably Johann Gensfleisch, a member of the Gutenberg family. Such, at least, is the history of the invention of printing as given by the Dutch, and which they support by the testimony of Hadrianus Junius, the historian of the States of Holland.

It is impossible to pronounce either Coster or Gutenberg the exclusive inventor of letter-press printing. It is rather the product of the age than of an individual, and probably during the early part of the 15th century there were many others on the verge, at least, of the discovery.

It long formed a subject of contention among antiquaries and bibliomaniacs by what means Gutenberg formed his types; but it is now pretty clearly ascertained that they were at first all individually cut by the hand. The mode of *casting* types in moulds has been very generally, and seemingly correctly, assigned to Gutenberg's successor, Schöffer. This individual was an industrious young man of inventive genius, an apprentice with Faust, who took him into partnership immediately after his rupture with Gutenberg, and who is supposed to have been initiated into the mysteries of the art by the latter. The first joint publication of Faust and Schöffer was a beautiful edition of the Psalms, which came out only about eighteen months after their going into partnership. Along with it appeared a declaration by them, claiming the merit of inventing the cut-metal types with which it was printed; but this pretension was evidently false; and, in fact, it afterwards appeared that the book had been four years in the press, and must, consequently, have been chiefly executed by Gutenberg. It is worthy of notice that the above publication was the very first to which the date, printer's name, and place of publication were affixed. The most perfect copy known is that in the Imperial Library of Vienna.

Early Progress on the Continent.

Mainz, Strasburg, and Haarlem are indisputably the places where the art of printing was first exercised. It was introduced into Italy in 1464 by two German printers, and was practised first

at Subiaco in the Roman territory, and then at Rome. The present Roman type was first used by an Italian printer, John of Spira, in an edition of Pliny's *Natural History*, printed at Venice in 1469. The first printed books imitated every peculiarity of the contemporary manuscripts, and as printing was first practised in Germany and the Netherlands, the first types were copies of the Gothic or black-letter (**Black-Letter**), used in the manuscript-writing of these countries at the time. These types spread with the art of printing into various European states. In France and Italy they were at once slightly modified, and the classic taste of Italy still further changed them, till they assumed the present Roman shape. The Roman letters soon spread from Venice all over Western Europe, but the Gothic or black-letter, although supplanted for general use, was long retained for special purposes, such as, in this country, the printing of Bibles, prayer-books, proclamations, and acts of parliament. Black-letter is still the recognised type of Germany. The first set of Greek characters was also cast by the Italians—whether at Venice, Milan, or Florence, is a disputed point.

So rapid was the spread of the new art of printing, that by 1475 attempts at printing books had been made in most of the principal towns of Germany, Italy, France, and the Netherlands, often, as in the case of the Spiras of Venice, with eminent success. It was introduced into Russia about the year 1560, or more than a century after its general practice in Southern Europe.

About the year 1496, the letter which we now call *Italic* was invented by Aldus Manutius, a Roman by birth, who set up the business of a printer in Venice.

Printing in Britain.

The early history of printing in England is obscure. The credit of introducing the art into that country is generally believed to be due to William Caxton, a mercer and citizen of London, who, during his travels abroad, and his residence for many years in Holland, Flanders, and Germany, had made himself thoroughly acquainted with the process, and upon his return was induced, by the encouragement of many men of wealth and rank, to set up a press in Westminster Abbey about the year 1474. It has indeed been contended that books were printed at Oxford several years before this. There are copies extant of a work professing to have been printed at Oxford in 1468; but internal evidence discredits this date, and, as the testimony in favour of Caxton is strong and direct, there seems no sufficient ground for depriving him of the fame which he enjoys.

After the art of printing had been introduced into London, it spread to Cambridge, Tavistock, Worcester, Canterbury, Ipswich, &c.; in almost all cases by the encouragement of the churchmen of these places, and generally with the view of printing works of piety. About the year 1500, or probably somewhat earlier, Pynson was, by patent of Henry VII., invested with the office of king's printer, which may be regarded as the first instance of an appointment of this nature. At the close of the fifteenth and the commencement of the sixteenth century, London possessed a number of printers, but none whose name has been so celebrated as that of Wynken de Worde, a foreigner, who had been instructed under Caxton. He improved the art considerably, and was the first printer in England who introduced the Roman letter—all previous printing, and much of a later date, being in the black or German letter.

Although at first countenanced by the clergy, the art of printing was soon looked upon with extreme jealousy by the Church, which at length discovered that this invention was but too certainly calculated to revolutionise the whole fabric of society. The earliest efforts of the art, as we have seen, were directed to the multiplication of the Bible; but for a period of sixty or seventy years from the date of the invention, all the copies of the Scriptures which were printed, were in the Latin or some other classic language, not understood by the people. But now a new era commenced. Certain printers began to issue the Bible in the English tongue, translated from the original, and this gave mighty offence to the Church, or Romish hierarchy.

The progress of the art in England, after its first rush into notoriety, was remarkably slow. In the sixteenth century it was interrupted by the broils consequent on the Reformation, and in the seventeenth century by the still greater harassments of the Civil War, and the gloomy religious spirit which prevailed up till the Restoration. Even this last event was unfavourable to it, by introducing a general licentiousness and contempt for any solid and respectable literature. At this period, there was an act of parliament still in force preventing more than twenty printers to practise their art in the kingdom.

The whole number of books printed during the fourteen years from 1666 to 1680 has been ascertained to amount to 3550, of which 947 were on divinity, 420 law, and 153 physic—so that two-fifths of the whole were professional books; 397 were school-books; and 253 on subjects of geography and navigation, including maps. Taking the average of these fourteen years, the total number of works produced yearly was 253; but deducting the reprints, pamphlets, single sermons, and maps, we may fairly assume that the yearly average of new books was much under 100. Of the number of copies constituting an edition, we have no record; we apprehend it must have been small, for the price of a book, as far as we can ascertain it, was considerable. The following abstract of the return for 1872 of the books lodged by publishers at the British Museum, in terms of the Copyright Act, will serve to shew the enormous increase in the production of books during the last 200 years: Complete works, 8345; parts of volumes, works in progress, and periodicals, 17,796; single articles, including playbills, songs, broadsides, &c. 5871—total, 32,012.

After the Revolution of 1688, the business of printing rapidly increased, by the demands for sheets of intelligence or news, as well as for a better class of literary productions. In the reign of Queen Anne, printing was increased still further by the issue of the *Guardian*, *Spectator*, and other literary sheets; and in 1731 it received considerable impetus by the establishment of the *Gentleman's Magazine*, being the first of the class of larger periodicals.

Printing was introduced into Scotland, and begun in Edinburgh, about thirty years after Caxton had brought it into England. Mr Watson,

in his *History of Printing*, says that the art was introduced into Scotland from the Low Countries by the priests who fled thither from the persecutions at home. Be this as it may, we find James IV. granting a patent, in 1507, to Walter Chapman, a merchant of Edinburgh, and Andrew Mollar, a workman, to establish a press in that city. According to bibliographers, the most ancient specimen of printing in Scotland extant is a collection entitled the *Porteus of Nobleness*, Edinburgh. In 1509, a *Breviary of the Church of Aberdeen* was printed at Edinburgh; and a second part in the following year. Very few works, however, appear to have issued from the Scottish press for the next thirty years; but from 1541, the date from which we find James V. granting licenses to print, the art has been pursued with success in the metropolis. At present, and from the beginning of the present century, it is perhaps the most distinguished craft in the city, being conducted in all its departments of typefounding, printing, publishing, and, we may add, paper-making at the mills in the vicinity.

Printing was not known in Ireland till about the year 1551, when a book in black-letter was issued from a press in Dublin; but till the year 1700, very little printing was executed in Ireland, and even since that period, the country has acquired little celebrity in this department of the arts, although possessing some respectable printing establishments.

We shall now proceed to a description of the art in its various branches, though without entering into the more minute and, what would be tiresome, technical details of the profession.

OF THE TYPES.

Printers, in early times, made the letters which they used, but in process of time the necessity for a division of labour created the distinct trade of a manufacturer of types, and it is only in rare instances in the present day that printers supply their own letter. The preparation of types requires much delicacy and skill. The first step in the process is the cutting of a punch or die, resembling the required letter. The punch is of hardened steel, with the figure of the letter cut, the reverse way, upon its point. On this die being finished, it is struck into a piece of copper, about an inch and a quarter long, one-eighth of an inch deep, and of a width proportionate to the size of the type to be cast. This copper, being so impressed with the representation of the letter, is called the matrix. The matrix is now fixed into a small instrument or frame, called the mould, which is composed of two parts. The external surface is of wood; the internal, of steel. At the top is a shelving orifice, into which the metal is poured. The space within is of the size of the required body of the letter, and is made exceedingly true. The melted metal, being poured into this space, sinks down to the bottom into the matrix, where it cools instantly, and the mould being opened, the type is cast out by the workman. This process of casting types is executed with great celerity. Of course, every separate letter in the alphabet, every figure, point, or mark, must have its own punch and matrix. In casting types, the founder stands at a table, and has beside him a small furnace and pot with heated metal, which he lifts with a small ladle. Various alloys, used in various proportions, are employed in different type-foundries at the present day, the exact combinations being trade secrets. Lead, antimony, and tin seem to be universal ingredients, while copper is sometimes added. One composition, which is especially hard, consists of fifty parts lead, twenty-five of tin, and twenty-five of antimony.

Type is now largely cast by machinery; the following is the method adopted: The metal is kept fluid by a little furnace underneath, and is projected into the mould by a pump, the spout of which is in front of the metal pot. The mould is movable, and at every revolution of the crank in the hand of the workman, it comes up to the spout, receives a charge of metal, and flies back with a fully formed type in its bosom; the upper half of the mould lifts, and out falls a type. Many machines to cast type have been invented, but those of the Patent Type-founding Company, London, are considered to be the most perfect of their kind.

When the types are cast from the mould, they are in a rough state, and go through a number of hands, to be smoothed and finished, before they are ready for use. Whatever be the size of the types, they are all made of a uniform height, and must be perfectly true in their angles, otherwise it would be quite impossible to lock them together. A single irregular type would derange a whole page. The height of a type made in this country is $\frac{2}{3}\frac{9}{2}$ds of an inch. All the types of one class of any founder are always uniform in size and height; and to preserve their individuality, all the letters, points, &c. belonging to one class, are distinguished by one or more notches or nicks on the body of the type, which notches range evenly when the types are set. These nicks, as we shall immediately see, are also exceedingly useful in guiding the hand of the compositor. Types are likewise all equally grooved in the bottom, to make them stand steadily.

The varieties of size of types in the present day amount to forty or fifty, enlarging, by a progressive scale, from the minutest used in printing pocket Bibles, to the largest which is seen in posting-bills on the streets. For very large posting-bills, the types used are cut in wood. Printers have a distinct name for each size of letter, and use about sixteen sizes in different descriptions of book-work; the smallest is called *Brilliant*, the next *Diamond*, and then follow in gradation upwards, *Pearl*, *Ruby*, *Nonpareil*, *Minion*, *Brevier*, *Bourgeois*, *Long Primer*, *Small Pica*, *Pica*, and *English*. The larger sizes generally take their names thus—*Two-line Pica*, *Two-line English*, *Four*, *Six*, *Eight*, *or Ten Line Pica*, &c.

All kinds of types are sold by weight by the founders, the price varying inversely according to the size of the letter. The type used in the present work, is of the size called Bourgeois, and costs 1s. 5d. per lb. Expensive as types thus are, their prices will not appear too high, considering the immense outlay in cutting the punches and the general manufacture. In the *Diamond* size, 2800 go to a single pound-weight of the letter *i*, and of the thinnest *space* about 5000.

A complete assortment of types is called a *fount*, which may be regulated to any extent. Every typefounder has a scale shewing the

proportional quantity of each letter required for a fount; and a peculiar scale is required for every language. For the English language, the following is a typefounder's scale for the small letters of a fount of types of a particular size and weight.

a.. 8500	h.....6400	o.....8000	u.....3400
b.....1600	i.....8000	p.....1700	v.....1200
c.....3000	j.....400	q.....500	w.....2000
d.....4400	k.....800	r.....6200	x.....400
e..... 12,000	l.....4000	s.....8000	y.....2000
f..... 2500	m..... 3000	t.....9000	z.....200
g.....1700	n.....8000		

It will be seen from this scale that the letter e is used much more frequently than any other character.

Type-founding originated in Germany along with printing; as early as 1452, P. Schöffer had substituted types of cast-metal for the original wooden types. The earliest and best punch-cutters were in Nürnberg, which continued for a considerable time to supply the type-founders throughout Germany with punches. The art received little attention in Great Britain until about the year 1720, when it was brought to considerable perfection by William Caslon, whose establishment still exists. Baskerville is the next greatest name in the history of the art in England. The types produced by Alexander Wilson of Glasgow became the foundation of the fame of the Foulises as printers. In Edinburgh, the principal establishment of the kind is that of Messrs Miller and Richard, the durability, as well as beauty of whose types, for half a century past, have established a well-merited name for that enterprising firm. Besides metal types, they produce large ornamental wood-type, which is much used for posting and hand bills. The finest wood-letters are cut by machinery on rock-maple by the American firm of Page & Co., and used in combination, produce some very wonderful chromatic effects.

COMPOSING.

All the types used in printing-offices are sorted in cases, or shallow boxes, with divisions. There are two kinds of cases—the *upper* and *lower case;* the latter lying nearest the compositor upon the frame for their support. Fig. 1 exhibits the arrangement of the cases and position of the compositor, the lower case being immediately under his hand, the upper case directly above, in a slanting position, and the under part of the frame stocked with cases of different founts. In the upper case are placed all the capitals, small capitals, accented letters, a few of the points, and characters used as references to notes. In the lower case lie all the small letters, figures, the remainder of the points, and spaces to place betwixt the words. In the lower, no alphabetical arrangement is preserved; each letter has a larger or smaller box allotted to it, according as it is more or less frequently required; and all those letters most in request are placed at the nearest convenient distance to the compositor. By this ingenious and irregular division of the lower case, much time is saved to the compositor, who requires no label to direct him to the spot where lies the particular letter he wants. To a stranger, nothing appears so remarkable as the rapidity with which a compositor does his work; but habit very soon leads the hand rapidly and mechanically to the letter required. When *Italic* letters have to be introduced, they are taken from a separate pair of cases of the same fount.

Fig. 1.

The process of composing and forming types into pages may now be adverted to. Placing the 'copy' or manuscript before him on the upper case, and standing in front of the lower case, the compositor holds in his left hand what is termed a composing-stick. Sometimes this instrument is of wood, with a certain space cut in it of a particular width; but more commonly it is made of iron or brass, with a movable slide, which, by means of a screw, may be regulated to any width of line. In either case, the composing-stick is made perfectly true and square. One by one the compositor lifts and puts the letters of each word and sentence, and the appropriate points, into his stick, securing each with the thumb of his left hand, and placing them side by side from left to right along the line. When he places a letter in the stick, he does not require to look whether he is placing it with the face in its proper position; his object is accomplished by looking at what is called the *nick*, which must be placed outward in his composing-stick. (See fig. 2, representation of a type.) This is one of those beautiful, and at the same time simple, contrivances for saving labour which experience has introduced into every art, and which are as valuable for diminishing the cost of production as the more elaborate inventions of machinery.

Fig. 2.

When he arrives at the end of his line, the compositor has a task to perform in which the carefulness of the workman is greatly exhibited. The first letter and the last must be at the extremities of the line: there must be no small spaces left in some instances, and crowding in others, as we see in the best manuscript. Each metal type is of a constant thickness, as far as regards that particular size of letter; though all the letters are not of the same thickness. The adjustments, therefore, to complete the line with a word, or at anyrate with a syllable, must be made by varying the thickness of the spaces between each word. A good compositor's work is distinguished by uniformity of spacing: he will not allow the words to be very close together in some instances, and with a large gap between them in others, as is evident, for instance, in this sentence. In composing poetry, or similar matter, where there is always a blank space at one of the ends of the line, spacing is very easily accomplished by filling up the blank with larger spaces, or *quadrats*. But whether prose or poetry, the matter of each line must be equally adjusted and *justified*, so as to correspond in point of compactness with the previously set

lines. The process of composing is greatly facilitated by the compositor using a thin slip of brass, called a *setting-rule*, which he places in the composing-stick when he begins, and which, on a line being completed, he pulls out, and places upon the front of the line so completed, in order that the types he sets may not come in contact with the types behind them, but glide smoothly into their places to the bottom of the composing-stick.

When the workman has set up as many lines as his composing-stick will conveniently hold, he lifts them out by grasping them with the fingers of each hand, and thus taking them up as if they were a solid piece of metal. He then places the mass in an elongated board, termed a *galley*, which has a ledge on one, or perhaps both sides.

Letter by letter, and word by word, is the composing-stick filled; and by the same progression the galley is filled by the contents of successive sticks.

After the matter is thus far prepared, it is the duty of the pressman to take an impression or *first proof* from the types, which are tightly fixed together in the galley, in order that the *reader* (who is specially employed for this purpose) may correct the errors which the compositor is sure to have made. Proofs are usually taken by a press kept for the purpose. After the galley matter is corrected and re-corrected by the reader, and the corrections are given effect to by the compositor, it is divided into pages of the size wanted; and head-lines or figures indicating the number of the page, being added, the pages are arranged upon a large firm table, and there securely fixed up in an iron frame or *chess*, by means of slips of

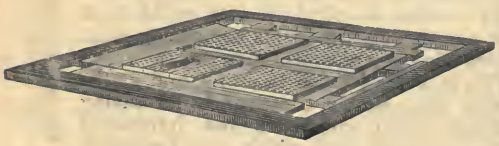


Fig. 3.

wood and wedges, or *quoins*. Fig. 3 is a representation of a small *form*, consisting of four pages of type.

This process, which is called *imposing*, being completed, and the face of the types being levelled by a *planer* and mallet upon the imposing-table, the *form*, as it is called, is proved, and prepared for press. Proof-sheets being taken, they are subjected to the scrutiny of the reader, the author himself having previously given effect to his corrections or emendations on the *galley-proofs*. When the reader has pointed out words and letters to be altered or corrected, the compositor once more goes over the form, correcting the errors by lifting out the letters with a bodkin, and, when revised, the sheet is pronounced ready for printing. It may be explained that the imposing-table at which all these corrections are given effect to, is usually composed of smooth stone, or marble, or cast-iron on the top, and requires to be a substantial fabric.

The corrections to be made on a proof are marked on the margin by a set of signs, which are understood by all printers, and which every one who has occasion to write for the press should know. The following specimen exhibits the application of most of those signs:

'To rule the nations with imperial sway, to impose terms of peace, to spare the humbled, and to crush the proud, resigning it to others to describe the courses of the heavens, and explain the rising stars; this, to use the words of the poet of the Æneid in the apostrophe of Anchises to Fabius in the Shades was regarded as the proper province of a Roman. The genius of the people was ~~even~~ more adverse to the cultivation of the physical sciences than that the European Greeks and seen we have that the latter left experimental philosophy chiefly in the hands of the Asian and African colonists. The elegant literature and metaphysical speculations of Athens, her histories, dramas, epics, and orations, had a numerous host of admirers in Italy, but a *feeling* of indifference was displayed to the practical science of Alexandria. ['This repugnance of the Roman mind at home to mathematics and physics, extending from the Atlantic to the Indian Ocean, from Northern Britain to the cataracts of the Nile, annihilated in a measure ~~all~~ pure sciences in the conquered districts where they had ~~had~~ been pursued, and prohibited attention to them in the mother country.

Long, indeed, after the age of Ptolemy, the school in connection with which he flourished, remained in existence;' &c.

together with the prevalence of its military despotism abroad,

1 *a*
2 *tr.*
3 #
4 |
5 *Italic.*
6 ,/
5 *S. caps.*
7 *stet.*
8 9
9 *of*
6 ;/ 2 *tr.*
10 *wf.*
6 ⊙
11 ƃ
2 *tr.*
12 *Roman.*
13 *New line.*
14 *See below.*
3 # 15 ⁀
16 *the*
17
11 ƃ
18 -/
19 *Run on.*
5 *Caps.*
20 '
V

1. A wrong letter. A line is drawn through the wrong letter, and the proper one written in the margin. After every mark of correction a line / should be drawn, to prevent its being confounded with any other in the same line. 2. A word or letter to be transposed. Where letters only are to be transposed, it is better to strike them out, and write them in their proper sequence in the margin, like a correction. 3. A *space* wanted. This mark is also used when the spacing is insufficient. 4. A space or quadrat *sticking up*. 5. Alteration of type. One line is drawn under the word for *Italics*, two for SMALL CAPITALS, three for CAPITALS. 6. Correction or insertion of stops (*points*). 7. A word struck out, and afterwards approved of (Lat. *stet*, let it stand). 8. A turned letter. 9. An omission. 10. A letter of a

wrong fount. 11. A word or letter to be deleted. 12. Alteration of type. 13. A new paragraph. This should be avoided as much as possible, as it causes great trouble and expense. 14. Insertion of a sentence. 15. A *space* to be removed or diminished. 16. A wrong word. This is struck out, and the proper one written in the margin. 17. When letters or lines do not stand even. 18. Mark for a hyphen or rule. 19. No new paragraph. This is also troublesome and expensive. 20. The manner in which the apostrophe, inverted commas, the star and other references, and superior letters and figures, are marked.

Type-setting Machines.—Type composing and distributing machines have exercised the brains of inventors since the year 1840 up to the present time. In America alone, no less than forty-five patents have been taken out for inventions of this kind. The latest English machines, those patented by Hattersley and Mackie, have been used to a limited extent. A modification of Hattersley's is in use by a printing firm in Edinburgh, who affirm that for some kinds of plain setting it is more profitable than doing the work by hand. For various reasons, however, few printing-offices have yet adopted machine-setting.

It need scarcely be told that the size of books greatly varies; but the sizes are all reducible to a standard determined by the number of leaves into which a sheet of paper is folded. The largest size is denominated *folio*, being simply a sheet folded into two leaves or folios; and the next *quarto*, or a sheet folded, as the name implies, into *four* leaves. The most common size is *octavo*, each sheet of which contains eight leaves, or sixteen pages; the next is *duodecimo*, containing twelve leaves, or twenty-four pages in the sheet; and the next *eighteenmo*, containing thirty-six pages in a sheet. There are other sizes, such as *twenty-fourmo*, *thirty-twomo*, and *sixty-fourmo*.

STEREOTYPING.

We may now offer a brief explanation of the process of stereotyping, which has been of immense service to literature. Stereotyping is the manufacturing of *solid* pages of types (Gr. *stereos*, solid), and the invention is generally attributed to a Mr William Ged, of Edinburgh, about the year 1725. The process of fabricating plates is very simple. The page of type being set, corrected, cleaned, and fixed in a frame, is laid on a smooth iron table, face upward; a little fine oil is brushed over it, to prevent the liquid stucco from adhering; the stucco, of the consistency of very thick cream, is now poured over the face of the page, and straightened over it in the process of hardening; when hardened, the cake of stucco is lifted off, and is seen to be a perfect mould of the types. The cake is baked in an oven, and then placed in an iron pan; the pan, which has inlets at the upper side, is carefully dipped into molten metal, which soon runs into the mould; being lifted out and cooled, the pan is opened and found to contain plates resembling the page of type; the mould is broken and of no further use. When removed from the pan, the plate is rough, and by means of rotatory cutting and planing machines, it is reduced to a uniform thickness. It is then carefully examined, and all specks removed by a *picker*, or foundry-man; any letter which may be defective is dug out, and the head of a corresponding type soldered in.

Such is the old and well-known *stucco* process of stereotyping. It is still used when very fine work is required, as the stucco goes deep into the interstices of the types, and gives a sharp and clear impression. But for ordinary purposes it has been almost entirely superseded by the *papier maché* process; and as the latter is the only method by which types can be arranged for printing on moderately sized or small cylinders, such as are used in the *Walter* and other machines, it has recently been developed in an extraordinary degree in connection with newspaper printing. The process followed in the offices of the *Times*, *Scotsman*, &c. to suit the Walter machine, may be briefly described. The page of types, mounted on a movable table, is run into the foundry; it is oiled with a roller covered with flannel soaked in oil; several plies of thin, soft paper, carefully pasted together, are placed in a wet state on the types, covered with a blanket, and the whole, on an iron table, is passed between rollers, which, by immense pressure, force the soft paper into the types. An additional piece of paper is then pasted above the mould to give greater strength. The page, with the soft paper still on, is next put on a hot plate, covered with several thicknesses of dry blankets, and a press firmly screwed down on the top. In two or three minutes, it is removed, and the mould is taken off quite dry, trimmed at the edges, rubbed over with a little French chalk, and bent, face uppermost, inside a cylindrical casting-box, the core of which is of the same diameter as the cylinder of the printing-machine. The metal is poured in at such a heat that it will run and no more, and when the core is taken out, a complete fac-simile of the page, in a semicircular form, is seen adhering to it face outwards. A few taps of a hammer make it drop off on to a travelling-carriage, on which it is immediately trundled away to another cylinder, where an ingeniously-arranged movable circular-saw cuts off the waste metal, or 'tail.' It is then dipped in water to cool; is fixed on another cylinder, where revolving cutters instantly trim the edges close to the letters; and any of the wide spaces which may not be deep enough are cut out. It is then put into a hollow cylinder, a piece of card-board being first put in to protect the face; a circular cutter sweeps round the inside of the plate, making the thickness quite uniform and ready for printing. Such is the completeness of the arrangements in the larger newspaper-offices, that, in the space of twelve minutes from the time a page of types is run in at the door, duplicate casts of it can be delivered ready to print.

For book-work, where the plates lie on the bed of the machine, and not on a cylinder, the process is somewhat different. The paper is beat into the face of the types with a hard brush, which takes a much deeper impression than the roller. The casts are, of course, taken in a flat box, and very great care is taken in trimming, and replacing bad letters. The plates, dressed in separate pages, about one-sixth of an inch in thickness, are mounted on wooden blocks, and fitted into the bed of the machine.

The paper process has many advantages over the stucco. It is cheaper and quicker. By keeping the mould or matrix, a fresh cast can be taken at any time, without re-setting the types, as there is practically no limit to the number of casts which can be taken from one mould.

This is obviously a matter of great importance with books which require to be reprinted frequently.

Electrotyping.—This process, which is described in Vol. I. p. 276, is sometimes used in letter-press printing when the plates are wanted to print a great number of impressions. Wood-cut illustrations are generally electrotyped, the paper process of stereotyping, owing to the damp and heat, being quite unfit for the purpose. The illustrations are electrotyped separately, and soldered into the plate of letter-press.

PROCESS OF PRINTING.

The duties of the compositor differ from those of the printer. When the forms are duly prepared in the composing-room, and if it is intended to print from them, and not from plates, they are carried into the press-room, where they come under the charge of the pressmen. The earliest printing-presses were exceedingly rude, and seem to have resembled the common screw-press, with a contrivance for running the form under the point of pressure. This must have been not only a laborious and slow operation, but one exceedingly defective, from the difficulty of regulating the impression, and the risk of injuring the faces of the types. The defects in these original presses were at length remedied by an ingenious Dutch mechanic, Willem Jansen Blaew, who carried on the business of a mathematical instrument-maker at Amsterdam. He contrived a press, in which the carriage holding the form was wound below the point of pressure, which was given by moving a handle attached to a screw hanging in a beam having a spring, which spring caused the screw to fly back as soon as the impression was given. This species of press, which was almost entirely formed of wood, continued in general use in every country in Europe till the beginning of the present century.

With certain lever-powers attached to the screw and handle, it is represented in fig. 4.

In connection with this representation of the old common hand-press, the process of printing may be described. The form, being laid on the sole or

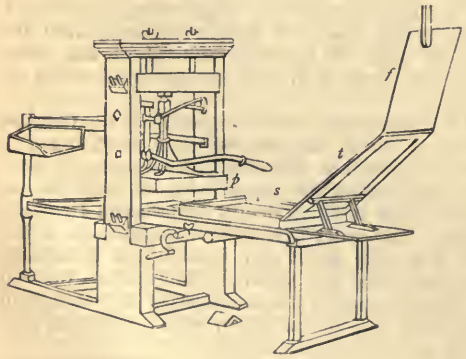


Fig. 4.

bed of the press (*s*), is fixed at the sides, so as to render it immovable from its position. There are two men employed: one puts ink on the form (see below), and the other works the press. The latter lifts a blank sheet from a table at his side, and places it on what is called the *tympan* (*t*), which is composed of parchment and blanket stuff, fitted in a frame, and tightened like the top of a drum—and hence its name—and which, by means of hinges connecting it with the sole, folds down like a lid over the form. As the sheet, however, would fall off in the act of being brought down, a skeleton-like slender frame, called a *frisket* (*f*), is hinged to the upper extremity of the tympan, over which it is brought to hold on the paper. Thus, the frisket being first folded down over the tympan, and the tympan next folded down over the form, the impression is ready to be taken. This is done by the left hand of the pressman winding the carriage below the *platten* (*p*) or pressing surface, and the impression is performed by the right hand pulling the handle attached to the screw mechanism. The carriage is then wound back, the printed sheet lifted off, and another put on the tympan, the form again inked, and so on successively.

One of the greatest niceties connected with this art is the printing of the sheet on the second side in such a manner that each page, nay, each line, shall fall exactly on the corresponding page and line on the side first printed. To produce this desirable effect, two iron points are fixed in the middle of the sides of the frame of the tympan, which make two small holes in the sheet during the first pressure. When the sheet is laid on to receive an impression from the second form, these holes are placed on the same points, so as to cause the two impressions to correspond. This is termed producing *register;* and unless good register is effected, the whole effect of printing, and afterwards folding and binding, will be greatly marred. Expert workmen perform these operations with surprising rapidity, though with considerable labour. Two men employed at a press take the process of pulling and inking for alternate quantities. After the forms are wrought off, they are washed in a solution of potash, to remove the remains of the ink, which is of a thick oleaginous character, and then carried back to the composing-room to let the types be distributed in the cases; this operation, like that of setting, is very speedily performed by the compositors. If the printing be done by plates, these are cleaned and put by for future use.

To suit paper for printing, it is necessary to wet it some hours previous to its being used. This is done by dipping alternate quires in water, and afterwards pressing the mass with a heavy weight, or by the screw or the hydraulic press, till the whole is in an equally damp state.

After the sheets are printed, they are hung upon parallel bars in the *drying-room* to be dried—a process which is effected slowly or speedily according to the degree of heat applied. On being dried, they are individually placed between fine glazed boards, and in this condition subjected in a mass to the pressure of a powerful press. On removal, the indentations of the types are found to be levelled, and the whole sheet to be smooth, and ready for the operations of the folder and bookbinder. A great improvement has been effected in the smoothing process, by employing the hydraulic or water press, and by the process called hot-pressing.

INK AND INKING-ROLLERS.

Much of the beauty of good printing depends on the quality of the ink, which it requires considerable skill to manufacture. The principal ingredients are boiled linseed oil and lamp-black. It is made of various qualities, ranging in price from 1s. to 10s. and upwards per lb., to suit different kinds of printing, from posting-bills to the finest wood-cut work. Good ink should possess depth and durability of colour, and be capable of drying quickly after being put upon paper.

One of the greatest of recent improvements in the art of printing is in the mode of inking the forms. From the days of Gutenberg, this had been done by stuffed cushions, or balls covered with skins, by which no regularity could be preserved, and no speed acquired. It is now done with rollers made of a composition of treacle and glue, which, being heated and melted together, are poured into long iron moulds, in which the central rod has previously been inserted. When taken out of the mould, the roller is a cylinder of soft and elastic matter, resembling India-rubber. If required for the hand-press, it is connected with a handle after the manner of a garden-roller. The ink being placed, in moderate quantity, on a smooth metal table, the workman draws the roller backwards and forwards along the table, distributing a little ink equally all over its surface; and having thus diffused some ink all over the roller, he applies the same to the types, drawing it backwards and forwards over them, to make sure that all have been inked. By this plan the types are inked more equably than by the balls, and in less than half the time. In modern presses, however, the forms are inked by an apparatus attached to the press.

IMPROVED PRINTING-PRESSES—MACHINE-PRINTING.

The first improvement upon the printing-press was made near the close of the 18th century, by

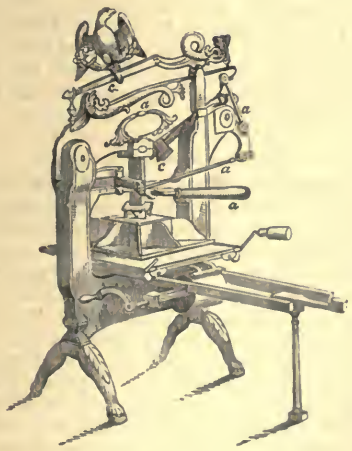


Fig. 5.

the celebrated Earl of Stanhope, who constructed a press made of iron large enough to print a whole sheet, in which an application of levers to the screw made the pull much lighter. Other improvements followed rapidly, mostly abandoning the screw altogether. Among the most prominent of them was the *Columbian press* (see fig. 5), brought to this country and patented by Mr George Clymer of Philadelphia, in 1818. The pressing power in this instance is procured by a long bar or handle acting upon a combination of exceedingly powerful levers (*a*, *a*, *a*, *a*) above the platten; the return of the handle or levers being effected by means of counterpoises or weights (*c*, *c*). For ease and facility of *pull*, this press is preferred by most workmen, and certainly the powerful command which the leverage enables the workman to exercise, is favourable to delicacy and exactness of printing—his arm feeling, as it were, through the series of levers to the very face of the types.

Other presses, of a variety of styles and sizes, are used in printing small forms of job-work, many of these very ingenious, and working very rapidly.

Machine-printing.—After all the ingenuity of Lord Stanhope and that of his successors had been lavished on the press, the process of printing could not be executed without considerable fatigue, and at a rate of speed seldom greater than that of throwing off 250 impressions, or 125 complete sheets, in an hour. As the taste for reading increased, the necessity of more rapid production, especially in the case of newspapers, stimulated invention, and led to an entire revolution in the structure of the press.

In 1790, Mr Nicholson, the editor of the *Philosophical Journal*, procured a patent for certain improvements in printing, which patent embodies almost every principle since so successfully applied to printing-machines.

Whether Mr Nicholson's ideas were known to Mr König, a German, is now uncertain; but to him is due the distinguished merit of carrying steam-printing first into effect. Arriving in London about 1804, he first projected improvements on the common press; but after a while, he turned his attention to *cylinder printing*.

The first result of his experiments was a small machine in which the two leading features of Nicholson's invention were embraced (the cylinders and the inking-rollers), which he exhibited to Mr Walter, proprietor of the *Times* newspaper; and on shewing what further improvements were contemplated, an agreement was entered into for the erection of two machines for printing that journal. Accordingly, on the 28th of November 1814, the public were apprised that the number of the *Times* of that date was the first ever printed by machinery steam-propelled.

After the utility of cylindrical printing had been thus proved, it was thought highly desirable that the principle should be applied to printing fine book-work, where accurate register is indispensable. Various improvements were introduced for this purpose. The best of them was that patented, in 1818, by Messrs Applegath and Cowper, and as the double-cylinder machine for ordinary book-work is still constructed on the same model, we will shortly describe it. It is represented in fig. 6. It is about fifteen feet long by five broad, and consists of a very strong cast-iron frame-work, secured together by two ends and several cross-

bars. The moveable portion consists of two large cylinders revolving on upright supports; two smaller cylinders or drums revolving above them; and beneath, within the framework, a movable table, on which lie the types at both ends, going constantly backward and forward. A boy, marked

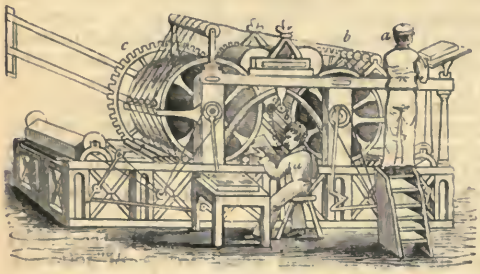


Fig. 6.

a in the fig, standing on the top of some steps, feeds in sheets of paper, each of which, on being delivered, is swept round the first cylinder *b* (being held on by tapes), gets its impression below from the types, is carried over and betwixt the drums above, and then brought round on the second cylinder *c;* now it gets its second side printed, and issuing into the space between the cylinders, is seized by the boy *d*, who lays it on a table completely printed. At each end there is an apparatus of rollers taking ink from a ductor or reservoir of that material, and placing it upon a portion of the moving table; here other rollers distribute it, while others take it off and roll it upon the pages of types, ready for each impression. The most skilfully contrived part of the machine is the arrangement of the endless tapes, which, taking the sheet from the hands of the upper boy, retain it, in its progress over both the cylinders, and finally deliver it to the boy beneath.

The cylinders have a continuous rotatory motion towards each other, given by two large toothed wheels, whilst the table carrying the types moves backwards and forwards under them. The movements are so contrived that the types shall have gone and returned to the same point during the period that the cylinders have made one entire revolution; consequently, each successive impression is taken from the types by the same part of each cylinder. The two drums placed between the cylinders are for the purpose of causing the sheet of paper to pass smoothly and accurately from one printing cylinder to the other.

But the printer has much more to do than simply put the types in his machine and begin to print. If the surface of the types were mathematically level, that might suffice, but practically the surface is very unequal. If a sheet were printed without preparation, it would be found that some places would be printed quite black, while others were not printed at all. To remedy this the machine-man prints a sheet, and then proceeds to cut out the parts that are too heavy, and pastes little pieces of paper over those that are too light. This is put on the cylinder exactly over where the types are pressed at each revolution, and the whole covered with a blanket fixed on the cylinder. Another sheet is printed, and the process repeated until the nearest possible approach to perfection is obtained. This 'making ready,' where good work is required, takes a considerable time. As an example, it may be mentioned that several sheets of the present work, consisting of 16 pages, and where many wood-engravings occur, have occupied the whole time of the machine-man for two or three days before a copy could be printed. When fairly started, great care has also to be taken that all the sheets are of uniform 'colour,' a matter of extreme importance in the appearance of the finished book.

Many modified varieties of the cylinder machine have been introduced; the most important of them is the *Gripper*. In this machine the types are laid on a travelling table like that described above; the cylinder which gives the pressure is reduced to 12 or 18 inches in diameter, the drums are dispensed with, and the tapes are replaced by a contrivance called a gripper. This consists of a series of brass grips like fingers arranged along, and fixed to the cylinder; they seize the sheet at the proper moment, and retain it till it is delivered printed. The single gripper is supplied with points for registering. In the double or perfecting variety, the sheet is delivered from the first cylinder into the grippers of the second. There are many varieties of gripper machines; the most popular are the Wharfdale, a single, and the *Marinoni*, a double gripper. They produce first-class work, and are well adapted for nearly every description of printing.

Besides those various descriptions of machines above alluded to as being principally in use, there are others calculated to execute work of a more peculiar nature. Perhaps the most wonderful of those ingenious pieces of mechanism is a machine which has been made to print two colours by only one impression—a lower form charged with one colour being caused to rise through and come upon a level with another form, so that both may be printed at once. Hitherto, the work which has been executed by this machine has consisted chiefly of the stamp-duty marks for the Excise, and for bank-notes, fancy labels for druggists, and other similar jobs. There may also be noted the Conisbec two-colour printing-machine, printing two colours by one cylinder, having two forms laid on a traversing table, and ink-ducts at each end. The first revolution of the cylinder takes the first colour, and the second the other colour, and then delivers the sheet.

Extra-fast Machines.

Non-registering machines for rapid printing are of various kinds, according to the degree of speed which is demanded. In those first introduced, the principle was that of pressure by a cylinder on a form of types laid upon a table, which was passed beneath it by a forward and retrograde motion; the inking being effected as in the above-described perfecting machines. Having received one side by this means, the sheets were afterwards printed on the second side; such second impression containing the news up till the latest hour of going to press. This species of single cylinder printing-machine was well adapted for newspapers of which only a few thousand copies were wanted; and for this purpose, it is still in use, particularly in provincial towns in Great Britain. As presses of this sort, however, do not usually yield more

than 4000 or 5000 impressions per hour, they are quite unfitted for printing newspapers having a circulation of 50,000 copies and upwards, the whole of which must be promptly produced by a certain hour every morning. The liberation of newspapers from the obligatory penny stamp in 1855, caused so great an increase of circulation, that none of the ordinary processes, including that just referred to, was at all adequate for the work required. Recourse had to be made to an entirely new method of printing, the invention of which is due to Richard M. Hoe of New York.

Hoe's process consisted in placing the types (for which stereotype plates were afterwards substituted) on a horizontal cylinder revolving on its axis, against which the sheets were pressed by exterior and smaller cylinders. The pages of type were arranged in segments of a circle, each segment forming a frame that could be fixed on the cylinder. These frames were technically called *turtles*. By the ingenious contrivance of making the brass rules that separate the columns of a bevelled or wedge shape, the thinner edge being towards the surface of the turtle, the form of type was susceptible of being tightened up and made firm. The forms occupied only a portion of the main cylinder, the remainder affording space for the inking apparatus. The smaller surrounding cylinders for effecting the pressure were arranged in a framework, in connection with slopes, by which the sheets were fed in blank, and came out printed on one side. The size of the main cylinder, the number of exterior cylinders, and the rate of speed determined the number of impressions printed per hour. Such was the method of working Hoe's rotary machines, which, as wanted, were made with 2, 4, 6, 8, or 10 subsidiary cylinders. The first introduced into Europe (with the exception of one made for the Paris newspaper, *La Patrie*, in 1848) was one with six cylinders for printing *Lloyd's Weekly Newspaper* in London, in 1857. Some idea of the process of working may be obtained from fig. 7, representing a rotary machine with six cylinders. Such a machine with its six feeders, each laying in sheets at the rate of 2000 per hour, could deliver 12,000 impressions in the hour; and those with 8 and 10 cylinders, in proportion.

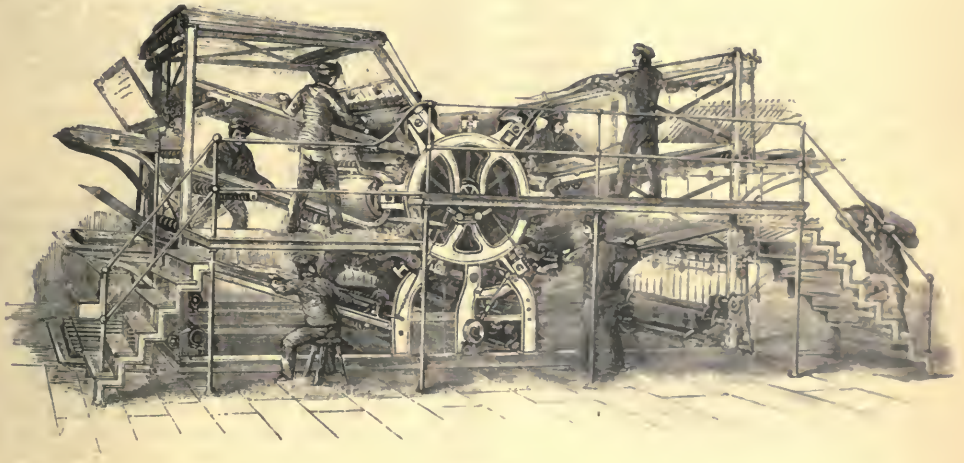


Fig. 7.

About the time that the Hoe machines came commonly into use, another great advance was made in the art of rapid printing. In 1859, a long series of experiments ended in the successful substitution of curved stereotype plates for pages of movable type. Besides escaping the risk and wear involved in working pages of type in circular chases, the new method relieves the types from all direct printing-work, so that the fount, instead of two years, may last twenty.

The Hoe machine, however, with all its advantages, retained the inconvenience of printing only one side at a time, and the multiplication of the feeding cylinders introduced too many complications. These difficulties have been entirely overcome by a new machine, the 'Walter,' contrived and perfected between 1863 and 1868 by the manager of the *Times* printing establishment, which prints both sides by one operation from a continuous roll of paper. The 'Walter' machine is represented at the beginning of this sheet.

A reel of tightly rolled paper, just as it leaves the mill, is placed at one end of the machine, is damped while passing between small cylinders, and is then led between the first and second of four cylinders, placed one above the other, where it receives its first impression from the stereotype cast of the first cylinder. The paper then returns backward between the second and third cylinders; and passing forward again between the third and fourth, receives on its other side the second impression from the stereotype plates of the lowest cylinder. The roll is next cut into sheets, and the sheets numbered by an index. Carried up to the top of the machine, the sheets descend perpendicularly, and are thrown alternately backwards and forwards on to boards held by two lads. These, with the striker, who starts the machine, are the sole attendants necessary. The paper travels at the rate of 1000 feet per minute, and the finished sheets are delivered at the rate of 12,000 copies

and upwards per hour. Repeated experiment has proved that good work may be done at the rate of 17,000 copies per hour. The other web-printing machines differ more or less considerably in idea or details from that just described. The 'Bullock,' which is the invention of an American, has also done excellent book-printing at the rate of 12,000 sheets per hour. The 'Victory,' nearly contemporaneous with the 'Walter,' differs from it in several points. It does not damp the paper; it has only a single delivery; but it delivers the finished sheets ready folded. The 'Prestonian' will print from type, whereas all other web-machines print only from stereotype. The most recent web-printing patent is the Hoe web-machine, which is also very favourably spoken of.

Flat-pressure Machines.

The best kind of flat-surface machine was the contrivance of a gentleman in London, and is still used for several kinds of work. It consists of an upright frame, and printing-platten, resembling the common hand-press, with a type-carriage at each side. The type-carriages go below the platten alternately; so that, in point of fact, the apparatus is two presses with one printing-surface to serve both. The movements to and fro of the type-carriages, and the pull downwards of the platten, are effected by machinery beneath. The forms are also inked by an apparatus for the purpose. This machine requires a layer-on and taker-off of sheets at each end, besides a superintendent, and works about 700 sides per hour, or 350 complete

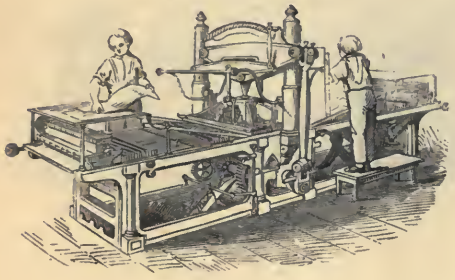


Fig. 8.

sheets. The mechanism is effective for ordinary book-work. Fig. 8 will give a general idea of the arrangement of the platten machine—the type-tables travelling horizontally, as in the cyclinder-machines, and the platten rising and falling with undeviating accuracy at the return of each table.

By the introduction of the steam-presses which we have now described, the profession of the printer has within these few years undergone a most extraordinary revolution; and although fewer hand-pressmen are now employed than formerly, the increase of employment to compositors, engineers, bookbinders, booksellers, &c. must be very great. The principal advance in the profession has been since the year 1832, when the printing of cheap literary sheets rose into importance; and, by a fortunate coincidence, the patents of various machines having about the same time expired, a new impulse was given to the trade. The making of printing-machines has in itself become a great business. The printing-office is a factory; and the interior of one of those concerns usually presents a remarkable spectacle of industry, animate and inanimate, which to a stranger leaves a lasting impression on the memory.

THE CHAPEL.

It is worth while to remark, that up to the present day the phraseology used in relation to the mechanical details of the printer possesses certain traces of the early connection of the art with men of learning. A number of the technical terms, as may be seen from the descriptions we have given, are a corruption of Latin words. We may instance *tympan*, from tympanum, a drum, and *stet* (let it stand), which is used as a mark in correcting proof-sheets. The name *brevier*, applied to a certain size of type, originated in that letter being first used in printing the Breviaries of the Romish Church. An exceedingly old practice prevails among printers of calling their office a *Chapel*, and under this title the compositors, pressmen, and all others engaged in the office, have been in the habit of meeting together, and forming a species of lodge, presided over by the *Father*, in order to settle affairs connected with the internal arrangements of the office, or any disputes which may occur among members.

LITHOGRAPHY.

Lithography was invented by Aloys Senefelder, who was born at Prague on the 6th of November 1771. He received a tolerable education at Munich, whither his father had removed, being employed at the theatre of that town. He lost his father before he had reached manhood, and was thus reduced to great hardships. Being undecided what profession to choose, he endeavoured to support himself as a composer of music, and not being able to pay for the engraving of his compositions, he resolved to engrave them himself. Finding this, however, rather expensive and difficult, he tried to work with a greasy ink on copper, to etch this afterwards in relief, and to print the plate with the ordinary type printing-press. One day, being asked by his mother to note down some account, and having no paper on hand, he wrote it with his composition-ink on a polished Kelheim or Solenhofen stone. It occurred to him afterwards to raise this writing with acid, and to print with a press of his own invention, a rude enough implement, on the principle of a common press. From this beginning, Senefelder gradually discovered the whole process of chemical printing from stone, called lithography, a name derived from Greek *lithos* (λίθος), a stone, and *graphein* (γραφειν), to *write*.

In 1796, a piece of music, Senefelder's first work, was printed from the stone, and in 1800 he patented his invention in Bavaria and most of the German states. He obtained afterwards a patent in Austria, and commenced business at Vienna, chiefly with the view of printing on cotton, but without much success. Mr André of Offenbach, a music-publisher, then became his partner;

they opened establishments at Offenbach, London, and Paris, but did not succeed very well. The further progress of lithography was long prevented through the great secrecy and jealousy with which its working was guarded; and it was not until many years afterwards that the very complicated manipulations of this invention became more simplified by the assistance afforded by artists and scientific men; and since then, rapid progress has been made.

Senefelder was appointed director of the government lithographic establishment at Munich; and, in later years, the king of Bavaria settled on him a handsome pension for life. He saw his invention brought to comparative perfection, and died at Munich, in 1834. His work on Lithography, published more than fifty years ago, although containing antiquated and too complicated notions, comprises a pretty correct skeleton of nearly the entire system of the present day.

In a work like the present, only a general outline of this invention can be given. Before proceeding, however, it is advisable to direct attention to a few of the benefits of which it has been productive. By its means the fine arts have become better understood, and art-education and taste advanced.

The famous collection of paintings of the Nether Rhenish School, formed by the Brothers Boisserée of Cologne, was purchased by Bavaria. Its choicest examples were, about fifty years ago, lithographed on a large scale, and published in numbers by Strixner. This work, having been executed under the superintendence of the best painters of Munich, and even now remarkable, though somewhat heavy and mechanical in treatment, made at the time a great impression, and enabled young lithographic artists to improve their abilities. From that time, lithography may be considered to have taken its place among the fine arts.

Other works of importance were undertaken; the choicest specimens of the old and modern masters were brought under the notice of the public; they were executed very frequently in a masterly style, and rendered with scrupulous fidelity the characteristics of the paintings of the different masters and schools. Hanfstaengl commenced the publication of that celebrated work, *The Choice Paintings of the Dresden Gallery*, a triumph of lithography and art. The entire work was executed by young men of talent, and who had received an art-education—who made it a point to study and understand thoroughly their originals before copying them on the stone.

The principles on which the practice of lithography is founded, are: *1st*, The strong adhesion of greasy substances to calcareous stone. *2d*, The affinity of one greasy body for another, and their antipathy to water. *3d*, The facility with which calcareous stone imbibes water. It follows, that, if a greasy line be drawn on a prepared stone, its adhesion is such, that it can only be erased by entirely removing the surface of the stone, so far as the grease has penetrated. If water be put on the surface of the stone, it remains, till evaporation takes place, on those parts not covered with grease, and a roller charged with greasy ink may be passed over the stone; the ink adhering to the greased portions, while the parts covered with water will repel the ink and remain clean. A piece of paper put on the stone, and pressure applied, will receive an impression in ink of the greasy line.

Lithography has therefore been called chemical printing; as it is neither printed from intaglio, like steel-engraving; nor from a raised surface, like wood-engraving; but, by attention to chemical affinity, from a level surface. There are various methods employed in lithography—namely, drawing on stone with a pen or brush with liquid ink; drawing on stone with solid ink or crayon; drawing on paper, and transferring to the stone; and engraving on stone. These differ only in the manner of applying the greased drawings to the surface of the stone. The printing from them is in all cases identical.

The Stones.—The immense quarries of Solenhofen, near Pappenheim on the Danube, in Bavaria, furnish the best stones; they vary from a pale yellowish white, to a light buff, reddish, grayish, bluish, and greenish colour. The beds commence with layers as thin as paper, but the strata become thicker, until they form slabs of considerable size. The thickness required for printing purposes varies from one to four and five inches. The stones are, while in the quarries, tolerably soft, and can easily be cut and squared by the workmen. Very beautiful petrifactions are found between these layers, of which there are very complete and interesting collections at the museums in Munich and Eichstädt. These stones were formerly, and are yet, used in Bavaria and elsewhere for the floors of houses, churches, and mosques, arranged in geometric patterns, like inlaid tiles, also for window-sills, tops of tables, &c. Useful lithographic stones have been found in England, France, Canada, on the banks of the Mississippi, the West Indies, and Silesia. This calcareo-argillaceous stone, of a conchoidal fracture, resembles the lias limestone, but does not belong to the same geological period, being of a more recent formation. The stones require to be *ground* with sand and water, face to face, and when level, are first polished with pumice-stone, and lastly, with Water-of-Ayr stone. The polished stones are for line-work, writing, engraving, and transfer; those for chalk-drawing and tinting, after having been ground, as already described, are *grained* with finely sifted silicious sand, or finely ground glass, either fine, sharp, or rough, according as it is intended for a sketch, a finished drawing, or a tint.

The *writing* and *drawing inks*, and *crayons* (chalks), are composed of lard, hard soap, white wax, shell-lac, Venetian turpentine, carbonate of soda, and powdered Paris black. The proportions used, and the methods of manufacturing ink and chalk, vary considerably. All descriptions can be purchased ready prepared The greasy substances are the important parts, the black colouring matter is added merely for the convenience of the artist, as it enables him to see what effect he is producing as he goes on with his work.

Writing or *drawing* on stone is performed with a very fine pen or a small brush for free-hand work, and a ruling pen for straight lines. This process is adapted for all purposes, such as plans, maps, outline sketches, &c. where the subject can be represented by *lines*. A polished, or as it is technically called, *flat*, stone is necessary. The

ink, with a little water and a gentle heat, may be rubbed down in the same manner as china-ink. The subject may be traced with tracing-paper, and the drawing proceeded with in the same manner as on paper; the only difference being, that it must be *reversed* on the stone. Great care is necessary in handling the stone, as its affinity for grease is so keen that a finger placed on it would develop into a black blot in printing. When the drawing is finished, it is covered over with a solution of gum-arabic in water; this gumming is an indispensable part of the process, and acts in several ways: it fills up the pores of the stone on the undrawn parts, prevents the greasy lines of the drawing from spreading, and resists the adhesion of accidental grease stains in handling. The stone is then removed to the printing-press (to be afterwards described), and prepared for printing. As this preparation is the same for all descriptions of work, we will briefly describe it here. When the stone is fixed in the press, the gum is washed off with clean water. We may observe, in passing, that however carefully the gum may be washed away, a little always remains in the pores of the stone, assisting the water to resist the ink in the subsequent printing. The stone is then damped with a canvas cloth, and a roller (made of wood or iron, covered with one or two thicknesses of flannel, and an outer covering of fine leather) charged with printing-ink, is passed several times over the stone, till every part of the drawing is thoroughly inked. In some cases this *inking up* is performed with a piece of rag smeared with ink, but the result is the same. If there have been any accidental grease or finger marks on the stone, they will appear with the inking. They must be removed, if on the margin, by polishing with Water-of-Ayr stone, or with acid, or if close to the work, scraped out with a sharp knife. When the drawing is thus rendered satisfactory, the stone is washed over with a weak solution of nitric acid in gum water. This *etching*, as it is called, is another indispensable condition, and also acts in several ways. If applied too strong, it would remove the drawing completely from the stone, but when diluted to the proper degree, it gently eats away the surface of the bare parts of the stone, opening up the pores for the better reception of the gum afterwards applied, thoroughly cleans it from grease soils, and sharpens the lines of the drawing. When the stone is sufficiently etched, the acid is washed off with clean water, and another coating of gum applied; when this is dry, it is again washed off with water, and usually, the whole drawing, or at least what appears on the surface of the stone, is washed off with turpentine. From all that can be seen on the stone by the uninitiated, the whole work has been lost, but it is only the *black* which is removed, the *grease* is *in* the stone, and that is all that is necessary. This washing out is done to get rid of the writing-ink, which differs in composition from the printing-ink, and is better removed. The stone is now damped with a cloth, and inked with the roller till the drawing is all black again; a piece of paper is placed on the top, passed through the press, and when taken off has received an impression from the drawing. The damping and inking is repeated for every impression, and when the stone is put away or left for a time, it is, for preservation, covered with the indispensable gum, which, of course, must be washed off again when the printing is resumed. The ink for black printing is composed of Paris black, ground up with varnish made from boiled linseed oil.

Chalk-drawings are executed on a grained stone, coarse or fine, according to the nature of the work. As a chalk-drawing is capable of very soft effects in shading, this process is much better adapted for such subjects as portraits and finished pictures than that last described. The lithographic crayon works on the surface of the grained stone exactly in the same manner as the ordinary drawing-chalks on rough crayon-paper. The method of drawing is similar, and needs no explanation. When the drawing is finished, it has to undergo precisely the same operation to fit it for printing as the writing on stone. The printing of a chalk drawing requires to be more carefully conducted than a line-drawing, on account of the grain on the stone; the proper inking with the roller particularly being a very delicate operation.

Writings and drawings made on prepared paper, and transferred to the stone for printing, form, perhaps, the most important item in general lithographic work. The paper is prepared on one side with a coating of a mixture of isinglass, flake-white, and gamboge, and afterwards smoothed by being passed several times through a press over a heated stone. The writing or drawing is made on this preparation with a pen or fine brush, with the lithographic writing-ink, in the same manner as drawing on stone, with this difference, that it does not require to be reversed, since the transferring does that for it. Transparent tracing-paper can be prepared with the composition, and is used where a fac-simile of any other subject is wanted. The paper is put on the top of the drawing or writing to be copied, and as the coating is not thick enough to affect the transparency much, it can be traced through with the pen like an ordinary tracing. When the drawing is finished, it is transferred to the stone in the following manner. The paper is put for a few minutes between damped blotting-paper. A *warmed* polished stone is put in the press; the paper is then placed with the coated side upon it, and passed several times through the press, after which the paper is damped with water and gently rubbed with the fingers till it comes easily off, leaving the work adhering to the stone. The stone is gummed over, and proceeded with as already described. After the first inking-up, and before the etching, any defects in the transferring can be touched up with a pen or brush.

Although liable to accidents in transferring, this process, when carefully performed, is capable of very fine work, and has almost entirely superseded drawing directly on stone, except perhaps in cases where the value of the drawing is such that it is not considered expedient to run the risk of transferring. For circulars and commercial work generally, it is invaluable.

Autography is the name given to a variation of this process, executed on common writing-paper, without preparation, with the lithographic ink. It is transferred in the same manner as that described, except that it is damped with diluted nitric acid, and only requires to be passed once through the press. It is only used in the case of any one wanting copies of circulars or other matter in their own handwriting.

Fresh *impressions of lithographs, of steel, copper, and wood engravings, and of letter-press*, may be transferred to, and printed from the stone. The paper used for this purpose is prepared with a special composition; and the ink is a mixture of the writing and printing inks. Transfer impressions from wood-engravings and letter-press may be taken on the writing transfer-paper with the best kind of type-printing ink. The transferring process is the same as that already described. This forms an important branch of lithography, as impressions of copper and steel engravings may be multiplied indefinitely without injury to the original plates. Many subjects, such as music-titles, &c. are engraved cheaply on a soft metal, such as zinc, expressly to be transferred to the stone. When the design is small, and wanted in large numbers, it may be transferred many times on one stone, and so many of them printed at one impression.

The grained paper process is a most important invention of recent date. The method of preparing the paper is as follows: A sheet of copper or other metal is grained on the surface by aquatint, stipple, or ruling-machine; paper, coated with a white transferring ground, is passed through a press on the face of the prepared plate, becomes impressed with the grain, and can be drawn on with chalks in the same way as a grained stone. The drawing is transferred to a *flat* or polished stone, in the same manner as writing. The great importance of this process will be better explained when we come to describe the steam lithographic machine.

Engraving on Stone is not engraving, properly so called, but an adaptation of the process of etching, whereby very delicate drawings may be executed on stone. A hard, polished stone is covered with a thin coating of gum, having a little colouring-matter mixed with it, to allow the artist to see his progress. On this ground the drawing is executed with etching points of diamond and steel of various breadths, so that broad lines may be cleanly cut out. It is necessary that the surface of the stone should be cut into sufficiently to remove the gum entirely, in making the line. When the drawing is finished, any greasy matter, oil, or tallow is rubbed into the lines, and allowed to remain for an hour or so; this is imbibed by the stone where it has been exposed by the etching point; the other parts are protected by the gum. The gum is then washed off, the stone damped, and inked by the roller, and printed without any further manipulation. It is obvious that, as a much finer line can be scratched with a diamond point than drawn with a pen or brush, this process is capable of very delicate work. It is extensively used in Germany in the production of maps and other work. In printing engravings on stone, the ordinary inking-roller has sometimes to be supplemented by a dabber made of rolls of flannel, charged with thin ink; this is dabbed over the surface of the work; any superfluity arising from the thinness of the ink is readily removed by passing over a roller with stiffer ink.

Chromo-lithography is the most beautiful of all the methods of printing from stone, and its proper execution requires a very high degree of skill. The object being to produce, as nearly as possible, imitations of pictures in colour, it is necessary to employ a number of stones, each printing a separate tint, to produce the infinite variety of colour in a finished colour-drawing. The usual method of procedure is as follows: A careful outline of the entire design is drawn on, or transferred to, a stone; from this as many copies are printed with transfer-ink as there are colour-stones, to which they are transferred as guides for drawing in the different colours. On one of these the general effect of the picture is sometimes drawn in, and this, printed in a neutral gray, forms the basis of the finished print. The other stones are charged separately with the colours necessary for the different parts, one having the blue, with its modifications, another red, another yellow, others with grays and secondary tints to break and harmonise the others. It will be easily understood that, in the arranging of the different colours on the stones, the proper amount of force to be given to each, and the effect likely to be produced by printing one tint over another, have all to be considered, and give scope for a great deal of artistic skill. There are many different methods of making the tints on the stone; the following is a usual one: all parts of the stone not intended to print are covered with a strong solution of gum and acid, which is allowed to dry; those parts that are to have a full tint are scratched round with a point, the stone is slightly warmed, and a tinting-ink of greasy composition is rubbed over the surface with a piece of woollen cloth till a flat grayish tint is produced. This forms the middle tint, and is modulated towards the high lights, which have been covered with gum, with a scraper; and those parts intended for a solid tint, which are shewn by the scratched line appearing sharply through the tinting-ink, are filled in with lithographic ink. The stone is then strongly etched, and is ready for printing in the usual manner, except that coloured inks are used instead of black. When it is considered that as many as twenty or thirty different stones are sometimes used in printing one picture, and that they are printed one after the other on the same paper, it will be understood that a great amount of care is necessary, in printing, to see that each impression is exactly fitted to the others, or exactly *registered*, as it is called. If any one of the impressions were misplaced, even a very little, the result would be a failure. Several appliances are used to secure this uniformity, into the details of which we need not enter.

Ordinary *chalk-drawing* coloured with *one or two tints*, is a simple modification of this process, and is performed in the same manner.

We have now roughly sketched the principal kinds of lithography, but it is to be understood that they are all capable of various modes of treatment. Those we have described have been chosen with the idea of giving the best possible explanation of the theory of this beautiful art.

Lithographic presses vary in construction, but the chief points in their mechanism are these: The scraper (*s*, fig. 9), which applies the necessary pressure, is a wedge-formed plate of brass or boxwood, fixed to the bottom of the scraper-holder, with its edge downwards. The table on which the stone is placed, and on which the tympan (*t*), an iron frame covered with leather, which covers the paper on the stone while being printed, is brought down, is, by means of a

handle (*h*) or wheel, brought upon the metallic moving roller, and under the scraper. The handle of the lever-power (*l*) is put down, bringing the

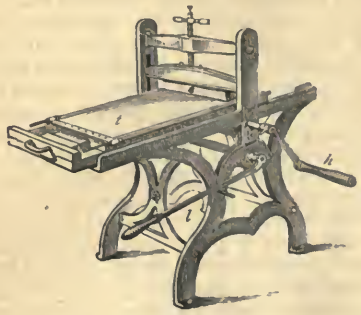


Fig. 9.

scraper firmly down on the top of the tympan, the handle (*h*) is turned round, and the stone is gradually moved through its whole length; the handle of the lever-power (*l*) is raised again, and the table upon which the stone rests is returned to its former place.

The first self-acting lithographic machine (called simply a *machine* to distinguish it from the ordinary hand-*press*) that was made and introduced into this country was that of Sichel of Berlin and Vienna, patented in Britain some years ago; it was considered at the time a triumph of ingenuity; but it did not benefit lithography, as was at first anticipated, from the fact, that the principle upon which it was constructed (that of the scraper process) was found to produce too much friction, rendering speed dangerous, and work difficult to keep on the stone. It was not till about the year 1860 that the lithographic machine, as at present in use, was first introduced into Britain from France, and became a necessary adjunct to all large establishments, its use being found of as great benefit to lithography as the steam printing-machine has been to letter-press printing.

As all such machines are made upon what may be termed more or less the French model, which is somewhat an adaptation of the letter-press single-cylinder machine, we here give a description of one of the most recent makes.

The lithographic machine resembles the ordinary single-cylinder letter-press machine in that the cylinder produces the impression from the stone, thereby doing away with the friction attending the hand-press. The stone is fixed in a movable bed, which can be raised or lowered according to the thickness. The sheet when placed on the feed-board on the top of the cylinder, is thrown into register by a simple contrivance, worked by a camb and spring; at the same time, the gripper opens, and, by special action in the mouth, it throws up the sheet at the same time that it takes it, which, with the somewhat similar action on the feed-board, insures the sheet always going properly to the stone. A side-brake is arranged, whereby the cylinder is steadied while passing over the stone. Behind the cylinder are the damping-rollers, which are covered with some soft absorbent fabric. The ink is supplied from a duct, as in letter-press, is thence transferred to the inking-table by distributors, and then to the inking-rollers, which are covered with the finest French leather. The stone first travels past the damping-rollers to the inking-rollers, and returns again past the inkers to receive the paper with the pressure, the whole being worked by what is termed the crank-action. A variety of patents have from time to time been taken out in connection with steam lithographic machinery; but none have proved better than that described.

The weak point of the machine is that it cannot print satisfactorily from a *grained* stone on account of the rigidity of the rolling apparatus. This at first rendered it quite unsuitable for printing chalk-drawings, which could only be executed on grained stones, and consequently diminished its usefulness in a great measure. The invention of the *grained-paper* process (by means of which, as already described, chalk-drawing can be transferred to, and printed from a *flat* stone) has entirely removed this difficulty, and opened up every kind of lithographic work for the machine.

Lithography has benefited so much by the introduction of machine-printing, that new fields of enterprise are opening up for it. An illustrated paper is printed, entitled the *Canadian Illustrated News*, in which not only the illustrations are lithographed, but the letter-press transferred to the stone, and printed as well. In New York also is published a paper, called the *Daily Graphic*, illustrated, produced entirely by lithography; and recently an attempt has been made, and we believe with some success, to print from the lithographic stone *fixed* colours on calico.

Zincography.—The invention of this process is due to the late Mr Eberhard of Bavaria. It is merely an application of lithography to zinc plates, with some necessary modification of the etching and printing, but is not so certain in its action. Its only advantage is in connection with very large subjects, as the zinc is more portable and less liable to breakage than stone.

Photo-lithography is very well adapted for reproducing, on any scale, architectural and engineering drawings, &c. where these are executed in *lines;* hitherto, the process has not been so far perfected as to reproduce a *flat* tint. An account of the process will be found in the following number (p. 783).

A very ingenious process has recently been invented for printing several colours by one impression. It seems to be adapted principally for printing the tints on maps. The different parts are carefully cut out from blocks of solid *ink* of the required colour, and of equal thickness. These are put together on a press specially adapted for the purpose, and printed on paper slightly damped with turpentine, without any further inking. The outlines, &c. are then printed from the ordinary lithographic stone in the usual way.

Since its discovery by Senefelder, the art of lithography has made an immense stride, and we think we are within the mark when we say that, compared with many of its sister industries, it has not only kept pace with, but considerably distanced them. The rapidity of its growth, and the prominence it has attained as one of the most important branches of industry in this country, is particularly striking.

ENGRAVING—PHOTOGRAPHY.

ENGRAVING.

HAVING in the preceding sheet endeavoured to explain the method of printing from movable types, known as letter-press printing, and from stone, called lithography, we shall, in the present, give some account of the allied arts employed principally in the embellishment of printed matter, namely, Engraving on wood, copper, steel, and other metals, and the kindred art of Photography.

WOOD-ENGRAVING.

During the last twenty or thirty years, everyone must have observed how great has been the increase of works containing wood-engravings, for the purpose either of illustration or embellishment; and yet there is scarcely an art or profession of which so little is popularly known.

Wood-engraving, or Xylography, the art of engraving designs on wood, differs from copper and steel plate engraving by having the parts intended to print on the paper, in *relief*. While *plates* are printed from the engraved lines by a laborious and necessarily slow process, wood-engravings, having the object to be represented on the surface, in the manner of a type, may be printed along with the matter it is intended to illustrate in the ordinary printing-machine. This, of course, is an important point in the illustration of books, on the grounds of cheapness and expedition. Another advantage wood-engravings possess is, that they can be multiplied to any extent by means of the stereotype and electrotype processes.

The invention of wood-engraving has been claimed for the Chinese, whose books have certainly been printed from engraved wood-blocks for ages. It has indeed been asserted that the art of cutting figures in relief, and printing impressions of them on paper, was known and practised by that nation as early as the reign of the renowned Emperor Wu-Wang (1120 B.C.). There is no doubt that wood-stamps were used by the ancient Egyptians and Romans for stamping bricks and other articles of clay; and that wood and metal stamps of monograms, &c. were used in various European countries, for attesting deeds and other documents, at a very early period, when the ability to write was an extraordinary accomplishment even for princes. It is not, however, until the beginning of the 15th century that we find any evidence of the existence of wood-engraving as we now understand it. It appears to have been used in Germany at that time for printing playing-cards and figures of saints. The earliest print of which any certain information can be obtained is, or was recently, in the collection of Earl Spencer. It was discovered in one of the most ancient convents of Germany—the Chartreuse of Buxheim, near Memmingen, in Bavaria—pasted within the cover of a Latin MS.; it represents St Christopher carrying the infant Saviour across the sea, and is dated 1423. Fig. 1 is a reduced fac-simile of this curious engraving. It is a work of some merit, notwithstanding its apparent roughness; the infant Saviour and the

Fig. 1.

drapery of the saint being drawn with considerable skill and vigour. The inscription at the bottom has been thus translated: 'In whichever day thou seest the likeness of St Christopher, in that same day thou wilt, at least, from death no evil blow incur.—1423.' Shortly afterwards, a series of books, printed entirely from wood-engravings, called block-books, were issued. They consisted principally of religious subjects, with short descriptions engraved on the same block. The most important of them were the *Apocalypsis, seu Historia Sancti Johannis;* the *Historia Virginis ex Cantico Canticorum;* and the *Biblia Pauperum*, the last containing representations of some of the principal passages of the Old and New Testaments, with explanatory texts. The illustrations, of which Mr Jackson, in his treatise on the *History and Practice of Wood-engraving*, gives an elaborate account and several specimens, seem to be drawn with a supreme contempt for perspective and proportion, but bear evidence of the draperies, and hands and faces, having been carefully studied. Fig. 2 is a copy of one of the cuts in the *Apocalypsis*. It represents St John preaching to three men and a woman, with the inscription: '*Conversi ab idolis,*

per predicationem beati Johannis, Drusiana et ceteri' (By the preaching of St John, Drusiana and others are withdrawn from their idols). Fig. 3, from the *Biblia Pauperum*, is curious as shewing the general manner of representing the

Fig. 2.

creation of Eve during the 15th century, the same subject frequently occurring previous to 1500. Both have the appearance of careful drawings 'spoiled in the engraving.' Previous to the invention of movable types, whole books of text

Fig. 3.

were also engraved on wood, and the impressions had evidently been taken by *rubbing* on the back of the paper, instead of steady pressure, as in the printing-press, the ink used being some kind of distemper colour.

As printing spread, the publication of illustrated books became general in Germany and Italy, and reached England in 1476 ; in which year Caxton published the second edition of the *Game and Playe of the Chesse*, with figures of the different pieces. They are very rude, compared with the earlier German works. Fig. 4 is a reduced copy of the 'Knight,' and is interesting as one of the first wood-engravings executed in this country : several works followed, all, however, in the same rude manner. The first attempt at something finer than simple lines appears in the frontispiece to the Latin edition of Breydenbach's *Travels*, printed at Mainz by Erhard Reuwich, 1486. It is by an unknown artist, and is an elaborate and really very beautiful specimen of the art. It is also remarkable as being the first engraving introducing *cross-hatching* to represent dark shadows. About the beginning of the 16th century, a complete revolution in the art of wood-engraving was accomplished by the genius of Albert Dürer. His productions exhibit not only correct drawing, but a knowledge of composition and light and shade, and attention to the rules of perspective, which, with the judicious introduction of subordinate objects, elevated them to the rank of finished pictures. Dürer, however, in common with most of the German artists of his day, paid very little attention to the propriety of costume in his religious subjects; one of his drawings in the *History of the Virgin* (1511), for instance, representing the birth of the Virgin, shews the

Fig. 4.

interior of a German burgomaster's house of his own day, with a number of gossips drinking from flagons, and otherwise enjoying themselves.

During the first half of the 16th century, the publication of books illustrated with wood-engravings still increased, and prevailed to a greater extent than at any other time, with the exception of the present day. The superiority of talent, both in drawing and engraving, however, still remained with the Germans. In France, although their figure-subjects were inferior to those of their German neighbours, their ornamental borders in prayer-books, &c., of which a great number were printed at this time, were extremely beautiful. In Italy and England, the art was very far behind. The most remarkable work published at this time was the *Dance of Death*, issued at Lyon in 1538. The original edition of this curious work contained 41 engravings, representing the struggle between Death, generally in the form of a skeleton, and different individuals, such as the Pope, the Emperor, a Judge, Monk, Doctor, Duchess, Old Man, &c. The drawings, which are characterised by

great vigour and skill, are generally understood to have been executed by Hans Holbein; but whether he also engraved them, as has been alleged, is more than doubtful. Towards the conclusion of the century, however, the art had made considerable progress in Italy, where some of the best productions of Germany were equalled, if not excelled. In England, it did not make much progress. John Daye published almost the only illustrated books of the time, notably Queen Elizabeth's Prayer-book, which contains a tolerably well-executed portrait of Her Majesty. From the beginning of the 17th century the art fell into a state of great neglect, not, apparently, for want of engravers, for wood-cuts of a certain kind were always produced, but for want of artists able, or willing, to make drawings worthy of preservation.

Nothing particularly deserving of notice occurred until the genius of Thomas Bewick gave wood-engraving that impetus which has made it what it now is—one of the most important of the illustrative arts. Bewick's most important works are his *Histories of British Quadrupeds* (1790) and *British Birds* (1804); all the quadrupeds, and almost all the birds, were drawn and engraved by himself. The birds especially are executed with a truthfulness and skill which have rarely if ever been equalled. These works are also famous for their collection of tail-pieces, which display an infinite amount of humour and pathos. Fig. 5 is a reduced

Fig. 5.

copy of one of them—a poor ewe, in the starvation of winter, picking at an old broom in front of a ruined cot—a scene, trifling as it seems, which tells a woful tale of suffering. He entirely abandoned the elaborate system of 'cross-hatching,' which prevailed so much in the works of the older engravers, and produced his light and shade by the simplest possible means. The above example affords an excellent specimen of a wonderful effect being produced by a few simple lines.

Since Bewick's time, wood-engraving has continued to flourish without interruption. He left behind him several pupils, the most successful of whom were Nesbet, Clennell (who engraved some of the tail-pieces in the *British Birds*), and William Harvey. Harvey, however, forsook the burin for the pencil; and his drawings illustrating Milton's *Paradise Lost*, Thomson's *Seasons*, &c., especially such as were engraved by John Thomson (perhaps the most skilful engraver that ever lived, and a pupil of Robert Branston, a self-taught engraver), still retain a first-class place as specimens of wood-engraving. The establishment of the *Illustrated London News* (1842) tended greatly to familiarise the public with the beauties of wood-engraving.

Of late years, the art has also made very great progress in France and Germany. The style of engraving, however, is quite different from the English, so much so, that a practised eye can distinguish a French wood-cut at a glance.

Formerly, the usual practice was for the engraver to make his own drawings on wood. While the work was limited, and not required of a very high class, and in cases of exceptional genius, such as Bewick, Samuel Williams, and W. J. Linton, this did well enough. The spread of printing in modern times, and the increased demand for *good* wood-cut illustrations, had the inevitable result of producing a supply of trained artists, many of them beginning as engravers, who, by making the necessities of that art their special study, have brought it as nearly as possible to a state of perfection. Messrs (now Sir) John Gilbert and Birket Foster were the first of this class of artists. It would be difficult to overestimate the value of the services these gentlemen have rendered to the cause of wood-engraving, and their influence in raising it to its present high place as an art. Although both have left the pencil for the brush, they have, by their example and precept, left behind many who are well qualified to carry on the work they had so well begun.

Practice of Wood-engraving.—The wood used for engraving is boxwood, which has the closest grain of any wood hitherto discovered. It is principally imported from Turkey for the purpose, as the English box is too small to be of much use. It is cut *across* the grain in slices, which are dressed to the same height as type, for convenience in printing. Inferior kinds of wood, such as American rock-maple, pear-tree, plane-tree, &c., are used for coarser purposes; and for very large and coarse subjects, such as posting-bills, common deal is used, and cut on the *side* of the wood with chisels and gouges. When *blocks*—as the pieces of wood are termed—are required of a larger size than a few inches square, it is necessary to join two or more pieces together, as the amount of *sound* wood to be got out of even a large slice is extremely limited. There is, however, for all practical purposes, no limit to the joining process, as blocks have been printed consisting of from 50 to 100 pieces. The wood having been made very smooth on the surface, and squared to the required size, is prepared for the artist by being covered with water-colour Chinese white, with the addition of a little enamel, scraped off an enamelled card; this gives a very good surface for the pencil to work on—the enamel hardens the white, and permits of washing with a brush, which the white itself will not do. The subject is then drawn in the ordinary way, except that everything must necessarily be *reversed*, the tints being generally washed in with India-ink, and the details filled in with pencil. When the drawing is finished, it is given to the engraver, who, previous to commencing, carefully covers the block with paper, fastened round the edges with beeswax; this is necessary, to avoid rubbing the drawing out in the process. As the engraving proceeds, he gradually tears the paper off.

The tools or gravers necessary in wood-engraving are of three kinds—viz., gravers proper (fig. 6, *a*); tint-tools (fig. 6, *b*); and scoopers, or cutting-out tools for clearing out the larger pieces (fig. 6, *c*). They are arranged in different sizes, to suit

the different portions of the work. Fig. 7 represents the method of using the graver. Most engravers use a glass of slight magnifying power,

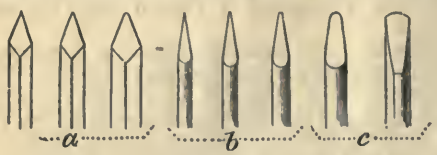


Fig. 6.

more for the purpose of relieving the eyes from the strain of fixing both eyes closely on a small object, than for magnifying the work. When gas

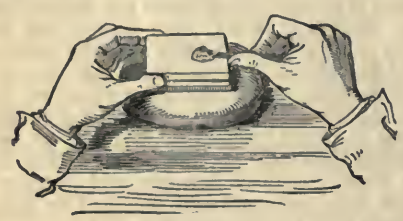


Fig. 7.

or other artificial light is used, a glass globe filled with water, slightly tinted with blue (to neutralise the reddish glare of the light), is placed between the flame and the work: this serves the double purpose of concentrating the light on the block, and keeping it out of the eyes. When the drawing is in outline, or mostly so, the engraving is very simple: the process consists of engraving a line along each side of the pencil lines, which are, of course, to be left in relief, and afterwards cutting out the white pieces between. It will thus be understood that every part of a woodcut which prints on the paper is the surface of the wood left untouched, and that every white part is cut or hollowed out. Fig. 8 represents a little subject

Fig. 8.

Fig. 9.

outlined; fig. 9 is the same subject *finished.* When it is complicated with much shading, trees, &c., it becomes much more difficult, and brings into play the artistic talents of the engraver to preserve the proper shades, or *colour*, as it is technically termed, and texture of the different objects. Some engravers of the present day are celebrated for their power of producing beautiful pictures altogether by 'graver-work' from drawings made entirely with the brush. Skies and flat tints are engraved with tint-tools, which, from their shape, are best adapted for cutting straight lines; and by the judicious use of the different sizes, the lines are left wider or closer, thicker or thinner, as the tint is wanted darker or lighter. As already mentioned, the tools are arranged in sizes —i.e., those for light tints are broader at the points than those for dark tints, so as to cut out more white. Trees, foregrounds, &c., are cut with *gravers*, which, as they are like a lozenge in shape, give more scope for freedom of handling.

When the drawing is all engraved, a proof is taken by inking the surface gently with printing-ink on a dabber (a ball of cotton covered with silk), and, a piece of *India-paper* being laid on it, by rubbing the paper with an instrument called a *burnisher*, until it is all printed. The engraver then sees what touching-up is required—a light part to be softened here, a hard dark part to be toned down there, &c.—before it is finished and ready for the printer.

When large blocks are to be engraved, the pieces of wood are joined with screw-bolts, and the drawing prepared in the usual manner; after which, the pieces can be separated for convenience in engraving, and also for the purpose of getting it quicker finished, by having an engraver working at each piece—a matter of some consequence in many cases, as, for example, in the large engravings in the illustrated newspapers.

As wood-engraving, however, is at the best but a slow process, it is not surprising that many attempts have been made to introduce a substitute for it. The point aimed at is to produce by some process of etching, or otherwise, an engraving in relief, directly from the drawing of the artist, without the intervention of the engraver at all. It would occupy several pages of this work merely to enumerate all the processes which have been invented to accomplish this end. The only one which, from its being partially successful, seems deserving of mention, is called the *Graphotype Process.* The drawing is made on finely prepared chalk, with a preparation of silica; this hardens the chalk where it is applied; the spaces between the lines remaining soft, are then carefully removed by means of a brush; a cast or stereotype is then taken, as the chalk is of course too soft itself to be printed from.

Wood-engraving as a Profession.

Wood-engraving is carried on as a profession chiefly in London, Edinburgh ranking next in the number of its professors.

In the larger establishments, it is not unusual to have a division of labour, a block going through several hands, one engraving the sky, another the trees, a third the figures, and so on. By these means, wood-engravings can certainly be produced with amazing rapidity, but it may be doubted whether such a wholesale system is advantageous to art, or to the production of artistic engravers.

Another matter tending to deteriorate the profession is the peculiar style of drawings indulged in by certain artists. Through an entire misapprehension of the uses and aims of wood-engraving, they draw etchings on the wood with a very fine point, and expect them to look as well when printed. But as the burin was never intended to supplant the etching-point, the result is not satisfactory; anything more tedious and mechanical

than the process of engraving these etched drawings can scarcely be imagined. Wood-engravings should possess a character of their own which cannot be mistaken, and not be a mere imitation of any other art; and to attain this character in the highest possible degree, ought to be the aim of every artist on wood. Much has been said of late years about wood-engraving as a light and remunerative employment for ladies, and much nonsense talked about its being easily acquired in a few lessons. Without wishing to discourage the idea, we would not be doing our duty if we did not warn them that the patience and perseverance necessary to acquiring the art *usefully* will be much greater than at first sight may be supposed. To such, however, as can furnish the requisite patience, in addition to decided talent, we would desire to give every encouragement; there is plenty of room for really good engravers, although, of mediocre hands, there are enough and to spare.

ENGRAVING ON COPPER AND STEEL.

In the printing of letter-press or wood-cuts, as has been already noticed, the impressions are effected by the raised faces of the letters, or marks, in the manner of a stamp. Printing from engraved plates is performed on a principle directly the reverse: in this case, the face of the metal, cleared of the ink daubed upon it, gives no representation—the printing is effected from the sunk lines. While wood-engravings may be printed along with type-matter, engravings on plates of metal require to be printed by themselves.

The discovery of the art of engraving on metal, for the purpose of making impressions on paper, is generally ascribed to Finiguerra, a goldsmith of Florence. He excelled in an art then much practised in Florence called *niello*. It was the custom with jewellers, in those times, to engrave the outlines of Scripture subjects upon the vessels which they made for the use of the church. When this engraving was completed, they filled the lines with a black substance composed of a mixture of lead and silver, in solution with borax and sulphur; and impressions were taken from this in clay or sulphur. The black substance used was called *niello*, and hence the name of the art. The same process was also used when pieces of armour, household plate, and other articles, were engraved for the purpose of being inlaid with metals, wood, or ivory.

German writers claim the honour of the invention for a citizen of Antwerp, Martin Schoengaur, asserting that he practised the art before Finiguerra. It seems probable that it appeared nearly simultaneously in both countries. The earliest distinguished engravers, after the discovery of the art, however, were Italians.

It does not appear that Finiguerra pursued his invention any further than to take impressions on paper instead of clay. A contemporary, of the same profession and city, Baccio Baldini, improved upon the invention by engraving on plates for the express purpose of taking impressions on paper. The works of Baldini attracted the attention of a Roman engraver, Andrea Mantegna, who had already become distinguished as one of the most successful of the *niellatori*. This artist not only assisted Baldini with original designs, but also turned his own efforts to the promotion of the newly discovered art, in which he soon became a proficient.

In our notice of the early days of the art, we must not omit mentioning Albert Dürer, one of the earliest German engravers. Some knowledge of the art seems to have been previously possessed in Holland by Martin Schoengaur, who is thought by some German writers, as we have seen, to have invented it, and who was certainly a contemporary of Finiguerra. The works of Martin, and his disciple Wolgemuth, inspired the genius of Albert Dürer, who did much for the improvement of the art, excelling as much on copper as we have already seen he did on wood. Marc-Antonio Raimondi, an Italian artist, having seen Dürer's prints, improved upon them, and became at Rome a master in the art. Thus the profession was spread simultaneously over Holland and Italy. Although there have been various improvements in the art since this early period of its history, the mode of etching the plates remains substantially the same. At present, there are several kinds of engraving practised, each effected in a different manner, and of these we shall now offer a short account.

Line-engraving.—This is the principal as well as the most ancient species of engraving. When not executed entirely with the graver and dry point—that is, when the lines are not cut mechanically and finished with the scraper and burnisher—it is commenced by a chemical process called *etching*. The plate is first cleaned on its polished surface, and heated sufficiently to melt a composition of asphaltum and Burgundy pitch, called etching-ground, which is rubbed upon it, and rendered equal all over, by dabbing with a ball of wool covered with silk. The plate is then held up for the surface to receive the smoke of a wax-taper, until it is rendered black and glossy, into which state it comes, on not being suffered to cool during the process. These preparations being effected, and the plate becoming cold, the etching-ground, which is not thicker than a coat of varnish, is found to be of a hard consistence, and ready to receive the tracing of the subject intended to be etched. The previous preparation of the subject is a very important step in the process. The subject is drawn upon transparent paper with a black-lead pencil, and being laid with the face downward on the etching-ground, the lines or marks of the drawing are pressed upon it with such force, that they are left on the ground on removing the paper. This is called 'transferring;' and of course the excellence of the representation to be produced depends on the excellence of the drawing. Engravers, therefore, in copying paintings, require to possess a degree of skill in the art of delineation hardly inferior to that of the original artist.

The drawing being transferred in the manner described, the engraver applies his tool, or etching-needle, over the lines, carefully removing the ground, at the same time pressing sufficiently hard to scratch the surface of the copper. When any error has been committed, the objectionable lines may be stopped out by working a little of the ground over them with a hair-pencil dipped in turpentine. When set, the parts so treated resist the aquafortis. A wall of wax is now placed round the margin of the plate, and into the

inclosure so formed aquafortis is poured, to the depth of half an inch. This aquafortis decomposes or bites into the copper where the etching-ground has been removed. During this process, globules of air arise from the decomposition, and these are carefully removed with a feather, to allow free scope to the biting liquid. The length of time employed in biting the plate is regulated by the depth required, also by the state of the atmosphere; in ordinary cases, the operation may be performed in about an hour. When it is ascertained that the plate is properly acted upon, the aquafortis is poured off, the wall of wax removed, and the ground cleared with spirits of turpentine. The plate is now said to be etched, and when printed from in this state, exhibits the appearance of a pen-and-ink sketch. To this state of etching, but regulated by the nature of the subject, professional engravers bring the plates to be finished in the *line* manner. Different gradations of power are given by the aquafortis, and parts are rebitten to the depth required, the parts not wanted to be rebitten being stopped out; after which, the light parts are put in with a sharp needle. Other parts are then cut with gravers of various sizes and forms, suited to the lines which will best express the respective objects. The engraver, in thus finishing his work, rests the plate on a small cushion, so that, it may be conveniently turned with the left hand, while the incisions are cut with the graving-tool by the right. These lines are re-entered, crossed in various directions, or cut in the spaces between the diagonal crossings, until the desired effect is produced. Landscapes and architecture are generally executed with the needle and aquafortis: portraits and historical subjects are chiefly cut with the graver or burin, without the use of aquafortis. Where a series of parallel lines are wanted, as in backgrounds, &c., an ingenious machine called a *ruler* is employed, the accuracy of whose operation is exceedingly perfect. This is made to act on etching-ground by a point or diamond connected with the apparatus, and the tracings are bit in with aquafortis in the ordinary way.

As etching has become somewhat fashionable, and is now pretty freely cultivated by amateurs, either as an amusement, or with a view to illustrate discoveries in natural science, it may be well to mention that the art can be learned in a few lessons. Those who reside in large towns will most readily acquire it under the direction of some copper-plate engraver; those who have no such opportunity, may consult any practical treatise on the subject. The apparatus is by no means costly, and consists of a few copper-plates, etching-needles, a hand-rest, a ball of etching-ground, a dabber, oil-rubber, a little rotten-stone, a smoking-taper, bordering-wax, some varnish for stopping out false lines, tracing-paper, and a phial of aquafortis. The great advantage of etching to the amateur consists in the opportunity it affords him of multiplying impressions of his work. A sketch in oil or in water-colours remains single, and a copy can only be obtained by repeating the process; whereas a sketch once etched can yield hundreds of impressions, all precisely the same in every line and feature. Those who can draw in reverse, proceed at once to delineate on the etching-ground; but in general it is safer to draw on paper, and transfer. Etching with a *dry point*, as it is called, is performed entirely with the point without any ground, the burr raised by the graver being taken off by the scraper—a steel instrument with three sharp edges. Engraving or etching in *soft ground* is used to imitate chalk or pencil drawings. For this purpose, the ground is mixed with a portion of tallow or lard, according to the temperature of the air. A piece of tissue-paper being attached to the plate at the four corners by some turners' pitch, and lying over the ground, the drawing is made on the paper, and shadowed with the black-lead pencil. The action of the pencil thus detaches the ground which adheres to the paper, according to the degree to which the finishing is carried; the paper being then removed, the work is bit, as in etching with the hard ground.

Stippling is a style of engraving in which dots of various sizes and depths in the copper, instead of lines, express the forms and shades of the subject. They are first made in the etching-ground with the needle, or with a toothed-wheel called a *roulette*, then bitten, and some parts stopped out, to prevent the further action of the aquafortis on them; while other parts receive additional bitings, till the subject has the power required. After this the plate is cleaned, dotted up with the needle, stippled with the graver, or rebitten, until all the gradations of force are communicated.

Mezzotinto is in a great measure a reversal of those styles already described, being the reducing of a darkened surface of copper to one that is light. The operation is generally commenced by grounding or puncturing the plate with a circular-faced tool called a *cradle*, on the edge of which are a number of points; this instrument, by being rocked regularly over the surface of the copper in every direction, covers it so completely with marks, that, if it were printed from, the impression would be perfectly black. On this dark ground the subject is traced, directing where the various gradations of light and half-tint are to be scraped and burnished out, until the proper effect is produced. This style of engraving is used chiefly for portraits and historical subjects. It has a pleasing, soft appearance, but it is understood that the copper soon fails in producing strong impressions, and it is therefore not well adapted for subjects of which great numbers are required.

Aquatinto engraving is an exceedingly complicated style of producing pictorial effect. In appearance, it resembles tinting with Indian-ink, and the prints are susceptible of being finished with water-colours. In commencing the process of aquatinto engraving, the plate must be cleaned with an oil-rubber, which is a strip of woollen cloth rolled up hard, to about two inches in diameter; this, with a little impalpable crocus and sweet oil, will give to the copper-plate, when perfectly cleaned from the oil, a proper surface to receive the ground, which is made with pulverised sifted rosin and spirits of wine, incorporated by a gentle heat, till it appears like a varnish. This composition is poured over the plate while placed in a slanting position, so as to permit the superfluous liquid to run off. The operation must be so managed as to preserve an equal surface. As soon as the granulation, or drying of the grain,

appears, the plate must be placed horizontally, when the spirit will evaporate, and the particles of rosin will adhere to the copper. When dry, the surface appears evenly covered, as with a diminutive honeycomb, and perfectly smooth. On this the subject is traced, and the highest lights painted out with a sable pencil in a mixture of turpentine varnish and lampblack, so as to prevent the aquafortis acting on those parts. The margin is also covered, and on it a wall of wax is fixed, with a spout at one corner. The aquafortis is regulated in its strength by the temperature of the weather and the hardness of the copper. Being poured on the plate, it remains until the first gradation of tint is bitten—the aquafortis having acted on the copper between the particles of rosin which adhered to the plate. The aquafortis is then taken off, the plate dried, and this first degree of tint stopped out or covered over with the blackened varnish. When hard, the aquafortis is again poured on, to bite the second degree of tint; and so on until all the tints have in succession been bitten in. The copper must then be cleaned, and a proof taken and compared with the original. A similar or rebiting grain must then be laid on the plate as before; when cold, a composition of treacle and lampblack, well mixed, must be used to paint the projections of foliage on lights, or other touches which the masses of tint may require. When these are dry, the whole of the plate must be washed over with a thin coat of varnish reduced with turpentine, which will adhere to the untouched parts of the work. The wall of wax must then be replaced, and clean water poured on; in a short time the water will mix with the treacle-touches, and loosen them. When all appear to be removed, the water is taken off, and aquafortis poured on, and allowed to remain until a sufficient degree of power is given to the touches, and the subject completed. This mode of engraving was invented by a Frenchman of the name of St Non, about the year 1662. He communicated the process to Jean Baptiste le Prince, who died in 1781, from whom it was acquired by Paul Sandby, who introduced it, through the medium of Mr Jukes, into this country. It has been practised in England with much greater success than anywhere else, but latterly has been superseded in many instances by lithography.

Plate-printing.—Copper-plates, engraved in any of the above styles, are ready for press as soon as they are finished by the engraver. The method of printing from them is very simple. Their engraved surface is daubed over with a thick oleaginous ink, so that the lines are effectually filled. As this dirties the whole face of the plate, it is necessary to clean it, which is done by the workman wiping it first with a piece of cloth, and then with the palms of his hands, rubbed on fine whiting. It may be calculated that a hundred times more ink is thus removed than actually remains in the indentations; however, such is necessary. The plate being thoroughly cleaned, it is laid on a press (see fig. 10), with a piece of damped paper over it, and being wound beneath a roller covered with blanket-stuff, it is forced to yield an impression on the paper. The plate requires to be kept at a moderate warmth during the operation. The frequent rubbing of the plate with the hand to clean it, as may be supposed, tends greatly to wear it down; and such is the wear chiefly from this cause, that few copper-plates

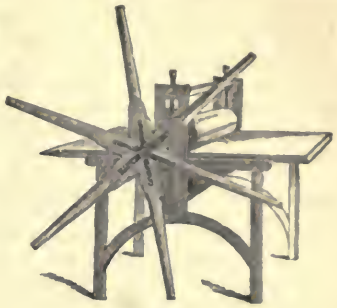


Fig. 10.

will yield more than a few thousands of impressions in good order. The earliest, called *proofs*, are always the best, and most highly prized.

In consequence of this defect in copper, all subjects requiring a great many impressions are now engraved on *steel-plates*. This process was introduced by the late Mr Perkins of London, who originally softened the plates, engraved them, and then rehardened them—a practice now abandoned, as ordinary steel-plates can be worked upon by the burin, dry point, scraper, and burnisher with perfect facility. Etching on steel-plates is executed much in the same way as in the process on copper. The plate is bedded on common glaziers' putty, and a ground of Brunswick black is laid on in the usual way, through which the needle scratches. The biting menstruum is then poured on, and managed in the manner already detailed. An engraving on a steel-plate may be transferred in relief to a softened steel cylinder by pressure; and this cylinder, after being hardened, may again transfer the design by rolling it upon a fresh steel-plate; and thus the design may be multiplied at pleasure.

It is very much to be regretted that this beautiful art is gradually declining. Although many able engravers still practise it successfully, the demand is so restricted, that very few pupils are being trained to follow in their footsteps. The necessarily great cost of good work, and the great advance of wood-engraving, lithography, and photography are surely, if slowly, making it a thing of the past.

SEAL AND GEM ENGRAVING.

This is a branch of the profession altogether distinct from that of engraving on metallic plates. While the hardest metals are susceptible of being cut by a tool wielded by the hand of the artist, the different kinds of stone requiring to be operated upon by the seal-engraver are so extremely hard, that a much more powerful instrument than the hand has to be resorted to. The cutting-tool is fixed into a turning-machine or lathe, and is made to operate while in a rapid rotatory motion. The lathe is of a light and miniature construction, erected on an elevated bench or table in front of the artist, and is moved by a footboard beneath. The engraver of metal-plates sits while at his work, but the seal-engraver in general stands, in order to have greater command over his operations.

He likewise requires to be exceedingly steady in the hand, for the slightest error would perhaps be irremediable; therefore, with both his elbows resting on cushions on the bench, and the palm of his left hand leaning on the top of an erect roundish-shaped bolt or pillar, his fingers of both hands are busy in pressing the stone to the edge of the whirling-tool, or guiding it so that it may receive the appropriate indentations. One tool, however, cannot execute all parts of the device. The cutter possesses from one to two hundred tools, usually of soft iron or copper, varying from a large to a small size. It is also necessary to explain that the cutting part of each tool is shaped so as to present to the stone a sharp thin edge like the rim of a wheel. (By sticking a small wafer on the point of a pin, and conceiving the edge of the wafer, when turning round, to be the cutting part, a good idea may be obtained of this curious instrument.) As the tool projects horizontally, the artist, by holding the stone beneath it, with its surface to be cut uppermost, is thus enabled to watch the progress of his operation from beginning to end.

Sharp as the cutting-tools of the seal-engraver are, they would entirely fail in perforating the gems to which they are applied by the lathe, unless they were given an additional sharpness by means of a foreign material occasionally applied to them while in rapid motion. This material is usually diamond-dust, or the powder of the ruby and other hard stones. The diamond is so expensive an article, that the particles used by the seal-engraver are those which have been rejected as waste by the lapidary. These being placed in a hollow steel tube, having a tight-fitting rammer of the same material, a few smart blows on the upper extremity of the rammer reduce the particles to powder. A small portion of this dust is then mixed with a little olive-oil, and being held to the tool in a state of motion, it is attached to or forced into the metal. If a powerful magnifying-glass were taken to examine the tool after its absorption of the diamond-dust, its edge would be observed to resemble a rasp or saw, the particles being partly imbedded and fixed in the steel; hence, properly speaking, it is not the tool, but the diamond-dust upon it, which cuts the surface of the stone.

To cut an elaborate device, such as a bust or a coat-of-arms, upon the surface of a cornelian or other gem, a vast deal of care is necessary on the part of the artist. The precise depth of every turn and indentation is matter of serious study, and a momentary heedlessness might have the effect of ruining the work of several days. The operator, however, exercises caution in his ingenious labour. The stone being dimmed by friction, is drawn upon with a brass point, to shew the subject, which is of course reversed: the artist first traces the outlines of his figures, next opens them with the bolder tools, and gradually proceeds to the details with finer and finer instruments, frequently stopping to take impressions on wax, to see the effect which has been produced, before he gives the finishing stroke to his workmanship; lastly, the surface is repolished, and the seal completed.

It will thus be seen that gem-engraving requires not only great ability and skill, but a degree of patience and perseverance beyond what is required in most other professions. To cut a metallic seal or die is comparatively an easy task—the instruments as well as material being thoroughly under the control of the artist; but to engrave on the hardest gems, whose nature cannot be altered, and which, if destroyed, cannot be replaced—to carve the most minute and delicate figures, and to produce them in such a manner as to yield a distinct and smooth impression—is altogether an art of the highest order.

ENGRAVING AND ETCHING ON GLASS.

The name of *cut-glass* is given in commerce to glass which is ground and polished in figures with smooth surfaces, appearing as if cut by incisions of a sharp instrument. This operation is chiefly confined to flint-glass (see No. 23), which, being more tough, soft, and brilliant than the other kinds, is more easily worked, and produces specimens of greater lustre. An establishment for cutting glass contains a great number of wheels or disks, seldom exceeding a foot in diameter, which are made to revolve with great rapidity by steam or other moving power. Against the circumferences or edges of these revolving wheels, the glass to be ground or figured is held by the hand of the workman. 'The thickness of the cutting-disks, and the forms of their edge, are varied considerably; some being broad, others narrow; some convex, others concave; some flat-edged, others wedge-shaped; and so on, according to the shape of the vessel, and the figures to be produced. Even forty or fifty disks with different shaped edges may be found in the same workshop. Materials of very different degrees of hardness, from cork to wrought-iron, are employed in the formation of these disks. Those made of wrought-iron, which are very thin, are used to cut grooves in glass, by the aid of sand and water, which are caused to drop on the circumference of the disk from hoppers placed above. Cast-iron disks are also sometimes used in the roughest part of the operation; but the coarse work is usually done by a disk of fine sandstone wetted with water. When ground down to the proper shape, the glass is polished by exposure to softer disks, the action of which is generally assisted by various powders applied in a moist state to the circumference. Thus, a copper disk is used with emery and oil; a disk of block-tin with peroxide of tin or putty; a disk of willow-wood with fine pumice-stone, colcothar, or putty; and a cork disk having an edge of hat-felt with putty or colcothar.' By such simple instruments is all that variety of design—flower, fruit, foliage, arabesque tracery, initials, armorial bearings, &c.—produced which now adorns so abundantly the most familiar articles of domestic utility.

The art of *etching on glass* is altogether different, being akin to etching on plates of copper and steel. 'The art,' says Parnell, in his *Applied Chemistry*, 'may be practised on all kinds of glass; but the most proper description is good crown-glass. The facts on which this art is founded are, that the vapour of hydrofluoric acid (see No. 21) acts energetically on glass, corroding it as aquafortis does a sheet of copper, and that certain parts of the glass may be easily protected by a varnish, on which the acid exerts no action except at a high temperature. The varnish usually

employed by artists for this purpose is either common turpentine varnish mixed with a little white-lead, or a strong aqueous solution of isinglass. In performing the process on a small scale, purified bees-wax will be found to form a convenient varnish.

'The piece of glass to be etched is first of all warmed in a convenient manner, and one of its surfaces is then rubbed over with wax, the temperature of the glass being high enough to cause the wax to melt, and be distributed uniformly over the entire surface. The glass is then set aside to cool; and when the wax has become quite solid, the design may be traced with a pointed, but not very fine instrument, such as a bodkin. A carpenter's brad-awl is a convenient tool for this operation, since, from being flattened at the end in one direction, it may be made to trace lines of different degrees of fineness according to the position in which it is held. Care must be taken to cut through the entire thickness of the wax, so as to lay the glass quite bare through the whole length of the line.

'The next part of the process consists in the application of the hydrofluoric acid. The vessel employed for this purpose is a shallow basin, either of lead or of Wedgwood's ware—no glazed vessel should be employed—large enough to include within its area every part of the design, when the prepared glass is placed upon its edge. The materials for generating hydrofluoric acid—consisting of one part of powdered fluor-spar, and about two parts of highly concentrated oil of vitriol—are introduced into the basin, and well mixed; the glass-plate is then laid on the edge of the basin, with the waxed side undermost, and a moderate heat is applied, to disengage the vapour of hydrofluoric acid. A spirit-lamp will be found a convenient source of heat, from the facility it affords of increasing or decreasing the temperature at pleasure. Care must be taken to prevent the heat becoming so powerful as to melt the wax-ground.

'After being exposed to the acid fumes for a few minutes, the glass-plate may be removed and cleaned. The lines where the wax had been removed are found to be covered with a white powder, which consists of silico-fluorides of the metallic bases of the glass. The greater part of the wax may be removed by scraping with a common table-knife, and the remainder by warming the glass before the fire, and wiping it with tow and a little oil of turpentine. The design will then be found to be perfectly etched upon the surface of the glass, the depth of the lines being proportional to the time the glass was exposed to the acid vapour. In conducting the operation, care should be taken not to allow the hands to become exposed to the acid fumes, as the vitality of the parts would be instantly destroyed by the action of the acid.' According to the authority now quoted, a dilute aqueous solution of hydrofluoric acid may be substituted for the vapour in the above process with a similar result.

Glass-plates engraved upon in this manner are not adapted for printing, or yielding impressions upon paper, on account of their brittleness; but even this has been partially obviated by a German invention, wherein the glass, of considerable thickness, is cemented to blocks of wood—the plates so mounted enduring sufficient pressure to produce a fair impression without fracture.

A recent invention, called the *Sand-blast*, has been used very successfully in engraving on glass. The design is either cut out in stencil, and pasted on the glass, or, for more delicate work, the whole surface is covered with some softer substance, as collodion, and the parts wanted to be engraved treated in the manner described above for etching. Fine sand is then forced against the glass by means of a blast of air, or steam, through a very small opening, and is found to cut very rapidly into the surface where it is not protected. This process promises to be of very great importance in the ornamentation of glass.

GLYPHOGRAPHY.

This process, the invention of Mr Palmer, is essentially the following: An ordinary plate of copper is stained black, and then coated with a substance like white wax. In this coating, the drawing is made as if for etching, only not reversed; and the remaining portions, which constitute the 'lights' of the drawing, being heightened in various degrees by chemical deposition, a cast of copper is finally deposited on the surface by the electrotyping process. This, when removed, shews the drawing in relief, and can now be printed from. The glyphographic process is applied with success to the production of maps.

PHOTOGRAPHY.

The word photography is derived from two Greek words, and means, literally, 'writing or drawing by light,' and is applied to all the various methods by which images can be produced by the action of light on chemically prepared surfaces.

Almost all substances are more or less affected by light, but the salts of silver, and in a lesser degree, the salts of chromium, have hitherto formed the basis of photography. In the 16th century, the alchemists noticed that *horn-silver* (the fused chloride) was blackened by light, but no attempt to turn the discovery to any practical account was made till 1802, when Wedgwood and Davy succeeded in obtaining images on leather and paper, which had been covered with that substance, or moistened with a solution of silver nitrate. When such a prepared surface was covered by an engraving, and exposed to the action of light, the parts under the transparent paper rapidly blackened, while the parts under the ink lines, through which no light could pass, remained white. In this way, a reversed, or *negative* picture was obtained, in which the light parts of the engraving were represented by dark parts, and *vice versâ*. Of course it will be evident that if a second sheet of prepared paper were exposed under the negative so obtained, a *positive* picture, or one in which the lights and shades are in their proper positions, would be produced.

The experiments of Wedgwood and Davy, however, led to no practical result, as they did not succeed in removing the unaltered chloride of silver, after the image was produced, and, in consequence, the whole surface blackened on exposure to light; nor could they obtain any result in the *camera-obscura*, their prepared surfaces not being sufficiently sensitive to be affected

by the faint rays of which the image in that instrument is formed; and it was not till 1839 that the foundation of photography may be said to have been laid, by the almost simultaneous discovery, in France by Nièpce and Daguerre, and in England by Talbot, of the application of iodide of silver, on which an image could be developed, after an almost instantaneous exposure to light.

We shall first describe, briefly, the more important apparatus necessary for the practice of the art; then several of the modifications of the processes of Daguerre and Talbot that have been practised; and, lastly, give a short account of the processes now generally adopted.

I. The *Camera-obscura*, or darkened chamber.—The invention of this instrument is ascribed to Baptista Porta of Padua. Its principle is extremely simple, and may be illustrated thus. Let a small hole be bored in a window-shutter, and the room be darkened. If now the beam of light entering the room by this hole be intercepted by a sheet of white paper, held at a small distance from the hole, an inverted image of objects without will be seen upon the paper. By placing a small convex lens over the hole, this image is rendered much more distinct, or *sharp*, in photographic language. Moreover, it will be found, that at a certain distance from the lens the image attains a maximum degree of sharpness; and that if the paper be removed from this point to any position either nearer to the lens or farther from it, the image becomes indistinct and confused. At the point of greatest distinctness the image is said to be *focussed*. Such being the principle of the camera, it is evident that in practice the instrument may assume many forms, provided always that it consists of a darkened box or chamber having a hole at one end for the insertion of a lens, or combination of lenses, and at the other a screen, generally made of ground

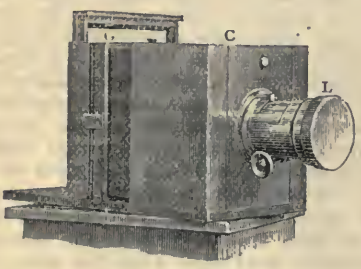


Fig. 11.

glass, on which to receive the image. Fig. 11 will at once give an idea of a very common and simple form of camera. C is the body of the instrument, made of any opaque substance; L, the tube or tubes, generally formed of brass, and containing one or more lenses; G, the obscured or ground glass, upon which the image is thrown for the purpose of adjusting the focus; by means of a rack behind, and the double sides of the camera, the body of the instrument may be lengthened or shortened till the image on the ground-screen is accurately focussed. This rack is frequently placed upon the tubes carrying the lenses. Fig. 12 represents the *camera-slide*. This is a thin dark box, and is used for conveying a sensitive plate from the operating-room to the camera, and back again after exposure. It consists of a rectangular frame, made to fit exactly into the back of the camera when the focussing-screen is removed. At the back is a hinged door, by means of which the plate is introduced into the slide; and in front is a shutter, which is pulled up when the plate is to be exposed, and shut down after the time requisite for the action of the light upon the plate has expired. It must be constructed so that, when substituted for the focussing-screen G (fig. 11), the surface of the prepared plate which is intended to receive the image shall correspond exactly in distance from the lens with the ground-surface of the focussing-screen. The plate rests upon projections in the interior of the slide; and the same slide may be used for plates of different size, by introducing into it thin frames with holes in their centre to suit the plates to be used.

Fig. 12.

II. *Lenses.*—One or more of these are fixed in a movable tube in front of the camera. The tube into which they are inserted slides light-tight within another, so as to permit the lenses to be brought nearer to, or removed farther from, the ground-screen, so that the image may be focussed. There are many requisites in a good photographic lens. We can do no more than indicate some of these, so as to enable any one to choose a good lens for himself.

1. When the image is focussed, it should be equally sharp, or very nearly so, over all parts of the ground-screen. The extent of surface over which a well-defined picture will be formed, depends not upon the size of the lens, but upon the length of its focus. The distance between the centre of the lens and the point where, for parallel rays, the most perfect delineation of an object is given, is the measure of its focal length.

2. The picture obtained by a good lens should be as sharply defined as the image was when seen on the focussing-screen of the camera. If this be not the case, it shews that the chemical and visual foci of the lens are not coincident, and that it is practically useless for photographic purposes.

For the purpose of copying landscapes and still-life, where time is of comparatively little importance, a single achromatic lens of pretty long focus suffices; but when rapidity of action becomes an object, as in portraiture, a combination of two achromatic lenses is necessary. By this means, the light is more powerfully condensed upon the plate, and a larger aperture may be allowed consistent with sharpness of definition. The linear extent of a well-defined image, given by any lens or combination of lenses, as well as their focal depth, may be greatly increased by using the *diaphragm* or *stop*. This is a thin circular plate of metal or card-board, cut to the size of the internal diameter of the tube containing the lenses, and having a small circular hole exactly in its centre. When a single lens is used, the stop is placed in front of it, at an average

distance of two-thirds of its diameter; in the case of a combination, it is placed between the lenses. The advantages of its use have been already stated; the disadvantage is manifestly loss of light, and a consequent increase of time required in exposure.

III. *Camera-stand.*—These are made of various forms—the most common and most portable, as well as most convenient for general purposes, is the tripod. It consists of three light but tough legs, steadily hinged upon a small table of wood or triangle of metal. A screw passes through the centre of this table, or through a bar of metal fixed between two sides of the triangle, and corresponds with a female screw inserted into the bottom board of the camera, so that the stand and camera can be firmly bound together.

The various processes by which photographic pictures may be obtained now claim our attention. We can enter fully into those only which are at the present time in greatest repute among operators; it will suffice to give a general idea of the nature of the others, as it would be beyond the limits of this article to dwell upon them all in detail. In historical order, since the discovery of the art, they stand as follows: Daguerreotype, Calotype or Talbotype, Wax-paper, Albumen on Glass, Collodion. All these have, since their first introduction, undergone modifications more or less extensive; and the variety of formulæ proposed, shews that considerable latitude in practice may be allowed.

DAGUERREOTYPE.

This process derives its name from M. Daguerre, its discoverer, and is essentially distinct in some of its features from all others. The pictures it gives are, when viewed in most lights, positive or direct, as given in the camera, though they also appear as negative when seen at certain angles. Its results are very beautiful, but as it has been altogether superseded, our description of it shall therefore be brief. The plates upon which the pictures are produced consist of copper, thinly coated on one side with silver. The plate is first subjected to the action of vapour of iodine, and then to the vapour of bromine, and is now ready for placing in the camera, where a short exposure is sufficient. To develop the image, the plate is exposed to the vapour of mercury, which attaches itself to those parts which have been acted on by the light. When fully developed, the picture is fixed by immersion in a solution of the salt called hyposulphite of soda.

CALOTYPE OR TALBOTYPE.

The first of these names is derived from the Greek καλος, 'beautiful,' and means 'beautiful picture;' the second is from that of the discoverer, Mr Fox Talbot. He first communicated it to the Royal Society in 1839, and, under a more perfect form, patented it in 1841. This may be said to have been the starting-point of British photography, as the discovery of Daguerre had so short time before been upon the continent. The pictures obtained by this method are upon paper, and depend upon the peculiar action of light on the iodide of silver. Paper having been coated with the iodide referred to, and presently to be described, and being thus made sensitive to light, is placed so as to receive the camera image: and according to the varied brightness of the light in the parts of the image, there is induced a tendency to blacken in corresponding degrees of intensity on the subsequent application of what is called a developing agent; so that, where there is a shadow in nature, there will be little or no action, and the paper will remain white, or nearly so; and *vice versâ*. The picture is thus the reverse of nature; in other words, it is what we formerly defined as a *negative*. This, instead of being a defect, is of the highest importance, since it permits a system of transfer by superposition, by which copies—called, in contradistinction, *positives*—may be obtained to an unlimited extent. The pictures produced by this process are very artistic and bold in effect, and give fine results for some kinds of landscape and architectural objects; and although excellent results may be obtained in portraiture—as, for example, those produced by the late Mr R. Adamson and Mr D. O. Hill of Edinburgh—yet the amount of light which is necessary to produce the required change is too great to render it very applicable for this purpose. The texture of the paper also interferes sadly with the delicacy which is desirable in portraits, and consequently the process has been almost entirely abandoned. The following description will, however, enable the amateur to practise it successfully.

Having procured a suitable paper—that known among photographers as *Papier Saxe* answers well—cut it in pieces of about a quarter of an inch less each way than the camera-slide to be used. They are next to be *iodised*—that is, coated on one side with iodide of silver. This is done as follows:

Take of nitrate of silver 50 grains, and dissolve it in 2 ounces of distilled water; add 7 drachms of iodide of potassium, and shake the mixture until the yellow iodide of silver, which is at first precipitated, is nearly re-dissolved. The solution should not become quite clear; should it do so, two or three drops of water must be added till the turbidity is slightly restored; allow this to subside, or filter the solution through dry bibulous paper. The sheet of paper to be used is now laid flat upon a board which is covered with a piece of blotting-paper, and this iodising solution is copiously, but without pressure, applied to the best and smoothest side of it by means of a pellet of cotton-wool fastened to a handle, or by a good camel-hair brush. The sheet must now be allowed to drain, and then rapidly dried, collecting the drippings in some suitable vessel. Each sheet is to be so treated in succession. They are then placed one by one in a large basin of pure tepid—not hot—water, where they will assume on the coated side a primrose-yellow colour. The water is changed after five minutes, and again three times during six hours. The sheets are now pinned up by one corner, and allowed to dry spontaneously. In this state they are iodised, and will keep good for a long time. They are insensitive to light, and indeed it has been found that exposure to sunlight for a short time before use has a beneficial effect.

To render this paper *sensitive* for the purpose of obtaining pictures, it must be treated as follows: Having laid a sheet flat over blotting-paper,

in a room carefully protected from white light by covering the window with three or four folds of yellow calico, or in a room lighted by a candle—coat it, in the same manner as described for iodising it, with the following solutions: 1. Nitrate of silver, 50 grains; distilled water, 1 ounce; glacial acetic acid, 2 drachms: dissolve. This is called aceto-nitrate of silver. 2. One drachm of No. 1 diluted with 8 drachms distilled water. 3. Water, 1½ ounce, saturated with gallic acid, and 2 drachms sp. wine added. Put a quantity of No. 2 sufficient for one sheet into a small capsule, and add—if the sheet is not to be long kept before or after exposure—2 or 3 drops of No. 3. Apply this to the surface of the iodised paper, and allow it to remain there for about a minute; then remove the superfluous moisture by pressure between sheets of white blotting-paper, and place in the camera-slide, which must be kept scrupulously clean and free from dust. If glass plates are employed to support the paper, they should be cleaned after being used. The slide and prepared sheet being now removed to the camera, and the image accurately focussed upon the ground-screen, the latter is removed, the slide is substituted for it, the shutter drawn up, and the requisite time of exposure allowed to elapse. This, of course, varies with circumstances; but with good light and a stop half an inch in diameter, it should not exceed four or five minutes. Should the sheet be required to keep good for from eight to twelve hours, it will be necessary to exclude solution No. 3 in preparing it—it is only useful when great sensitiveness is required, and when the sheet is to be used within half an hour.

To develop the picture, the sheet, when removed from the slide in the darkened room, is submitted to the action of 1 part of solution No. 1 added to 2 parts of No. 3, and applied to the surface with a brush or pellet of cotton-wool. The picture soon begins to appear, and gradually deepens in intensity. When the highest lights are sufficiently dark, and the parts in shadow are tolerably clear, the action is checked by plunging the sheet into a basin of water, having dissolved in it a tablespoonful of common salt. While the development is going on, the sheet must be kept always wet with the solution; and should it present a reddish hue, an excess of No. 3 may be employed. If this has not the desired effect, most probably the exposure in the camera has been too long. As absolute cleanliness is most essential in this as in all photographic processes, all vessels employed should be cleaned for each picture.

The image must now be fixed. This is done by removing the yellow iodide from the surface, by immersion in 3 ounces of hyposulphite of soda dissolved in 12 ounces of water—a gentle heat greatly facilitates this process. The picture is now thoroughly washed in repeated changes of water, allowing it to soak for six hours, and then pinning it up to dry. In order to render the negative more transparent for printing, it may be saturated with spermaceti or with white wax, by the aid of heat.

WAXED-PAPER PROCESS.

This is a modification of the plain calotype process just described, and has been found a very valuable one for landscapes. The most manifest advantages it possesses over the calotype consist in the keeping qualities of the sensitive sheet, and its remaining unchanged at higher temperatures than the talbotype sheet is found to do. Most beautiful and artistic pictures are produced by it. The keeping qualities of the sheets render the process a great favourite with many operators, as a portfolio containing the prepared sheets may be carried to a great distance, and pictures obtained, without the necessity of carrying a quantity of chemicals. The process originated in France with M. Le Gray. A short outline of it, somewhat modified and simplified, as practised by Dr Keith of Edinburgh, is as follows: Take thin paper (that of Canson frères or Turner for negatives answers very well), and having cut it into sheets of the size required, observe that they be quite dry. Then, having heated a plate of metal until a drop of water let fall upon it boils without running off, cover it with several folds of blotting-paper, and lay upon this a sheet of the paper to be prepared. Rub quickly over its surface a piece of yellow or white wax, and lay on sheet by sheet, rubbing each successively with the wax until the number is exhausted; apply pressure; separate them; allow the whole to cool; reheat the plate; cover it with blotting-paper; and lay on it the waxed paper, interposing a piece of blotting-paper between each sheet; cover the whole with several folds of blotting-paper, and pass a heated smoothing-iron several times over the mass. Remove the uppermost sheet; re-apply the iron, and repeat the process until the sheets are exhausted. It is important that the wax be equally imbibed, and that all superfluity be removed by the bibulous paper. The purest wax must be used. The sheets are now to be iodised. Take pure water, 40 ounces; iodide of potassium, 750 grains; bromide of potassium, 250 grains; sugar of milk, 3 ounces; chloride of sodium (common salt), 30 grains; iodine, 8 grains. Put ten or twelve of the waxed sheets into a flat dish containing a quantity of this solution, removing carefully air-bubbles, and preventing, as much as possible, their coming in contact. Allow them to soak for ten hours, and pin them up to dry. In this state they may be kept good in a portfolio for an indefinite length of time.

To render *sensitive*, take nitrate of silver, 360 grains; water, 12 ounces; glacial acetic acid, 13 drachms (citric acid has been employed with marked advantage instead of acetic—20 to 30 grains would be sufficient in the above formula). Immerse a sheet in this, or float it upon the surface for ten or twelve minutes—the dark colour will disappear, this disappearance so far forming a guide to the time during which it should remain in the bath. Air-bubbles will be readily detected by the dark colour remaining at the part. Wash the sheet in a large basin of water, blot off superfluous moisture, and the sheet is ready for use when required. The strength of the aceto-nitrate bath must be kept up by adding 2 or 3 grains nitrate of silver for every sheet rendered sensitive. Several sheets may be immersed at the same time. The time of exposure in the camera averages five minutes in good light, with a stop half an inch in diameter; in weak light, a much longer time is required—sometimes half an hour. Experience alone can determine this point for every case.

To develop, place the exposed sheet in a

saturated solution of gallic acid (1 grain of pyrogallic acid to 4 ounces of solution, seems to render the action more rapid); allow it to rest for four or five minutes; then add twelve drops of aceto-nitrate, agitating the bath to secure complete mixture. A few drops must be added from time to time. The development will now proceed very beautifully, and will require from twenty minutes to several hours. When it is completed, the sheet is washed in water, which must be changed two or three times during an hour, after which it is fixed in a solution of hyposulphite of soda, of the same strength as that employed for a plain calotype.

THE ALBUMEN PROCESS.

This process succeeded those on paper for landscapes, and some kinds of architecture. The results sometimes obtained by it can hardly be excelled by those of any other process. It was first suggested by M. Nièpce, and shortly afterwards, Messrs Ross and Thomson of Edinburgh attained great success in the practice of it. From the difficulty of conducting the process with the required nicety, it has been little followed by amateurs. A plate of glass, perfectly flat, is thoroughly cleaned. A mixture of albumen (white of egg) and water, containing iodide of potassium in solution, is beaten into a froth, and after having subsided, is poured upon the plate, which requires to be kept in a horizontal position until the albumen has been dried by exposure to a considerable degree of heat. In this state, it is insensitive to light, and will keep good for some time. To render *sensitive*, it is placed for a short time in a solution of nitrate of silver, to which acetic acid has been added, and then washed with two or three changes of water. When dry, it is ready for the camera. These plates may be made to keep good for some hours or weeks, according to the amount of washing given on removal from the aceto-nitrate bath. The exposure is somewhat long compared with dry processes by collodion, and may extend from three minutes to one or two hours, according to circumstances. The *development* is accomplished by immersion in a solution of gallic acid, to which a small quantity of nitrate of silver solution has been added. The image is *fixed* by hyposulphite of soda.

COLLODION NEGATIVE PROCESS.

This is the most beautiful of all photographic processes, and is the one which seems, more than any other, to be capable of almost indefinite improvement. Pictures are taken by it almost instantaneously, with a minuteness of detail and a delicacy of expression which give results no less wonderful than beautiful.

The plates used are of glass: the medium on which the pictures are received is a thin film deposited on its surface from a solution of gun-cotton (pyroxyline) in ether and alcohol. This solution is called *collodion*.

The glass plates must be very carefully cleaned by washing under a tap, and drying with a perfectly clean cloth. A few drops of a plate-cleaning solution, consisting of rouge, ½ ounce; alcohol, 6 ounces; and water, 2 ounces, are then poured on the plate, and briskly rubbed with a tuft of cotton-wool on both sides. This is then rubbed off with a cloth, and a final polish given with a third cloth, and the plate is ready for the collodion. The cloths should be kept each for its special purpose, and numbered 1, 2, and 3. Plates which have been used should be soaked in a strong hot solution of potash, contained in a shallow tub or earthenware foot-bath. In a short time the old film becomes easily detached; they are then treated as before.

When large plates are used, it will be found advantageous to give them a coat of dilute albumen, made of the white of one egg, and 2 drachms of strong ammonia, to 20 ounces of water. This may be applied to the cleaned plate in the same way as collodion, and insures both a chemically clean surface, and perfect adhesion of the collodion film. Good flattened crown-glass is suitable for all ordinary purposes.

To coat a plate, it is held by one corner between the forefinger and thumb of the left hand, and in a nearly horizontal position. The collodion is poured on at the opposite corner, allowed to flow round the plate, and back into the bottle. In pouring off the collodion, the plate should be tilted just enough to let it run freely, and as the last drops run into the bottle, it should be gently rocked, to prevent the formation of lines. It must now be allowed to set for from thirty to sixty seconds, according to the temperature, &c., and then slipped quietly and continuously into the nitrate of silver bath by means of a dipper, upon which the plate is laid, and which is usually made of a slip of fluted glass, one end of which has been fused and turned up to form a groove on which the plate may rest. This operation must be performed in what is called the 'dark room,' but which is in reality a room lighted by a deep yellow or orange light. The following is the formula for the nitrate bath: Nitrate of silver, 13 drachms; pure water, 8 ounces: dissolve, and add iodide of potassium, 5 grains. Shake well, to dissolve the yellow iodide of silver, which will be precipitated; then add water, 16 ounces. After being filtered, it is fit for use. In fig. 13, M represents the most convenient form of bath-dish, usually made of glass or porcelain. N is the top of the dipper projecting from the dish.

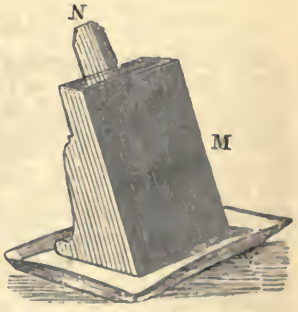


Fig. 13.

Immediately after insertion in the bath, the plate should be moved about for a few seconds, and then left undisturbed for from two to three minutes. It should then be lifted up and down several times; and when the solution flows freely over the surface, and leaves no oily-looking streaks, it is drained for a little, and placed face downward in the slide, and exposed as soon as possible in the camera. The period of exposure depends upon many circumstances, and may vary from 1 to 50 seconds. The next stage in the

process is the development of the, as yet, invisible image. For this purpose, the plate is taken into the dark room, and held by the corner, as when about to be coated with collodion, except that 3 and 4 are held a little lower than 1 and 2. The developing solution may consist of iron protosulphate, 5 drachms; glacial acetic acid, 1 ounce; alcohol, 1 ounce; and water, 18 ounces. A little of this is put into a small tumbler or developing-glass, and poured with a rapid sweep over the plate, the glass being moved from 2 to 1, so as to prevent the solution falling on one spot, and the plate at the same instant being made level, to keep it from running off at 3 and 4. A gentle rocking motion should now be given to the plate, to keep the solution moving; and if the exposure has been sufficient, the image will appear in from 5 to 10 seconds, feeble at first, but gradually getting stronger, till sufficient density is obtained. The plate is then well washed under a tap, and the image fixed by immersion in a dish of, or by pouring on, a solution of potassium cyanide, 15 grains; water, 1 ounce; or a saturated solution of soda hyposulphite. The fixing is complete as soon as the yellow iodide of silver is dissolved; and the plate is again washed thoroughly in plenty of water, and set up to dry, and then only requires varnishing to be ready for printing.

Occasionally, it occurs that sufficient printing density cannot be obtained by the application of the developing solution. In that case, the iron should be poured off, and the plate well washed, and the following intensifying solution applied: pyrogallic acid, 3 grains; citric acid, 2 grains; water, 1 ounce. To 2 drams of this, immediately before pouring it on, add 5 drops of a 30-grain solution of nitrate of silver, and keep it moving on the plate till sufficient density is obtained.

POSITIVE COLLODION PROCESS.

The aim of this process, which, in its manipulatory details, differs in no respect from that for negatives, just described, is the production of positive or direct pictures on glass. It is simple, and the results, when skilfully obtained, are very beautiful. Especial care must be taken to have the plates thoroughly clean. The collodion used for negatives will do if diluted with 20 per cent. of a mixture of ether and alcohol, and is improved by the addition of sufficient free iodine to give it the colour of pale sherry. The exposure for a positive is from a half to a third less than for a negative; and although the negative developer, with two drops of nitric added to each ounce, gives good results, the following is better: Protosulphate of iron, 7 drachms; distilled water, 10 ounces; nitrate of baryta, ½ ounce; nitric acid, 1 ounce; alcohol, 1 ounce. Dissolve the nitrate of baryta in the water, add the nitric acid, and then the protosulphate and spirit, and filter from the white precipitate. Pour one or other of these solutions on the plate as evenly as possible, keeping it in motion. Observe when the lower lights appear, and stop the action immediately by copious washing with water. Fix with water, 10 ounces; cyanide of potassium, 1 drachm. This solution can be used over and over again, by adding occasionally a little fresh cyanide, to keep up the strength. Wash the plate freely, and set it aside to dry; after which, protect the picture with varnish, and cover the back of the plate with the common jet-varnish used for protecting iron-work, &c.; or place behind it a piece of black velvet. The picture is lastly to be mounted in some sort of frame. If well washed after fixing, it should be quite permanent.

Positive Printing Processes.

These have as their object the obtaining from a negative on paper, glass, or other transparent media, a transfer or direct picture, as formerly defined. This is done by superimposing the negative, with the picture-side downward, upon any surface sensitive to light, and in as close contact with it as is consistent with the safety of

Fig. 14.

the negative, and exposing them to light for a length of time varying with the nature of that surface. In printing upon dry paper, a *printing-frame* (fig. 14) is used. A is a strong frame of wood, of any convenient size, in the bottom of which is fixed a sheet of thick plate-glass. B is a board which fits loosely into the frame, and is generally covered on the under side with thick velvet or felt. It is in two pieces, joined together by hinges, so that one half may be opened for the purpose of examining the progress of printing, without risk of shifting the paper. C, C, are two bars, hinged to the frame at one end, fastened at the other by hooks. Each bar is furnished with a spring, the pressure of which keeps the prepared paper and negative in close contact.

Positive prints are now almost exclusively made on *albuminised paper*, and therefore we shall confine ourselves to a description of its manufacture and manipulation. It is of the utmost importance to get a suitable sample of paper. At the present time there are only two kinds in general use, *Papier le Rive* and *Papier Saxe*, both of continental manufacture, and both very good. Take egg-albumen, 18 ounces; water, 2 ounces; ammonium chloride, 100 grains. Dissolve the salt in the water, add it to the albumen, whisk the whole into froth in the ordinary way, and when it has subsided, decant the clear part into a flat dish. Take, now, a sheet of paper, holding it by two opposite corners, and place the middle of it in contact with the albumen; then let the corners drop; raise the sheet partially, and remove air-bubbles, should any have been formed, by means of a camel-hair brush. Allow the sheet to remain upon the albumen for two minutes, and pin it up by a corner to dry spontaneously. This albuminised paper will keep good for a very long time, if preserved clean and *dry* in a portfolio. To render *sensitive*, a sheet is placed in the same manner as in albuminising, upon the following solution: water, 1 ounce; nitrate of silver, 60 grains—air-bubbles being carefully avoided, as before. After

two or three minutes, pin it up to dry in a moderately warm darkened room. It will keep good *in the dark* for about two days, but it is better to use it within twenty-four hours. To produce prints on the sensitised paper so prepared, it is cut into pieces of the size required. The negative is laid, face up, on the glass of the printing-frame; on this the paper is placed, with its albuminised side next the negative. The hinged board, *technically* called the *back*, is then laid on the paper, and the whole pressed down by the cross-bars and springs. The frame is then exposed to the light, and the progress of printing examined from time to time till completed, which is known by the print being just a little darker than the finished result is intended to be, as it loses a little of its intensity in the operation of toning. The print is then removed from the frame, and placed in a dish of common water, which is changed several times, or until it ceases to have a milky appearance. It is now of a brick-red colour, and requires to undergo the operation of toning, to bring it to the desired purple brown. A good toning-bath may be made by dissolving 100 grains of acetate of soda, and four grains of chloride of gold, in 20 ounces of water. This must stand for at least twelve hours before being used, and will keep indefinitely. The washed print is placed in this bath, and while kept in constant motion, is carefully watched till the operation is complete. First, the red will become brown, then dark brown, a purple brown, a slaty blue, and ultimately it will get bleached out nearly altogether. The action must be stopped when the proper colour has been attained, by removing the print from the bath, and washing it well in several changes of water. It is then fixed, by being immersed for ten minutes in a solution of soda hyposulphite, five ounces to the pint of water.

When fixed, the prints are to be subjected to a most thorough and careful washing, in as many as twenty changes of water, over a period of from eight to twelve hours, so as to remove, if possible, all trace of the soluble compounds produced during the process. Imperfect washing is sure to cause the fading of the prints in a longer or shorter time, according to the treatment they receive. When sufficiently washed, they are pinned up to dry. They should then be subjected to pressure, or rubbed on the back between two hard substances, so as to render the surface as smooth as possible, after which they may be trimmed to any desired shape.

A solution of dextrine in water is the best adhesive substance to use in mounting transfers. Gelatine or starch may be employed, but precautions must be used against their becoming sour or mouldy.

Although thorough washing after fixing will remove all tendency to fading from the action of sulphur compounds, there has long been a suspicion that no print having silver for its basis can be relied on as permanent; and for a number of years experimenters were hard at work with a view to replace it by the more permanent carbon. This has now been satisfactorily accomplished, and carbon-printing has become a large commercial enterprise. The process is based on the discovery by Mungo Ponton, that soluble organic matter, in presence of some of the alkaline bichromates, is rendered insoluble by the action of light; and the following may be taken as a type of the various modifications at present in use: A sheet of paper is coated with a mixture of gelatine, bichromate of potass, and lampblack, or other carbon, in very fine powder, and dried. This *carbon tissue* is then printed under a negative, and developed by immersion in warm water, which removes all the soluble parts on which the light has not acted, and which being the shadows in the negatives, become the lights in the print; while the parts corresponding to the lights in the negative, and on which the light has acted, remain insoluble, and represent the shadows.

Carbon prints of considerable beauty are also produced in the ordinary printing and lithographic presses. A bichromatised gelatine film is spread on a thick plate of glass, and printed under a negative. It is then soaked in cold water, which causes the soluble parts to swell, producing a picture in relief. This is hardened by alum, or chrome alum, and inked by rollers in the usual way; and by using inks of different consistency, beautiful half-tone is procured.

Instead of printing from the gelatine relief, its surface may be made to conduct electricity by the reduction of silver by phosphorus, and a copper-plate produced therefrom by the ordinary electrotype process. This has been called *photo-galvanography*, and is of much value for many purposes.

Photo-lithography is extensively employed, and is well adapted for reproducing maps or drawings. A sheet of paper coated with bichromatised gelatine is exposed under a negative, as in silver printing. A lithographic stone is inked all over on the surface sparingly with strong re-transfer ink, the paper transferred taken quickly out of the frame, and placed on the inked surface of the stone, so as to gather the ink, and passed two or three times through the lithographic press. After that, the transfer is taken and dipped into clean cold water, and then gently sponged over the blackened surface, when the transfer lines will be found to come out clear and sharp; after the transfer has dried, it is transferred in the ordinary way to stone.

Photo-zincography is probably one of the most useful applications of the above principle. It was introduced by Colonel Sir Henry James, of the Ordnance Survey, in 1859, for the purpose of reducing the 25-inch maps to the 6-inch scale; and this it did so successfully, that a government committee reported that the greatest deviation from the original plans did not amount to the $\frac{1}{100}$th part of an inch, and that its use would be the means of saving to the country £32,000. The process has since been successfully employed in reproducing the original manuscript of *Domesday Book*, and the 1664 folio edition of Shakspeare. The sensitive tissue is made by coating a sheet of paper with gum-arabic, or gelatine, or a mixture of both, to which has been added some bichromate of potass, or ammonia. When this is dry, it is exposed under a negative made from the map or manuscript in the ordinary way. Lithographic ink is then freely applied to the whole surface, and the inked tissue exposed to the action of a stream of warm water, which dissolves and washes off the parts not acted on by light, while the ink adheres to the lines on which the light has acted. The copy thus obtained is transferred to a suitably prepared plate of zinc, from which any number

of copies may be printed in the lithographic press.

A method of carbon-printing, which gives very beautiful results, was patented some years ago by Mr Woodbury, and is known as 'Woodburytype.' An image in relief is obtained on a bichromatised gelatine film, and laid on a plate of soft metal. On this is placed a plate of polished steel, and the whole subjected to hydraulic pressure, which forces every line of raised surface into the soft metal, giving a picture in *intaglio*, from which any number of copies may be printed.

The operation of printing from the *intaglio* is very simple. The press consists of a shallow box, with a hinged lid of plate-glass, and a bottom of the same material. The mould is laid, face up, on the glass bottom, and has poured on its centre a small pool of a suitable ink, composed of gelatine, carbon, and colouring-matter. The paper is laid on this, and the lid pressed down firmly. This causes the ink to spread out between the mould and the paper, filling up the cavities in the former, and forcing the superfluous portion over the edges.

Although photographs can be successfully transferred to *wood-blocks* for the use of the engraver, the process has not received the attention which it deserves. There are several methods by which it can be accomplished; the following, from its having stood the test of extensive practice, may be described. The surface of the block is prepared with Chinese white and enamel, as already described (p. 771), with this difference, that the enamel must preponderate, and the whole ground be a little thicker than for ordinary purposes. It is then coated with a solution of 1 ounce of albumen in 16 ounces of water. When dry, another coating is applied of 1 ounce albumen, 4 ounces water, 40 grains chloride of ammonium; when thoroughly dry, it is sensitised with ether, 1 ounce; alcohol, 1 ounce; gun-cotton, 8 grains; nitrate of silver, 30 grains. On this surface, the subject may then be printed from the negative in the usual way, after which the collodion must be thoroughly dissolved off with ether and alcohol in equal quantities. It is then fixed with hyposulphite of soda for a few minutes, and washed with water. When dry, it is ready for the engraver.

We may add that figs. 11, 12, and 14 in the present article, and the figure of the Walter printing-press at the head of the preceding sheet, were photographed on the wood in this manner.

In working the ordinary collodion process, technically called '*wet* collodion,' it is necessary to expose the plate within a short time after its removal from the bath; and in consequence, when taking landscape negatives, the operator is burdened with much troublesome material, including a tent in which to work. This inconvenience led to the discovery of a method by which the sensitive plates might be made so as to keep good for a period long enough to enable the photographer to prepare a supply before starting on a tour, and to develop them on his return. This '*dry* collodion' process consists essentially in thoroughly washing the plate on its removal from the bath, and then immersing it in a solution of certain organic substances, and afterwards drying it. Various modifications of the process have from time to time been recommended, each generally taking the name of the organic matter which was used as a *preservative*; such as the 'collodio-albumen,' the 'albumen,' 'tannin,' 'honey,' 'coffee,' 'malt,' &c. We may take as a type the 'Beer and Albumen' process, introduced by Mr Davies of Edinburgh, in 1867, a modification of which was used by Captain Abney in photographing the transit of Venus in December 1874. On removal from the sensitising bath, the plate is washed in three changes of water, and then placed in a flat dish of a preservative solution, made as follows: Strong sweet ale, 10 ounces, the albumen of one egg, and 10 grains of pyrogallic acid. Those are put into a bottle capable of holding 20 ounces, and thoroughly shaken. After standing for a short time, it is filtered, and is then ready for use. The plate should be left in the preservative for two or three minutes, and may then be set upon end, to dry spontaneously, or be dried by artificial heat. In this state, it is ready for exposure, and will keep indefinitely. The exposure required is much longer, probably six times, than for wet collodion; but as considerable latitude is allowable, it is better to over than under expose. For the development of the image, the plate is first washed under a tap, till the water flows evenly across the surface, and then has poured over it a solution of pyrogallic acid, four grains to the ounce of water. After this has been poured off and on several times, one or two drops of a weak solution of ammonia—a drachm of 'stronger solution of ammonia' to an ounce of water—are added, and the image should immediately appear. The solution must be kept in constant motion until the general detail of the picture is fairly visible, then washed off under a tap. Although the image at this stage may be fully out, when examined by reflected light, it will be found, on looking *through* the negative, to be much too thin, or weak, for printing purposes, and must be strengthened with pyrogallic acid and silver, as recommended for the intensification of the wet collodion film.

A method of preparing dry plates, different in principle from the above type, was introduced by Messrs Syce and Bolton of Liverpool. It is known as the 'Collo-bromide' or 'Emulsion' process, and its peculiarity consists in coating the plates with a sensitised emulsion, thereby getting rid of the costly nitrate bath, and doing, by one operation, what, in all previous methods, required two. In consequence of this, and the facility with which the plates may be prepared, the process is at present extensively and successfully practised. A bromised collodion is made by dissolving pyroxyline, 6 grains; cadmium bromide, 6 grains; and ammonium bromide, 3 grains, in a mixture of 6 drachms of sulphuric ether, and 2 drachms of alcohol. A tolerably large quantity of this should be made, as it will keep indefinitely, and improve by age. The sensitive emulsion is made by adding to each ounce of the collodion 12 grains nitrate of silver, dissolved in 2 drachms of alcohol, and the plates are coated in the manner already described. They are then plunged into a dish of water, and washed till it runs smoothly over the surface; after which they are immersed for a minute or two in a solution of tannin, or other preservative, and then dried. The image is developed with pyrogallic acid and ammonia, to which are added a few drops of a solution of potassium bromide, to somewhat restrain the action.

HOUSEHOLD HINTS.

UNDER this head we propose to offer a few advices connected with Housekeeping in general—referring to the choice, furnishing, and management of dwellings; the cleaning of furniture and apparel; the destruction of vermin; precautions as to fire and water; the preparation of small domestic manufactures; and, lastly, to the duties of the dressing-room and toilet.

CHOICE AND FURNISHING.

Choice of a House.—There are certain important points on which it is essential to obtain satisfactory information in making choice of a house. 1. Take care that it is not damp. Dampness may arise from several causes; but imperfect drainage, and a too close contact of the floors with the ground, are the principal. When a house is damp in any part, no matter from what cause, it is advisable by all means to avoid it, for it may produce the most pernicious effects on the health of your family. 2. See that the house has a free open exposure for fresh air, and, if all other circumstances suit, prefer that which has an exposure to the south, and possesses the beneficial influence of the sun's rays. A house with a pleasant southern exposure enjoys a climate several degrees warmer than a house which is not so favourably situated. In general, too little attention is paid to this circumstance, though it has been proved in the clearest manner, that mere sunlight, without reference to heat or air, exercises a most beneficial influence on the health and energy of the human frame. 3. Keep in mind that the communication of cold from the ground or from the outer atmosphere will greatly counteract all your efforts to produce warmth in winter by fire-grates or stoves. For example, a house with kitchens below the sitting-rooms is always warmer than one that has nothing but the ground or a small vacuity beneath. That, as regards a good class of houses, is a point to be attended to. Another point consists in having the outer walls strapped inside with lath and plaster. In very many cases in England, the plastering inside is done on the walls; consequently, they are cold to the touch, and hardly any amount of heat from fires keeps them from being chilly. In Scotland, the inside of the outer walls is usually strapped with lath and plaster, leaving a small vacuity between, by which means the escape of heat in the severest winter is prevented. Neglect on this score causes a needless expenditure for fuel. 4. Ascertain if there be a plentiful supply of good water in the premises, and if there be proper means at hand for drying and bleaching clothes. 5. Learn whether the chimneys go well, and do not smoke. Inquiries as to freedom from vermin, exposure to public nuisances, respectability of neighbourhood, and other particulars, should also be made. For the chief points to be looked to in the vital matters of drainage and water-supply, consult No. 32 in Vol. I., pp. 497—512.

Furnishing.—In furnishing a house, take care to set out on a right principle in the selection of articles. It is essential, for the sake of neatness, and for a pleasing effect to the eye, that there should be a harmony of colours, and also a similarity of style, in the main articles of furniture. Therefore, if a little taste and judgment are not exercised in the *first* selections, a blunder may be committed which will cost much subsequent annoyance. For example, let the tints of the carpet, of the paper or paint of the walls, and of the window-curtains, be all in harmony in each room—that is, either possess a general resemblance of colour, or various colours in pleasing contrast and harmony with each other. If the colour of the curtains be scarlet, and the colour of the walls or carpet blue, a most inharmonious and unpleasing effect will be produced; but brown and green, or green and gold, or white and gold, will be in harmony, and may therefore be placed together. Carpets being the most expensive articles, it is safest to buy them first, and then to let their colour lead the tone and style of curtains, paper-hangings, chair-covers, hearth-rugs, and all other articles. It is also a good economical plan to buy carpets of the same pattern for several rooms, because, in the event of removal to a house with different-sized apartments, a piece of one carpet may be taken to eke out another. It is also of prime importance to have the patterns in keeping with the size and style of the apartments.

Respecting the material of carpeting, matting, floor-cloths, and the like, the best your means can afford will ultimately be found to be the cheapest. There is always a great deal of showy but trashy material in the market, which, from its cheapness, is apt to allure the inexperienced; a few months' wear, however, destroys not only its appearance, but renders it next to useless. Cotton mattings, carpetings, and the like, can never compete with a genuine woollen fabric; and the closer and heavier a woollen fabric is, the more likely is it to give satisfaction. In purchasing oil-cloth, see that the colours are of a durable kind, and that they are laid on stout, close canvas. It is of importance to notice that an oil-cloth should never be laid down until it is a year old.

Tables, Chairs, &c.—When bargaining for tables, chairs, and other wooden articles of a fine quality, take care to specify that they must be of a solid fabric, and not veneered. Veneering is only tolerable in a few articles which are not to be subjected to much tear and wear; nevertheless, a practice has begun of veneering articles in daily use, such as chairs and tables, and, consequently, they are soon destroyed. This practice, we are sorry to say, prevails in cases where the highest price is paid for solid articles, and intending purchasers do well to be on their guard. In the case of professedly veneered articles, as cabinets, chests of drawers, wardrobes, sideboards, and the like, see that the veneers be laid on a substantial, well-seasoned ground; if not, the veneering is sure to

warp and blister after a few months' exposure to the ordinary heat of a dwelling-house. In ordering sofas, chairs, and mattresses, you should also take care to bargain for genuine hair-stuffing, for in many instances the stuffing is composed of what is technically called *pob*, or a composition of tow, wool, and other kinds of rubbish. Likewise the hair should be well baked and prepared. We have seen a hair-sofa, for which the highest price was paid, swarming with a species of louse, shortly after being sent home from the upholsterer's, in consequence of the hair not having been properly dried by baking. In every case it will be safer to pay a fair price to a respectable tradesman, and take the benefit of his experience in the selection of the articles, than to purchase from the self-styled 'cheap warehouses;' for though the articles may be of elegant enough designs, and look as brilliant as French polish can make them, yet in a few years they will become warped, disjointed, and rickety.

Fire-grates.—In choosing fire-grates or stoves for your rooms, do not buy those which have burnished steel fronts, as they require a considerable degree of care in cleaning, and are very liable to rust during summer when not in use. The best and neatest, as well as the cheapest grates, are those which are made of cast-iron. For bedrooms and sitting-rooms, no fire-grates, as regards venting well, prevention of smoke, neatness in appearance, and economical radiation of heat, excel Wright's patent bivalves. On this subject consult No. 31, in Vol. I. pp. 482–3.

Hardware—Cutlery.—Be particular in the choice of hardware and cutlery, as there is now no branch of British manufactures in which there is greater deception practised. There are hundreds of workshops in which these articles are made only for 'cheap sales' and 'sales by auction;' and in such cases, only the most worthless materials are made use of. See that your cutlery has a full, sound ring, and is sufficiently elastic to resist all ordinary pressure. Avoid the purchase of fantastic shapes and patterns, not only from the difficulty of matching any article, in the event of loss or breakage, but from motives of good taste.

Plate.—In the matter of silver articles, there is this to be said in favour of genuine sterling silver-plate, that it always keeps its value, however old and worn. Yet, there are good reasons for preferring articles of electro-plate on nickel. Besides being costly, genuine silver-plate—if there be much of it—becomes a source of constant trouble, through an apprehension of thieves. Many persons are consequently giving up their silver, all except a few articles, such as spoons and forks, and resorting to the use of electro-plate, of which there is now a superior manufacture. The articles are covered with a deposit of pure silver thrown down by a current of electricity. The plating varies in thickness, and is known in the trade as of A, B, and C quality. The A being the thickest, is of course the most expensive and most durable. It costs about one-fourth of the price of sterling silver, and, with ordinary care, will last for a quarter of a century, and at the end of that time, if replated, it will be as good as when new.

Gilding.—Gilding is of two kinds, *water* and *oil*. The former is the most durable and beautiful, and is used for all flat and burnished surfaces, the latter being used only on small and intricate ornamentation. Home-cleaning should not be attempted beyond the removal of dust with a brush of feathers or soft hair, and, with ordinary care, nothing more will be necessary oftener than once in fifty years.

Earthenware and China.—In purchasing sets of earthenware articles for the table, take care, as before directed, to set out on a right plan. Select a set which, in case of breakage, can at all times, and in all places, be easily matched. If you buy a set of table-ware which is peculiar or rare in its pattern, and afterwards break several pieces, you may be put to a very great degree of trouble, or even find it impossible, to restore them. Thus a peculiar set of earthenware or china, however beautiful and cheap, may ultimately prove a source of vexation and expense.

Glass and Crystal.—Articles of this kind are now fabricated in the most elegant shapes and designs, and at extremely moderate prices. There are two sorts in the market—cut-glass, and glass moulded so as to resemble cut patterns (see Vol. I. p. 364). The latter is cheaper, but not so elegant as the former. Tumblers and other articles intended for hot-water should be hand-made, plain, and of thin glass, cut or moulded articles being more liable to fracture from unequal expansion. Observe, in purchasing glass, that it be well annealed, as otherwise, on the first exposure to hot water, it will fly in pieces.

ORDER AND MANAGEMENT.

Housekeeping.—Every good housewife is expected to keep a regular and continuous account of her income and expenditure. This is indeed perhaps the most essential in the routine of domestic duties, and she must possess an ill-regulated mind, or have had an insufficient education, who neglects it. When properly set about, and methodically managed, there is little or no trouble in keeping the household accounts. Some housewives have one method, and some have another. Always presuming that we are addressing young housewives in the middle ranks of society, with whom frugality is an object, we beg to suggest the following simple plan of keeping house-accounts: Procure a small slate-book—that is, a little book composed of three slates, bound in a plain cover. Artificial slate is now manufactured and done up in books, which we recommend as preferable. A book of this kind, with its appropriate pencil, is your *day-book;* it is always at hand for you to scroll down any note of outlay, and will keep several days' or a week's accounts at a time. At any leisure moment, you carry the entries of outlay from the slates to a small-ruled paper-book, which is your *ledger*. One page of this is devoted to money received, and the opposite page to money paid out. By doing this regularly, and comparing the entries of sums received with the entries of sums expended, so as to see that they square with each other, you will find that you possess a complete record of family expenses, satisfactory alike to yourself and to your husband, should he make any inquiry into the subject. The keeping of an account of receipts and disbursements in this or any other convenient manner, is

calculated to have the most salutary and agreeable effects. The tendency to over-expenditure, or living beyond the means, is constantly checked, or at least you are not deceived upon the subject, and, in all likelihood, much future embarrassment is avoided.

In referring to housekeeping accounts, we must put you on your guard against the very mischievous practice of buying on credit, and running up bills with tradesmen. If you can at all avoid taking credit, do so. By paying for every article with ready money, you will possess two decided advantages—you get everything cheaper as you want it, and you can go anywhere to seek out the best markets. Housewives who run up bills beyond weekly or monthly convenience, become the slaves of tradesmen, and can possess no proper independence of action or self-respect. The advantage of ready-money dealing is now fully recognised by the success which has attended co-operative stores.

Servants.—The old practice of hiring domestic servants for six months at once is going out of use. Both mistresses and servants find, by experience, that a bargain for such a length of time very often produces disagreements. It is best for all parties that the term hired for should be only one month at a time, with one month's notice for separation. By this plan a servant can leave a place which does not please her without any long delay; and in the same way a mistress can give a servant warning to quit at a short notice, should it be found that she is unsuitable. Thus a separation can always take place amicably. All servants and mistresses who try this plan find it so agreeable, that they never like to change it. Many servants remain years in a place, though hired on the understanding that it is only from month to month, or, what is the same thing, for no fixed period, but just as long as both parties agree; and that, in the event of any dissatisfaction, there shall be a week or a month's warning given on either side. This practice is now almost universal.

Ordinarily, a good mistress endeavours to seek out and attach a good servant to herself. She effects this attachment and good-will by simply laying before the servant what is to be her line of duties, or what is expected of her, and then leaving her, undisturbed, to execute these duties in a regular methodic manner. No servant likes to be interfered with in her work, or to be called away from one thing to do another; nevertheless, some mistresses are not happy unless they are bustling up and down the house, ordering and counter-ordering, or in some other way worrying the servant out of all patient endurance. Mistresses of this fidgety turn can hardly expect to keep good servants, should they be so fortunate as to procure them. We advise the young housewife to commence on the wise plan of prescribing to her servants, in simple, plain terms, the duties which she expects they will daily and regularly execute; and if the servants are unfit to take advantage of this friendly and liberal arrangement, and require to be continually urged and 'spoken to,' it is better for both that there should be a separation. Where two or more servants are engaged, it is absolutely necessary that the precise duties of each should be expressly defined, in order to prevent disputes between them, and that the work of the house may be duly performed. We hope yet to see colleges or institutions established where young girls may receive an education fitting them to fulfil the duties of servants with satisfaction to themselves and to their employers. At the same time, a proper footing between servant and mistress cannot be expected to exist, unless the latter has been brought up to a thorough practical knowledge of housekeeping, and can thus appreciate work when it is well done, or point out deficiencies and faults when they exist. As really good and trustworthy servants are by no means common, we would strongly urge the young housekeeper, if she happens to possess them, to treat them with every kindness and consideration.

In accordance with our best legal authorities, the character to be given of a servant must accord with the strict truth. If a false *good* character be given, and the servant afterwards rob her master or mistress, the person who gave such false character is liable to an action for compensation. For the protection of masters and mistresses, it has been legally decided that they are not obliged to give a discharged servant any character, and no action is sustainable for refusing to do so. Where a servant has proved unfaithful, the safest and best course to adopt is, for the master or mistress to decline answering any inquiries on the subject.

CLEANING AND POLISHING.

The best way to clean a house is to *keep it clean* by a daily attention to small things, and not allowing it to get into such a state of dirtiness and disorder as to require great and periodical cleanings. Some mistresses, and also some servants, seem to have an idea that a house should undergo 'regular cleanings,' or great bouts of washing and scrubbing, once every three or six months, on which occasions the house is turned almost inside out, and made most uncomfortable. All this is bad economy, and indicates general slovenliness of habits.

Wooden Floors, if kept in order by daily sweeping and other small attentions, may be effectually cleaned by washing them with warm water and soap; but if spots of grease are to be removed, the spots must previously be taken out with fuller's-earth. Ink-spots may be discharged with spirit of salt. Some mistresses make a practice of ordering the floors of bedrooms to be frequently washed. We wish to guard both mistresses and servants against this practice. It is most dangerous to the health of the person who occupies the bedroom to wash or scour it, unless the weather be very fine or warm, in order to allow the window to be opened for thoroughly drying the room before night. The utmost that should be done, except in favourable circumstances, is to pass a damp mop lightly over the floor.

Carpets.—Ordinary Kidderminster carpets can be cleaned only by shaking and beating; if cleaned by means of washing, they become so soft as to be speedily dirtied again, and their appearance is spoiled. Brussels carpets may be cleaned as follows: Take them up and shake and beat them, so as to render them perfectly free from dust. Have the floor thoroughly scoured and dry, and nail the carpet firmly down upon it. Take a pailful of clean cold spring water, and put into it

about three gills of ox-gall. Take another pail with clean cold water only. Now rub with a soft scrubbing-brush some of the ox-gall water on the carpet, which will raise a lather. When a convenient-sized portion is done, wash the lather off with a clean linen cloth dipped in the clean water. Let this water be changed frequently. When all the lather has disappeared, rub the part with a clean dry cloth. After all is done, open the window, to allow the carpet to dry. A carpet treated in this manner will be greatly refreshed in colour, particularly the greens. It is very advisable, in laying down carpets at first, to cover the floor beneath them—especially if an old floor—with large sheets of paper, so as to prevent dust from rising between the boards. A carpet lasts longer by adopting this precaution.

Oil-cloths.—Oil or painted cloths should be laid only on dry floors; if the floor be in the least degree damp, the cloth will soon mildew and rot. Such cloths, laid even in the driest situation, should be wetted as little as possible. When to be cleaned, they should be wiped with a wet cloth, and rubbed gently till dry. The rubber should be frequently shaken, to free it from sand or gritty particles, which irrecoverably injure the lustre or varnish of the cloth.

Marble Hearths and Chimney-pieces may be cleaned as follows: Dissolve four ounces of *pearl-ash* in a pint of water; then slake two ounces of freshly burnt lime, and form it into milk by the addition of another pint of water; mix the two together, and shake at intervals for a few hours. Next pour off the clear liquor (which is now a solution of caustic potass), and add to it four ounces of fine whiting. This should be well rubbed over the surface to be cleaned, and left on for twelve hours. It should then be washed off with soap and water, and a final polish given with a soft cloth. Under no circumstances should acid of any kind be applied to marble.

Walls of Houses.—The outer surfaces of walls formed of brick or sandstone sometimes imbibe moisture from the atmosphere, and this gives a dampness to the interior. If it be found unsuitable to plaster or rough-cast, the intrusion of damp may be greatly prevented by painting the walls with a single coat of oil-paint, which, by being light in colour, will give a neat and clean effect. An ashlar or hewn front may be well preserved by a coating of hot linseed-oil, mixed with a small proportion of colour, so as to preserve the natural hue of the stone. For further information on the subject of wall-plasters, cements, and stuccoes, the reader is referred to Vol. I., p. 365.

Walls of Rooms.—When walls of rooms or staircases are to be painted in oil, let the paint be of the best description. It is not unusual for inferior tradesmen to use whiting instead of white-lead as a pigment; by this deception the paint will afterwards scarcely endure washing. Supposing, however, that the paint has been of the best kind, considerable care will be required in cleaning it. The safest and most simple plan is, to take a pail of hot water, and put into it as much common yellow or soft soap as will raise a lather or froth. Now wash the walls well with a flannel cloth dipped in this water; then wash this soapy water off with clean flannel and clean warm water. Dry with a clean linen cloth. Do all this equally, so as not to leave smears, or parts better washed or wiped than others. If soda or potash be added to the water, it destroys the varnish or gloss of the oil-paint, and gives it the appearance of flat-painting, or painting in distemper.

Paper-hanging should be first dusted, and then gently rubbed with the smoothly cut crumb surface of a stale loaf of bread; the dirty face of the bread being cut away from time to time. The imitative marble-paper, highly varnished, may be washed with cold water and soap. *Papier-mâché*, now much used for mouldings and ornaments in rooms, may be cleaned with soap and water.

Ivory may be restored to its original whiteness by cleaning it with a paste of burnt pumice-stone and water, and then placing it under glasses in the sun's rays. Some attempt the use of diluted acids, but this requires extreme caution and expertness.

Windows and Mirrors.—Moisten a soft linen rag with a mixture of very fine whiting and water, or spirit of wine, rub it well over the glass, and polish with a dry soft cloth. Much care is required in this operation, as the polish on plate-glass is easily injured.

Brass and Copper are best cleaned with sweet-oil and tripoli, powdered Bath-brick or rotten-stone, rubbed on with flannel, and polished with leather. A strong solution of oxalic acid in water gives brass a fine colour. Vitriol and spirit of salts soon make brass and copper very bright, but they very soon tarnish, and consequently require more frequent cleaning.

Grates and Stoves are cleaned with black-lead mixed with turpentine, or with stale beer and soap, and polished off. The finer lead is used dry, in lump or powder. The bronzed work of stoves should be only lightly brushed. Rotten-stone, or fine emery and sweet-oil, is used for the bright work of stoves, grates, and polished fire-irons; the higher the latter are polished, the less likely are they to rust. To prevent rust in articles not often used, rub them with sweet-oil, and dust over them fine lime; or with the following mixture: To a quart of cold water add half a pound of quicklime; let it stand until the top is clear, then pour off the liquid, and stir up with it some olive-oil, until it becomes of a pasty consistence, when it should be rubbed on the metal articles to be preserved. To fill cracks in stove-backs, make a paste of wood-ashes, salt, and water. To remove rust, mix tripoli, sulphur, and sweet-oil, and clean the articles with it; or mix boiled soft soap with emery No. 3, which will also discharge the fire-marks from bright bars. Polished fire-irons may be best preserved from rust by being closely wrapped up in strong brown paper.

Kitchen-vessels.—The crust on boilers and kettles, arising from the hard water boiled in them, may be prevented by keeping in the vessel a marble. Tin-plate vessels are cleanly and convenient, but unless dried after washing, will soon rust in holes. Iron coal-scoops are liable to rust from the damp of the coals. The tinning of copper sauce-pans must be kept perfectly clean and dry, in which case they may be used with safety. Copper pans, if put away damp, or a boiling-copper, if left wet, will become coated with poisonous crust, or verdigris. Untinned copper or brass vessels, even if scoured bright and clean, are always dangerous. If made dishes be allowed to cool and stand for

some time in copper vessels, the articles will become poisonous. A German sauce-pan is best for boiling milk in. This is an iron sauce-pan, glazed with white earthenware, instead of being tinned, the glaze preventing its tendency to burn. A stew-pan made like it is also preferable to a copper pan, since simple washing keeps it sweet and clean. A method of glazing sauce-pans with earthenware is now common in this country. Zinc sieves are more easily kept clean than those made of hair, will last longer, and not rust.

Dish-covers are cleaned with fine whiting and sweet-oil, and polished with dry whiting-powder. Britannia-metal teapots, &c. should be rubbed with sweet-oil on flannel, then polished by the hand with rotten-stone, and next washed with soap and hot water, and finished with wash-leather and whiting-powder. Pewter is scoured with fine white sand and a lye made with wood-ashes, or soda and water. A useful paste for tins, brasses, and the like, is composed of fine emery, oil, and crocus. The stone must be powdered, and sifted through a muslin or hair sieve; mix with it as much soft soap as will bring it to the consistency of putty; to about half a pound of this add two ounces of oil of turpentine. It may be made up in balls or put in gallipots; it will soon become hard, and keep any length of time. The articles to be polished should be first freed from grease and dirt; after which, moisten a little of the paste with water, smear it over the metal, then rub briskly with dry rag or wash-leather, and the surface will soon bear a beautiful polish.

Knives are best cleaned by rubbing on a flat board on which is put finely powdered brick-dust. Some recommend leather to be put on the board; this may prevent the knives from wearing, but it is apt to deprive them of an edge fit for cutting. Never put knives in hot water, for that loosens the handles, and spoils the temper of the steel. Machines for cleaning knives by the dozen are common in hotels, and are very useful where large numbers are used.

Lamps.—When lamps are foul inside, they should be cleaned with hot water and pearl-ash, and well rinsed, and set by the fire to dry before the oil is again put in. Spirit-lamps should be filled with great care, lest the spirit take fire; and unless the spirit of wine be pure, it will not burn. The merits of different kinds of lamps are considered in Vol. I., pp. 491–2.

Lamp-glasses.—If the lamp-glasses be ground, burnt spots upon them cannot be removed; but they may be cleaned from the effects of smoke by washing with soap and water, and then rubbing with a dry cloth. Grease may be removed with Sherwood ale. The glasses should always be ground on the outside.

Furniture.—Mahogany or other hardwood furniture, whether 'French polished' or varnished, is best kept in good order by frequent rubbing with soft dry cloths, as the pastes and oils generally used tend to make it 'sticky,' and fill up the more delicate carved portions. An occasional application, however, of a *reviver* is in some cases desirable, and therefore we give formulæ for two of the best. A good *furniture-oil* consists of linseed-oil 16 ounces, spirit of hartshorn 1 ounce, muriate of antimony 1 ounce, spirit of wine 2 ounces, and vinegar 4 ounces; and a *furniture-paste* is made of yellow wax dissolved by heat in sufficient turpentine to be, when cold, about the consistence of honey. If it is desired to darken the furniture, some alkanet root should be soaked in the oil, or turpentine for a few hours, and strained out. A little of either of those *revivers* is to be well rubbed on the furniture with a piece of flannel, and polished off by a rapid circular motion with a soft linen cloth. The paste requires less work, and gives a more brilliant surface, which, however, is easily marked by the fingers, and especially by hot dishes. The polish produced by the oil, although not so high, is more durable.

To remove ink from mahogany—make a saturated solution of oxalic acid in water, and apply it to the ink-spots with a feather. If the stain is not removed in half an hour, the acid may be applied a second or third time, and then washed off with water.

Bottles.—Cut a raw potato into small pieces, and put them in the bottle along with a table-spoonful of salt, and two table-spoonfuls of water. Shake all well together in the bottle till every mark is removed, and rinse with clean water. This will remove stains of wine, green marks of vegetation, and other discolorations. Hard crust in bottles may be cleaned off by rinsing with water and small-shot. Take care to wash out all the shot before putting the bottles aside. Stains in wine decanters, &c. may easily be removed by a table-spoonful of the solution of caustic potass, already mentioned, and a thorough rinsing afterwards.

Plate.—Articles of plate, after being used, should be washed in hot water; or, if stained, they should be boiled, and rinsed and dried before you attempt to clean them. They should be carefully handled, else they may receive deep scratches, which are very difficult to remove. Besides, the object is not merely to clean the plate, but to polish it, so that it may appear almost as brilliant as when it was received new from the silversmith. For this purpose, quicksilver was formerly much used in plate-powder, and it gave the silver great lustre, which soon, however, disappeared, and the article became tarnished and blackened. The only plate-powders that should be used are 'jewellers' rouge' and the finest whiting. This useful article, prepared chalk, which is to be had of any ironmonger or druggist, is simply ordinary whitening or carbonate of lime, washed and freed from gritty matter.

Brushes, hard and soft, sponge, and wash-leather, are requisite for cleaning plate: if the powder be mixed with spirit of wine laid on with a sponge, and rubbed off with wash-leather, all tarnish will be removed. Salt stains (blackish spots) and sulphur-marks from eggs are more difficult to remove. It is a good plan to boil a soft fine old cloth in water with some prepared chalk dissolved in it, and to dry the cloth, and use it for polishing. The soft brush is for the same purpose, the hard brush being for chased-work, edges, and crests, so that not a portion of dry powder may remain in them. Plate should in all cases be finished with a fine dry wash-leather. Plated articles should be carefully wiped dry after washing them, else they will rust or canker at the edges, where the silver first wears off; and on this account also they should be cleaned as rarely as possible. German silver may be cleaned in the same manner as plate.

Embroidery and Gold-lace should be cleaned

only with spirit of wine, or brushed with finely powdered roche-alum and chalk. For gold chains, dissolve three ounces of sal-ammoniac in six ounces of water, in which boil the chain; then boil it in soft soap and water, wash it in cold water, rub it dry with flannel, and shake it in a bag with very dry bran.

Flannel or Woollen Articles.—Wash them quickly in moderately warm water with soap; wring and shake them well, and hang them up to dry. Do not let them lie wet. The more quickly they are dried, the less likely are they to shrink.

Silks.—No silks look well after washing, however carefully it be done, and washing should, therefore, never be resorted to but from absolute necessity. We have seen it recommended to sponge faded silks with warm water and soap, then to rub them with a dry cloth on a flat board, and after that to iron them on the inside with a smoothing-iron. Sponging with spirit of hartshorn will also improve, revive, and remove *mildew* from old black silks. The ironing may be done on the right side, with thin paper or muslin spread over them, to prevent glazing.

The Colour of a Print-dress may be preserved by separating the body and skirt, and washing in cold rain or river water into which a handful of salt or a cupful of vinegar has been thrown. Instead of spreading the dress to dry, it should be rolled in a coarse cloth, and allowed to remain till dry enough to be ironed.

Bed-feathers.—Put a manageable quantity into a pillow-case or bag, which wash with warm water and soap; wring out the lather, and rinse them in clean water. Wring them as dry as possible, and hang them up to dry. Shake them frequently while drying. When quite dry, beat them, to free them from any dust. The feathers may be now taken from the bag, and are ready for use.

Lace.—When lace has lost its colour, soap it well, and put it in cold water, just enough to cover it. Rinse it out, and place it in a dish of water in a warm oven for twelve hours. Then starch it a little; pick it out as evenly as possible; roll it in a towel, and when nearly dry, iron it. All lace-veils may be treated in a similar manner.

Scarlet Cloth.—Pour boiling water upon bran, strain it, and, while hot, wash the cloth in it, and rinse with hot water. Soap should not be used. Purple cloth may be washed in hot water and pure lye. Saxony or dark-print dresses should be washed in two lathers, and in the second should be poured a little ox-gall, which will freshen reds, blacks, and greens; and a handful of salt added to the last rinsing water will prevent the colours running.

Clear-starching is practised as follows: Wash the articles in three waters, dry them, and dip them in a thick starch previously strained through muslin; squeeze them, shake them gently, and again hang them up to dry; and when dry, dip them twice or thrice in clear water, squeeze them, spread them on a linen cloth, roll them up in it, and let them lie an hour before ironing them. A small piece of white wax added to the starch prevents the iron from sticking, and gives a glossy surface to the material.

Stains.—Stains of fruit or wine may be generally removed from linen or cotton cloth by placing the articles over the top of a pail, and pouring boiling water through them till the marks disappear. A little salt of lemon (*Sal acetosella*) sprinkled over the stain will assist the removal.

Ink-marks or Iron-moulds may be removed by placing a plate on the top of a basinful of boiling water; then spread the articles on the plate; wet the spot, and rub it with a small quantity of the salt of lemon; as the article dries, the stain will disappear. If this fail, repeat the operation. A small box of salt of lemon will be found very useful in a household. *Mildew* may be removed from linen by the following process: Rub the cloth well with soap; then scrape some fine chalk, and rub it also on the stained part. Lay the linen on the grass, and, as it dries, wet it a little; the mildew will be removed by one or two applications at most.

Paint may be removed by turpentine, but it should be applied while the stain is fresh, as it is much more difficult after it has become dry.

Grease-spots of all kinds are easily removed by benzole, a liquid made from coal-tar, which will not injure the most delicate silk. The article should be spread on a table covered with a clean cloth, and the benzole applied with a piece of perfectly clean flannel. Begin at the outside, and work from the circumference, all round, towards the centre. The grease retreats before the benzole, and collects in the centre, where blotting-paper should be applied to absorb it. White gloves may also be cleaned by benzole.

DESTROYING VERMIN.

The best plan for preventing the attacks of vermin in houses is to keep the house scrupulously clean; for where there is cleanliness and ordinary precautions, no vermin will generate or exist.

Rats and Mice.—These might in most instances be completely prevented from encroaching on dwellings by giving a solid foundation to the house, cutting off the approach by grating the drains, and especially by filling up all open spaces beneath pavements and in walls and partitions. Mice might be effectually kept out by merely filling up the spaces behind the skirting-boards in rooms. These vacant spaces are invariably the habitations of mice; and the first thing any person should do in entering into possession of a domicile, is to cause all the spaces behind the skirting-boards and wainscots to be filled with plaster. Where mice and rats have gained a footing in a house, they should be taken off by a cat or trap; and when one kind of trap fails, another may be tried. All schemes for poisoning them with arsenic or other ingredients are dangerous; and even were they not so, the animals, having partaken, may retire to their holes, and dying there, cause an intolerable stench.

Bugs.—These pests exist only in dirty houses. A careful housewife or servant will soon completely destroy them. The surest method of destruction is to catch them individually when they attack the person in bed. When their bite is felt, instantly rise and capture them. This may be troublesome, but if there be not a great number, a few nights will finish them. When there is a large number, and they have gained a lodgment in the timbers, take the bed to pieces, and fill in all the apertures and joints with a mixture of soft soap and Scotch snuff. Fumigations are very dangerous, and rarely effectual,

therefore attempt no such project. Oil-painting a wall is a sure means of excluding and destroying them. The following extirpating mixture is given on high authority: Spirit of wine, half a pint; spirit of turpentine, half a pint; crude sal-ammoniac, half an ounce; corrosive sublimate, one ounce; camphor, one ounce. This mixture should be inserted into the joints of bedsteads, &c. with an old knife. Many bug-poisons are to be had at the chemists'; but it is not only unpleasant, but dangerous, to have such mixtures about a house; and, after all, they are really less effective than unremitting cleanliness. As means are taken to destroy, so means ought to be taken to *prevent* the introduction of these pests, which are often brought from one house to another in clothes, in old furniture, travelling-bags, books from libraries, servants' chests, and even in the old cut-wood sold for kindling fires.

Fleas.—There is no way of ridding a bed or house of these vermin but scrupulous cleanliness. Keep the floors well swept and washed, and if you have a dog, comb and wash it frequently. Fleas are bred on the ground, or among dust; and it has been said that to destroy one in March or early spring, is to destroy hundreds.

Beetles, Cockroaches, and Crickets.—These may be caught in traps, without the disagreeable and dangerous expedients of poisoning or fumigation. A simple trap for them is a glazed basin or pie-dish half filled with treacle, sweetened beer, or milk, to the edge of which a piece of wood is laid from the floor as a gangway.

Flies.—It is difficult to rid a house of flies by any other plan than poisoning, and that is too dangerous to be recommended. Papier-moure, a French invention, is a very effective destroying agent; it consists of a sheet of paper saturated with a solution of arseniate of potass, which is placed on a common plate and kept moistened with water: the flies, after lighting on it, drop down and die, and poison any animals that eat them. Great care requires to be taken in applying this dangerous remedy. An infusion of quassia sweetened with sugar is also very effectual. Gilt frames and chandeliers should be shrouded in thin yellow gauze or paper, in situations where the flies are likely to spoil them.

Moths.—The best way to preserve furs or worsteds from moths is to sew them closely up in a bag of new unwashed linen; if this be not done, the next best is to take the articles frequently out and brush and air them. The odour of camphor, shavings of Russia leather, lavender, &c., are much less efficacious than they are supposed to be. Kill every flying moth you can see.

ESCAPES FROM BURNING, &C.

Precautions as to Fire.—Houses are said to take fire by accidents; but these accidents are in general only acts of carelessness, and could, with a reasonable degree of prudence, be avoided. As prevention is better than cure, we offer the following advices:

Never leave a candle burning at your bedside, or on a table when you go to bed, except it be a rush, wax, or floating light, burning in a basin at a considerable distance from the bed or window-curtains.

Never put hot cinders or ashes into a bucket to set aside in a closet.

If you light candles with pieces of paper, take care that the burning paper is completely extinguished after being used. It is always safest to light candles and lamps with a small wax-taper, or asbestos and spirit of wine taper, which can be at once blown out. In large manufactories, where there are many lamps or gas-burners to light, let the lighting apparatus be a small hand-lamp, which shall be in charge of a particular person in the premises. And never on any account use any matches but those that ignite only by rubbing on the box.

Never blow gas-lights out; always turn them off; and turn off the gas at the main stop-cock. Should the gas from any cause have escaped, and the smell be suddenly and offensively felt, at once turn off the supply at the meter or stop-cock, and open the windows, to allow the entrance of fresh air. Be careful not to take a lighted candle into the apartment where the escape has taken place.

Cause the chimneys to be swept once in three months, or oftener, if necessary, so as to prevent the accumulated soot from catching fire. Sometimes houses are set on fire from beams which encroach upon the chimneys. House-builders ought to be particularly cautious in preventing any part of the wood-work from coming in contact with the flues.

The following are advices how to act when the catastrophe of fire actually takes place:

Chimney on Fire.—To extinguish speedily the fire in a chimney, it is only necessary to hang over the fireplace a piece of wet carpet or blanket: some handfuls of salt thrown into the fire at the same time will greatly aid the extinction. It is also recommended to scatter a handful of flowers of sulphur over the dullest part of the burning coals, the vapour arising from which will not support combustion, and will consequently extinguish the flames. Throwing water down from the top is a clumsy expedient, by which much damage is frequently done to furniture; so also is stopping at the top, by which the smoke and suffocating smell of the burning soot are driven into the apartment. If every fireplace were provided with a damper, or shutter of sheet-iron, sufficiently large to choke it thoroughly, fire in chimneys would become of little consequence, as it would only be necessary to apply this damper to extinguish them. All good modern grates are furnished with such dampers. To set chimneys on fire with a view to clean them is highly objectionable, even where there is no danger of fire to be apprehended, as the intense heat produced rends and weakens the walls.

Clothes catching Fire.—The moment you see that your clothes are on fire, remain still and collected; do not, on any account, run away in a fright. If there be a loose rug, carpet, or table-cover at hand, snatch it up, and roll it tightly about you. If you can get this done smartly, the flames will immediately be extinguished. Should no cloth of any kind be at hand, and no one be present to give assistance, lay yourself down on the floor, and try to extinguish the flames by rolling yourself about, always taking care to keep the garments as close together as possible. If a man be present, let him take off his coat, and

wrap it round you; and if a woman, her shawl will answer the same purpose.

[For remedial applications, in the event of injuries from fire—as burns, scalds, &c.—see SURGERY, Vol. I., page 781.]

House on Fire.—In making way through a burning house, we ought not, if it be full of smoke, to walk upright, for then we shall run the risk of suffocation. It is best to creep along on hands and knees, the freest air being to be had close to the floor. On being awakened by an alarm of fire during the night, it is particularly important to preserve presence of mind, and not to act till a moment has been taken for reflection. Preservation may depend on the choice we make of going *up* or *down* stairs, or on some selection of movement equally unimportant in ordinary circumstances of non-alarm. Phillips's fire-annihilator, a portable apparatus shaped somewhat like a large coal-scuttle, and the more recently introduced *Extincteur*, have been found of signal service in extinguishing flames upon their first outburst; they are charged with water and a substance which gives out carbonic acid gas; and this gas, together with steam generated by the intense heat of the charge, rush out at a funnel, and may be directed against the burning mass.

Fire-escapes.—The escape from a house which is on fire is sometimes prevented by the stairs being of wood, and either burning or already destroyed. In such an emergency, there are only two means of escape—issuing by the sky-light, and so reaching the next house, or going over the window. 'On this account, every house with wooden stairs should have a trap-door opening on the roof, accessible from the upper floors, and also some kind of apparatus for getting safely from the windows to the ground. The apparatus which meets with most general approbation is a rope-ladder, and this may be made in different forms. Captain Manby recommends 'a rope with nooses, distended by flat rests for the feet at convenient distances for stepping from one to another. In cases of danger, this might be instantly fastened by one end to a table or bed-post, while the other is thrown out of the window, thus furnishing a ready escape when perhaps there is no other possible means near those who are in momentary dread of being burned to death.' Such a ladder may be serviceably kept by private persons; and we should advise that, at all events, every house with wooden stairs ought to be provided with one or more pieces of knotted rope, and these be deposited in the bedrooms, for use when suddenly required. Where, from carelessness, no fire-escape of this kind has been provided, two or more sheets or blankets taken from the bed may be tied to each other by the corners, and thus a rope of sheet be formed. In most large towns, fire-escapes, by which the most timid persons and mere children can be lowered from windows, are kept in readiness at the police-stations.

Disinfectants and Deodorisers.—Many substances possess this valuable property, but the following are those most generally used: chlorine, including the hypochlorites of lime and soda, the chlorides of zinc and aluminium, protosulphate of iron, permanganate of potass, carbolic and sulphurous acids, charcoal, and heat. The last is the most efficient and easily applied. The clothing, bedding, &c. of patients labouring under contagious diseases may be effectually disinfected by exposure to a temperature a little higher than that of boiling water for about an hour. Neither the texture nor colour of textile fabrics is injured by a heat of even 250 degrees Fahrenheit. It is a practice at some of the workhouses to bake the clothes of the paupers who have the itch, or who are infested with vermin. Quicklime rapidly absorbs carbonic acid, sulphuretted hydrogen, and several other noxious gases, and is therefore commonly used as a wash for the walls of buildings. Acetic acid, camphor, fragrant pastilles, cascarilla, brown paper, and other similar substances, are frequently burned or volatilised by heat, for the purpose of disguising unpleasant odours. The sulphate of iron has the property of rapidly destroying noxious effluvia. A quantity thrown into a cesspool, for instance, will in a few hours render the matter therein quite scentless. Of gaseous disinfectants, 'sulphurous acid gas (obtained by burning sulphur) is preferable, on theoretical grounds, to chlorine. No agent checks so effectually the first development of animal and vegetable life. All animal odours and emanations are immediately and most effectually destroyed by it.'—(Graham.)

Carbolic acid is now much trusted as a disinfectant. The crude acid should be diluted with twenty times its volume of water, and a little of the solution poured into all vessels containing excrements from the sick-room. It may also be poured with much advantage down water-closets, drains, &c.

Alarms in Churches and Theatres.—Alarms, whether with reference to fire or the falling of galleries, often take place in these and similar places of resort. In general, they are raised without due cause, often from a circumstance of the most trifling nature, and perhaps occasionally from a deliberate spirit of mischief. However originating, they almost invariably generate a panic, and occasion much damage, which a little reflection would have enabled those present to avoid. The newspapers teem with accounts of incidents of this nature. In most instances, the whole mischief is caused by *yielding too easily to alarm.* We anxiously recommend every one to cultivate the power of suppressing such idle emotions. When a cry of fire, or of the falling of galleries, is raised in church, *sit still*, and remain tranquil till the assemblage is allowed to disperse in the usual way. On no account yield to alarm. Granting that there is a real cause of danger, you are infinitely more safe sitting still than trying to rush wildly to the door.

Attacks of Madmen.—A person in a house may become suddenly insane, and make a violent and deadly attack on those within reach. The best way to avert any serious calamity in cases of such attack is to remain calm and collected, and, if necessary, humour the madman till assistance be procured, or invent some pretext by which he will be induced to allow you to leave the room.

Coach-accidents.—Should the horses run off, in defiance of all restraint, while you are in a coach, sit perfectly still; and in anticipation of the possible overturn, keep your legs and arms from straggling. Sit easily and compactly, so that, when upset, you will gently roll over in the direction you are thrown. We have seen ladies in

these circumstances scream wildly and throw their arms out of the windows, thus exposing themselves to the chance of broken limbs. If run away with in a gig, either sit still collectedly, or drop down behind, endeavour to run for a short distance by holding on to the back, and then let go, and be prepared to fall on your hands. Never jump from a rapidly moving vehicle, unless—supposing it impossible to slip down behind—you see a precipice in front, in which case it is better to get out at all hazards.

MANAGEMENT OF FUEL AND WATER.

To light a Fire, clear the ashes from the grate, and cover the bottom with a layer of fresh coals about the size of road-metal. On this lay a small heap of shreds of paper, and round the paper dispose some small sticks on end with their tops leaning against one another, as soldiers pile their muskets. Around the sticks a layer of smallish coal should now be built, the top being left open, or covered with cinders. The whole charge of coals should not be put on until this is well kindled. When the sticks begin to blaze, the coals under them will be seen to smoke and burst into flame before any of the rest. It is a mistake to put cinders in the bottom, for they are difficult to kindle. Their place is on the top, where they become red in the flames without causing smoke. A fire arranged as now described kindles with very little smoke; and it is surprising how little wood suffices, if the pieces are cut short, and of varying thickness. The thinner pieces should be put next the paper, and two or three thicker pieces outside. No more paper should be used than is sufficient to set fire to the wood. A very effective fire-lighter or reviver, composed of sawdust and coal-tar, is now to be had in the shops for the merest trifle.

Economical Fuel.—In places where coal is scarce and dear, a tolerably good fuel may be made by mixing the culm or refuse dross of coal with clay, and moistening the whole with water—masses in the form of bricks or balls may be made, which, when dry, will burn with an intense heat. But without any preparation, the refuse of the coal-cellar can always be utilised, when once a good fire has been established, by bringing forward the hot coals to the front of the grate, and putting a shovelful of small coal at the back. A fire thus made up will keep good for hours. The refuse should be used up in this way, as it is formed, and not allowed to accumulate till all the whole coals are done.

Smoky Chimneys.—The causes of smokiness in chimneys are various; but all are connected with the properties of air and heat, for the smoke is only particles of soot ascending through the agency of heated air. To make a chimney vent well, the column of heated air from the fire must not be entangled with cold air from beneath, nor retarded by cold air coming down the chimney. To effect these objects, the fireplace must not be much larger than the grate, and the chimney must be of a certain length. The great leading cause of smokiness is cold air somehow or other mixing with the warm air about the mouth or throat of the chimney, and so causing a sluggishness in the ascent, or no ascent at all. Therefore, the nearer the air is made to pass the fire on all sides, the more rarefied it will be; and the less vacancy there is in the chimney-place, it will ascend with the greater rapidity. A proper contraction of the mouth of the chimney, the fire at the same time being allowed to be fed freely with air, will be found in most instances to cure smoke. It should be noted, that in contracting chimney-throats, the contraction should not be all at once, but at first gradual, and then straight upward, so as not to allow a volume of cold air to lurk in a hollow above. A flue wide at bottom, and gradually narrowing towards the next story, allows the coldish air to hang about the lower parts, by which, when a gust of wind comes, the smoke is driven back into the room. This kind of smokiness is the most teasing of all the forms of chimney disease. Every little puff of wind sends a smaller or larger quantity of smoke into the apartment, and often when it is least expected. Perhaps this kind of smokiness is not in all cases caused by wrong construction, but arises from the situation of the house; and of this we shall immediately say a few words.

Cases are by no means uncommon of fireplaces giving out a puff of smoke every time the door of the room is shut. The cause of this kind of smokiness is the want of a sufficient supply of fresh air into the room. In shutting the door, it draws out a certain quantity of air, which cannot be afforded to be lost, or it causes such distraction of the current towards the fire, that the force that carries up the smoke is destroyed, and a puff downward—in other words, a rush of air, loaded with smoke from the chimney—is the consequence. It will be remarked that this smokiness occurs most frequently when the door is on the same side of the room as the fireplace—an arrangement to be avoided. A remedy for this smokiness is to contract the mouth of the chimney, and, if possible, heighten the stalk; for if the chimney be pretty long, the heated air ascending it goes with such a force that the outer heavy air cannot get down, at least not to so great an extent as to cause a puff when the door is shutting. In some cases, the cause of the disease will be found to be air rushing up behind the grate, if a register, and then coming down to supply the fire, the action of the door disturbing the current. This is, therefore, an argument for always taking care to build register-stoves quite close behind, not leaving the smallest crevice for air to steal up the chimney without first going through the fire. As regards curing smokiness, we have already referred to Wright's patent bivalves.

In erecting chimneys, it should be a rule to carry them up a good way in a perpendicular direction before making a turn, by which means the heated air gains a force in its primary vertical ascent which carries it over future difficulties. It is also advantageous for all chimneys to have a bend in them before reaching the top, and a garret-chimney should have two bends. For want of attention to this top-bending, many cottage and small villa chimneys smoke. The use of bends is obvious: strong, sudden, and accidental gusts of wind sometimes enter, and beat into the top of the chimney; a turning or bend, therefore, will break the force of the wind, and prevent it repelling the heated air downward. But if the chimney is straight, and the gust meet with no

interruption, it will stop the passage of the smoke for a while, and of course force what rises from the fire immediately into the chamber. It is to be observed, that the further the wind gets down the funnel, the greater strength will be required to repel it; therefore, the nearer to the top the bend or winding is, the better. Also, if there is a heavy shower of hail, snow, or rain, falling perpendicularly, the first bend or turning will, in part, stop the progress of the drops; but if the funnel is perpendicular all the way down, they will fall freely to the bottom, repelling the smoke into the room; and if the funnel is foul, great quantities of soot will be driven down. These considerations recommend a bend in some part of the funnel as absolutely necessary.

Garret-chimneys are more liable to smoke than any other in the house, owing to the shortness of the flue; for when the composition of rarefied air and smoke has made its way up a high flue, it forms a strong column, and to repel it requires a corresponding force; but in a garret-chimney this strong column cannot be obtained; therefore, what cannot be had from nature must be aimed at by art. When smokiness is produced by too short a chimney, it will be necessary to add to its length either by building the stalk higher, or inserting an earthenware pot or iron tube at the summit. The building of higher stalks is an infallible remedy, provided all be right below; but it is attended with danger to adjoining roofs, and is at best unseemly. Pots or cans are useful both in adding to height, and in causing a free disengagement and shooting of the smoke as soon as it enters the outer atmosphere.

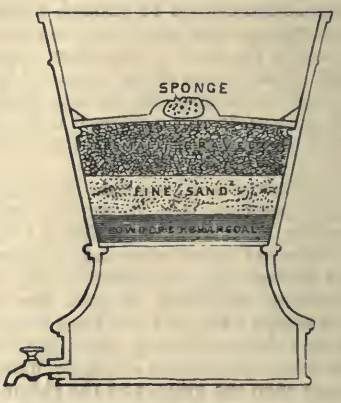
Another very common cause of smokiness is fires overpowering one another. For instance, if there be two chimneys in one large room, and you make fires in both of them, the doors and windows close shut, you will find that the greater and stronger fire will overpower the weaker, and draw air down its funnel to supply its own demand; which air descending in the weaker flue, will drive down its smoke, and force it into the room. If, instead of being in one room, the two chimneys are in two different rooms, communicating by a door, the case is the same whenever that door is open. The remedy for this is, to take care that every room in a house has the means of supplying itself with what air it requires, so that it does not need to borrow air from other rooms. Back-smoke is only cold air loaded with smoke coming down into a room from an adjoining chimney-top, in order to supply, in the readiest manner, air to that room. Thus fires in the lower part of a house will draw air even from a garret-room, and this garret-room will draw air to supply its deficiency, by taking it in a smoky condition from the adjoining chimney-tops.

Smokiness is also produced when the tops of chimneys are commanded by higher buildings, or by a hill, so that the wind blowing over such eminences falls, like water over a dam, on the tops of the chimneys that lie in its way, and beats down the smoke contained in them. Sometimes we have seen the droll phenomenon—though it is no laughing matter—of every particle of smoke all of a sudden pouring into the room, in consequence of a gust of wind blowing pertinaciously for several minutes down the chimney. Such a form of smokiness arises chiefly from the situation of the house, and the want of a bend in the chimney. The remedy to be applied (a very ugly one), consists in fixing on the top of the chimney a turning cap or cowl, which acts like a weather-cock, and keeps its closed side to the wind.

Supply of Water, whether for dietetic, domestic, or sanitary purposes, has been fully discussed in a previous number (32). The chief care of the housewife is, that she has a sufficient, pure, and wholesome supply of this indispensable element. Where water for domestic purposes is obtained from open streams and pools, caution is always necessary, and especially during summer, when vegetable and animal impurities are most abundant. Pump-wells also require to be looked after, especially if they have stood without being used for a time. Where service-pipes are admitted into a house, care is necessary—1st, To see that the stop-cocks are always secure, as frequently great damage is occasioned to furniture and ceilings by waste water; 2d, That cisterns be regularly cleaned, and if of lead, that they be not scoured, but simply sluiced out; and 3d, That during severe frosts the stop-cocks of exposed pipes be allowed to discharge a little, as the flow of water prevents freezing, and consequent bursting of the pipes.

To purify Water, a vast number of means may be adopted, according to the nature of the impurities: 1. Water may be sweetened and improved by free exposure to the air. Pouring it at some height from a watering-pot into a flat vessel will answer this end. 2. Filtration or agitation with freshly burnt charcoal, animal or vegetable, but especially the former, is an excellent method. 3. An ounce or thereby of powdered alum, dissolved and stirred into a hogshead of putrid water, will precipitate the foul matter in a few hours. 4. Hard water may be softened by the addition of a solution of carbonate of soda or potash.

To filter Water.—One or other of the various forms of filters may be used. A simple and efficient filtering-machine is represented in the annexed cut. The water passes first through a



sponge, which keeps back the coarser impurities, and then through successive layers of small gravel, fine sand, and powdered charcoal. For information respecting filtration on a large scale, see SUPPLY OF WATER, Vol. I., page 502.

Tests for Water.—Mechanical impurities, or such as are suspended in water, may be removed by rest or filtration, as above described; but chemical impurities, or such as are dissolved, pass through the filter, which has no power of separating them. Lime, generally as carbonate or sulphate, is detected by a white precipitate being formed on the addition of oxalate of ammonia. Chlorides produce a white precipitate with nitrate of silver, and the presence of organic matter is ascertained by the rapid disappearance of the pink tint given to the water by the addition of a few drops of a solution of permanganate of potass (Condy's fluid). The salts of lime are not objectionable, except in so far as they make the water hard; but water containing much chloride of sodium, or organic matter, should be regarded with suspicion, and avoided. Water that has been boiled in copper vessels is sometimes impregnated with that metal. Its presence may be detected by dipping the polished blade of a knife into the liquid, when the copper will be deposited in the form of a yellowish stain on the steel.

SMALL DOMESTIC MANUFACTURES.

The attempt to make all sorts of articles for domestic use is now far from economical, as the time and expense bestowed upon them are often of greater amount than what would buy the things ready made from shops. We therefore confine our directions to articles which may require to be manufactured in families at a great distance from towns, or for the families of emigrants in remote settlements.

Blacking for Shoes.—There are many ways of making this article, the chief ingredients employed being ivory-black, vinegar or sour beer, sugar, a little sweet-oil, and oil of vitriol. A good blacking may be made as follows: Mix three ounces of ivory-black, two ounces of treacle, a table-spoonful of sweet-oil, one ounce of vitriol, one ounce of gum-arabic dissolved in water, and a pint of vinegar.

Blacking for Harness.—Melt two ounces of mutton-suet with six ounces of bees-wax; add six ounces of sugar-candy, two ounces of soft soap dissolved in water, and one ounce of indigo finely powdered; and when melted and well mixed, add a gill of turpentine. Lay it on the harness with a sponge, and polish off with a brush.

Paste is useful in a house for papering walls, cupboards, boxes, labelling, &c. A very useful composition of this sort is made of flour in the usual way, but rather thick, with a little glycerine, and a small quantity of carbolic acid. The use of the glycerine is to keep it flexible, so as to prevent its scaling off from smooth surfaces; and that of the carbolic acid, to act as an effectual check against its fermentation.

Waterproof Stuff for Shoes.—In winter, or during wet weather, shoes may be rendered durable by applying to the soles and seams a composition made of the following materials: Half a pint of unboiled linseed-oil, two table-spoonfuls of turpentine, one ounce of bees-wax, and a quarter of an ounce of Burgundy pitch. Melt the whole together, and apply with a brush before the fire. Repeat the application till the soles will absorb no more. Neats-foot oil alone will be found an excellent preservative of shoes in wet weather. Since the introduction of caoutchouc and gutta-percha, shoes and goloshes, completely waterproof, are made of these materials.

Bottle-wax.—A good kind of bottle-wax or cement may be cheaply made as follows: Put into an iron ladle half a pound of rosin, two ounces of bees-wax, and when melted over the fire, stir in Venetian red, lampblack, or other colouring; and apply while hot. If kept for after-use, melt with a candle, as usual, when applied.

Potato-starch.—Wash and peel a gallon of good potatoes, grate them into a pail of water, stir frequently, and let them settle. On the following day the starch will be found at the bottom of the pail; then pour off the water, add fresh, stir as before, and let it subside a second time; pour off the water as before, and dry the sediment in the sun or a slow oven.

Potashes.—Settlers in the backwoods of America, or other woody regions, have an opportunity of manufacturing potashes, an article of great use and considerable value. A vast quantity of this substance is annually made in Canada, and exported to Great Britain. Potashes are made from the ashes of burnt trees. In burning timber to clear the land, the ashes are carefully preserved, and put in barrels, or other vessels, with holes in the bottom; and water being poured over them, a liquid or alkali is run off. This lye being boiled in large boilers, the watery particles evaporate, and leave what is called black salts, a sort of residuum, which, when heated to a high degree, becomes fused, and finally, when cool, assumes the character of potash. With these potashes the Canadians make their own soap: the lye of a barrel of ashes, boiled along with ten pounds of tallow, till it is of a proper consistence, produces about forty pounds of very good soft soap.

Ash-balls.—This term is applied to the ashes of various plants, especially ferns, moistened, and made into lumps or balls. They are used as a substitute for soap, and to clean painting.

Dyes.—Dyeing can rarely be well done at home, and so we recommend that articles of value or importance should be sent to the professional dyer. Ribbons, however, or small articles of silk or wool, may be dyed with *Judson's* dyes (alcoholic solutions of the coal-tar colours), that may be obtained in a very convenient form for domestic use. The article should be thoroughly freed from grease by soap and water, and immersed in nearly boiling water, to which has been added sufficient of the dye to give the desired depth of colour (see CHEMISTRY APPLIED TO THE ARTS).

Bleaching small Articles.—The principles and practice of bleaching cotton, linen, and woollen on a large scale, have been detailed in No. 22; we here allude to minor articles, which may be whitened in the laundry or kitchen. Silk is bleached by boiling it in white soap and water, to remove the natural yellow varnish which covers it; after which it is subjected to repeated rinsings. Articles that are required to be very white—as gloves, stockings, &c.—are also submitted to the action of sulphurous acid, or to the fumes of burning sulphur. Straw is also bleached by the fumes of sulphur; hence arises the sulphurous smell emitted by new straw hats and bonnets.

Clothes-balls for removing grease and stains may be made as follows: Fuller's-earth, two pounds; curd-soap, one pound; ox-gall sufficient to make a stiff dough, with which form balls. Or—pipe-clay, two pounds; fuller's-earth, one pound; whiting, one-half pound; mix with water. What are called *Scouring-balls* are composed of soft soap and fuller's-earth in equal proportions, beaten well together, and formed into balls. *Wash-balls*, again, are generally made of white curd-soap beaten up with bole or ochre; the mottled colours being produced by using a mixture of red, blue, or other coloured boles.

Cloth, Incombustible.—Cotton and linen fabrics that are liable to get ignited, such as theatrical dresses, &c., may be rendered flame-proof by being stiffened with starch containing a quantity of tungstate of soda, or sulphate of ammonia. The former is preferable, as the latter is apt to get brown under the iron. Borax is also effective. Articles so prepared do not take fire readily, and when they do so, only smoulder, without flame.

Temperance Drinks.—The simplest beverage of a cooling and pleasing quality which contains no intoxicating liquid, is *lemonade;* this may be very easily made by pouring boiling water on sliced lemons, and sweetening with sugar to taste. Lemons, however, are not always to be procured, and in such a case, citric acid, or cream of tartar, may be employed instead.—*Ginger-beer* may be made as follows: Take of lump-sugar, three pounds; bruised ginger, two ounces; cream of tartar, one ounce; one or two lemons sliced; boiling water, four gallons; and yeast, eight ounces. Let the whole stand to work in a cask for four days, and then bottle off for use.—*Spruce-beer*, which is a pleasant beverage when well prepared, and possesses slightly diuretic properties, may be prepared as follows: Water, ten gallons; sugar, ten pounds; essence of spruce, quarter of a pound; yeast, half a pint. Dissolve the sugar and essence of spruce in the water, previously warmed; then allow it to cool a little, and add the yeast as in making ginger-beer: bottle immediately.

Treacle-beer is a cheap drink, which may be made as follows: Boil as much water as will fill twelve common quart bottles; and to it add one pound of treacle or more, according to taste. When the treacle is dissolved, take the pot from the fire, and let the solution cool. When lukewarm, put into it half a gill of yeast. As soon as it is cold, bottle it, but do not put in the corks till next morning, when the yeast will have wrought over the top of the bottles. Let it stand in a cool place for two or three days, when it will be fit for use. Unless care is taken as to the proportion of yeast, and keeping cool, the bottles may burst.

MISCELLANEOUS HINTS AND RECIPES.

To remove a tight Stopper.—It frequently happens that the stopper of a glass bottle or decanter becomes fixed in its place so firmly, that the exertion of force sufficient to withdraw it would endanger the vessel. In this case, if a cloth be wetted with hot water, and applied to the neck of the bottle, the glass will expand, and the neck will be enlarged, so as to allow the stopper to be easily withdrawn. Where hot water is not at hand, the same result may be produced by the friction of a handkerchief, strip of flannel, or thick twine passed round the neck of the bottle, and drawn backward and forward with a see-saw motion. The same result may be obtained by striking the stopper gently with a piece of wood.

Adhesive Plaster.—A very useful adhesive plaster may be made by melting together five parts of common or litharge plaster with one part of white resin. The mixture, when well incorporated, is spread on thin strips of linen with a spatula or table-knife. Such a plaster may be advantageously employed for keeping on other dressings, where ligatures and bandages might be objectionable.

Cutting Glass.—Panes or flat pieces of glass may be divided, when a glazier's diamond is not at hand, by making a notch with a file, and carrying a piece of hot charcoal in the line in which it is wished the fracture should proceed. The charcoal must be kept alive by blowing upon it with the breath. A red-hot iron will also do. Phials, bottle-necks, and the like, may be cut across by looping a cord round the part where the fracture is wanted, drawing the cord rapidly backward and forward till a considerable degree of heat is produced by the friction, and then immersing in cold water up to the line of fracture. The rapid and unequal contraction of the parts will cause the glass to snap asunder.

Mending China and Earthenware.—When holes are required to be drilled in china or earthenware for the purpose of riveting it when broken, procure a three-cornered file, and harden it completely by making the end red-hot, and plunging it into cold water; then grind the point quite sharp on a grindstone, and afterwards on an oil-stone or hone. With the point of this tool pick repeatedly on the spot to be bored, taking care not to use too much violence, lest the object should break. In a short time, or in a few minutes, by a continuance of the operation, a small conical hole will be forced out, not bigger than a pin's head, but which may afterwards be widened by introducing the point, and working the file round. Rivets of lead are those generally employed in this kind of operation.

The best cement for broken china or glass is that sold in the shops under the name of diamond cement, which is colourless, and resists moisture. This is made as follows: Soak some isinglass in whisky, and then in hot water till quite dissolved. When the cement is to be used, it must be gently liquefied by placing the phial containing it in boiling water. The phial must be well closed by a good cork, not a glass-stopper, as this may become fixed. It is applied to the broken edges, which must be made hot, with a camel-hair pencil.

When the objects are not to be exposed to moisture, white of egg alone, or mixed with finely sifted quicklime, will answer pretty well.

To remove Crust or Fur from Teapots.—Put a good-sized lump of common soda into the pot; fill it quite full with boiling water; let it remain in the whole of a day and night. Should a teapot spout have become furred, when the water has been in for a sufficient length of time, put a skewer or knitting-needle into the spout to clean it. It will afterwards be necessary to scald and well wash the pot, to prevent any taste of soda, and to remove the fur, which will then come away easily.

Sympathetic Inks.—These are preparations used for writing on paper, the marks of which are invisible until acted upon by some re-agent. They are frequently employed in secret or playful correspondence. By heating the paper until it is nearly scorched, they may be rendered visible. The following may serve as specimens:

1. Sulphate of copper and sal-ammoniac, equal parts, dissolved in water—writes colourless, but turns yellow when heated. 2. Onion-juice—like the last. 3. A weak infusion of galls—turns black when moistened with weak copperas-water. 4. A weak solution of sulphate of iron—turns blue when moistened with a weak solution of prussiate of potash—black, with infusion of galls. 5. The diluted solutions of nitrate of silver and terchloride of gold—darken when exposed to the sunlight. 6. Dilute sulphuric acid turns black when heated. 7. Solution of nitro-muriate of cobalt—turns green when heated, and disappears again on cooling. 8. Solution of acetate of cobalt, to which a little nitre has been added—becomes rose-coloured when heated, and disappears again on being cooled.

Incorrodible and Indelible Inks.—Genuine asphaltum, one part; oil of turpentine, four parts; dissolve, and add lampblack or black-lead to bring it to a proper consistence. Or—asphaltum, one part; oil of turpentine, four parts; dissolve, and colour with printer's ink, which any printer will sell by way of favour. These inks supply a cheap and excellent material for marking linen, &c. They are very permanent. They should be employed with stamps or types. The marking-inks of the shops generally consist of preparations of nitrate of silver. One of these inks may be prepared as follows: Nitrate of silver, 1 to 2 drachms; water, three-fourths of an ounce; dissolve; add as much of the strongest ammonia-water as will dissolve the precipitate formed on its first addition; then further, add mucilage 1 or 2 drachms, and a little sap-green to colour. Writing executed with this ink turns black on being passed over a hot Italian-iron.

Common Inks and Writing Fluids, for which there are so many recipes, can be obtained so cheaply, and of such excellent quality, that it would be waste of time to attempt their manufacture for domestic use. An excellent ink, suitable for writing with steel-pens, which it does not corrode, may be made of the following articles: Galls, 1 ounce; sulphate of iron, 2 drachms; sulphate of indigo, 3 drachms; sulphuric acid, 5 drops; water, 8 ounces; carbolic acid, 5 minims. *Copying-ink* is prepared by adding a little sugar to ordinary black ink.

Writing rendered illegible by age may be restored by moistening it by means of a feather with an infusion of galls, or a solution of prussiate of potash slightly acidulated with muriatic acid, observing so to apply the liquid as to prevent the ink from spreading.

Pints and Quarts.—Much confusion is frequently caused by a misunderstanding as to what is meant by a pint and a quart. It should be understood that a reputed pint bottle holds only about 12 ounces, and a reputed quart about 24 ounces; while an actual pint and quart are respectively 20 and 40 ounces. A tea-spoon is understood to hold a drachm, or 60 drops; a dessert-spoon, 2 drachms; a table-spoon, half an ounce; and a wine-glass, 2 ounces.

CABINET COLLECTIONS.

Taxidermy—so called from the Greek *taxis*, order, and *derma*, skin—is the art of arranging, preparing, and preserving the skins and other exuviæ of animals, so as to represent their natural appearance. It embraces the entire art of preparing the skins of quadrupeds, the stuffing of birds and fishes, the mounting of insects, the cleaning and arranging of shells and zoophytes—in fine, the preparation and preservation of specimens in every department of the animal kingdom. Much of this lies, of course, beyond the circle of domestic economy; but many persons who have cabinets so arranged allow them to fall into ruin and disorder for want of proper cleaning and attention.—*Skins of quadrupeds and birds*, whether mounted or not, should be kept free from dust either by being placed in cabinets, in glass-cases, or under glass-shades; when dusty, use bellows, and handle as little as possible. Arsenical soap, corrosive sublimate, and oil of turpentine, are the preservative preparations; and when a skin is once thoroughly dried, it may be preserved from putrefaction by being kept dry afterwards. Small bags of camphor laid in cabinets assist in warding off moths and other insects; but even with this, the specimens will require to be occasionally examined. Should insects have commenced their attacks on any specimen, the only chance of further preservation is to bake it thoroughly in an oven.—*Bones* which have lost their whiteness may have it restored by immersion for ten or twelve hours in a weak solution of chloride of lime; and if oily, a little soda should be added to the solution. To obtain the skeleton of a small animal, bait the carcass with honey, and lay it near the nests of ants or wasps; in a few days it will be picked clean.—*Insects*, which are usually mounted on pins in flat trays with cork bottoms, or are kept in pill-boxes, test-tubes, and quills, require very delicate handling. Once in possession of a collection, keep it dry and free from dust, and disturb the specimens as little as possible, as they are not only extremely fragile, but are apt to lose the rich downy covering of their wings, which gives them colour and beauty. To ward off the attacks of mites, keep a supply of camphor, or sponge dipped in spirit of turpentine, in each tray; and if these harpies should appear, bake before a slow fire, or take equal parts of oil of anise, oil of thyme, and alcohol; mix, and apply a drop to the infected specimen. When large-bodied specimens become greasy, dip in spirits of turpentine, and dry with calcined magnesia, which can afterwards be blown off.—In collecting *shells*, kill the animal by gradual immersion in hot water; and remove it with the point of a knife or crooked pin. Retain the operculum of univalves; and tie the bivalves together after the animal has been removed. Marine shells should be steeped in fresh water for several hours, to remove all saline matter which would afterwards deliquesce. Remove all extraneous matter, as sea-weed, serpulæ, and the like, with the knife or brush. Dead shells, or those picked up along shore, have often a tarnished appearance; this may be remedied by applying a little olive-oil with a brush. Polishing and whitening with acids is a barbarity worthy only of the dealer in curiosities. No

shell is fit for a cabinet after such mutilation. Shells may be either kept in trays divided into numerous compartments, or attached to cards with a little gum. In the latter case, it requires two specimens—one to exhibit the front, the other the back of the shell. Minute and fragile shells are best preserved in glass-tubes—common test-tubes.

Minerals are kept with little trouble, if dust be excluded. Never lift a fine specimen with the naked hand; stains of grease and perspiration are intolerable. Dust always with a pair of bellows. Certain species will endure washing; in other cases, the appearance may be restored by fracturing anew.

Preserving Flowers Fresh.—Flowers may be preserved in a fresh state for a considerable time by keeping them in a moist atmosphere. In the *Gardeners' Chronicle*, the following remarks appear on this subject: 'It is now eighteen years ago since we first saw, in the drawing-room of a gentleman, in the hot dry weather of the dog-days, flowers preserved day after day in all their freshness by the following simple contrivance: A flat dish of porcelain had water poured into it. In the water a vase of flowers was set; over the whole a bell-glass was placed with its rim in the water. This was a "Ward's Case" in principle, although different in its construction. The air that surrounded the flowers being confined beneath the bell-glass, was constantly moist with the water that rose into it in the form of vapour. As fast as the water was condensed, it ran down the sides of the bell-glass back into the dish; and if means had been taken to inclose the water on the outside of the bell-glass, so as to prevent its evaporating into the air of the sitting-room, the atmosphere around the flowers would have remained continually damp. What is the explanation of this? Do the flowers feed on the viewless vapour that surrounds them? Perhaps they do; but the great cause of their preserving their freshness is to be sought in another fact. When flowers are brought into a sitting-room, they fade because of the dryness of the air. The air of a sitting-room is usually something drier than that of the garden, and always much more so than that of a good green-house or stove. Flowers, when gathered, are cut off from the supply of moisture collected for them by their roots, and their mutilated stems are far from having so great a power of sucking up fluids as the roots have. If, then, with diminished powers of feeding, they are exposed to augmented perspiration, as is the case in a dry sitting-room, it is evident that the balance of gain, on the one hand, by the roots, and of loss, on the other hand, by their whole surface, cannot be maintained. The result can only be their destruction. Now, to place them in a damp atmosphere, is to restore this balance; because, if their power of sucking by their wounded ends is diminished, so is their power of perspiring; for a damp atmosphere will rob them of no water—hence they maintain their freshness. The only difference between plants in a "Ward's Case," and flowers in the little apparatus just described, is this—that the former is intended for plants to grow in for a considerable space of time, while the latter is merely for their preservation for a few days; and that the air which surrounds the flowers is always charged with the same quantity of vapour, and will vary with the circumstances, and at the will of him who has the management of it. We recommend those who love to see fresh flowers in their sitting-rooms in dry weather to procure it. The experiment can be tried by inverting a tumbler over a rosebud in a saucer of water.'

PERSONAL ECONOMY—THE TOILET.

Personal cleaning and decoration are the proper duties at the toilet. We shall speak first of matters connected with the gentleman's toilet:

Shaving.—Some beards are more hard and difficult to shave than others. The usual plan is to soften them with soap-lather; but this is not sufficient with beards that are somewhat stubborn. We recommend all who in these days of long beards still prefer a shaven chin, to try the following plan: Rub the face or beard with a little soap and water with the hand over the basin, and when pretty well rubbed or softened, apply the lather. Raise the lather with warm water, and apply with a brush. Among the shaving *pastes* in vogue, that sold in the shops as *almond cream* is one of the best, although not better, probably, than any good toilet soap. Although warm water is most agreeable and suitable for shaving with, it is advantageous for every one to accustom himself to shaving with cold water, as it will render him independent of such assistance when travelling, or in cases of emergency.

It is of no use going to great expense in purchasing razors. A razor of the best kind may be had for from four to eight shillings; and as their tempering is very much a matter of chance, sometimes a first-rate razor may be had for one or two shillings. Supposing a sharp and good razor to be procured, it may last a whole lifetime with ordinary care. When to be used, dip the razor in hot water, for this adds keenness to the edge; and before putting it away, wash the razor gently, to remove all impurities. Do not wipe it with or upon paper, for that spoils the edge; wipe it only with a fine rag. Before putting it away in its case, give it a turn or two on a strop. Several kinds of strops are now offered for sale; and all, very properly, are mounted on hard board. In any case, take care always to draw the razor smoothly and flatly *from heel to point* along the strop. Do not draw first one way and then push another. In general, one or two turns will be enough. Never leave your razors in drawers or cases which are accessible to servants or children. By locking them up, you will keep them in better order than by all the other means you employ.

Razor-pastes.—This is the term applied to certain compositions applied to razor-strops to give them the necessary whetting surface. The following are recommended: 1. Emery reduced to an impalpable powder, two parts; spermaceti ointment, one part: mix together, and rub it over the strop. 2. Prepared putty-powder, one ounce; powdered oxalic acid, one-fourth ounce; powdered gum, twenty grains; make it into a stiff paste with water, and evenly and thinly spread it over the strop. With very little friction, this last is said to give a fine edge to the razor, and its efficiency is still further increased by being moistened.

Cut in Shaving.—The bleeding may be at once effectually stopped by placing on the wound a small portion of wool from a beaver-hat. We

have known cases in which bleeding from very serious wounds has been stopped by the application of hat-stuff or fine floss, when all other means failed.

The Teeth.—The cleaning and proper management of the teeth is the most difficult operation of the toilet. Whether arising from heat of the stomach or other constitutional causes, the teeth in some cases are much more liable to become discoloured and decay than in others. In general, even in the worst cases, much might be done in youth to prevent future deterioration of teeth; but children are ignorant, and parents are lamentably careless on this important matter of personal economy, and remedies often require to be applied when too late. Parents desirous of seeing their children grow up with good teeth, should cause them to be cleaned with scrupulous regularity daily, though only with a brush and tepid water. If the teeth appear crowded, so that there is a fear of one tooth shooting over another, a dentist ought by all means to be employed to thin the row, and allow all to grow straight.

The daily cleaning of the teeth should take place every morning after washing the face. Employ in preference tepid water and a moderately soft brush, taking care not to injure the gums by the friction. Various dentifrices or powders are offered for sale, which the opulent have opportunities of testing; but we know of none better than finely powdered charcoal—that is, charred wood well ground in a mortar, and kept in a box secluded from the air. It may be purchased, ready for use, at a small price from perfumers. By putting a little of this on the wet brush, and rubbing the teeth with it, impurities and discolorations will be removed without injuring the enamel. Rinse well afterwards with clean water. Those who object to the colour of the charcoal, may use with advantage precipitated chalk. All preparations, such as those of chalk, pumice, cuttle-fish bone, &c., act mechanically, and are liable to injure the enamel unless used with care. Chemical solutions are free from this objection; but unless their composition is thoroughly known, it is better to avoid them. In case of foulness or sponginess of the gums, powdered rhatany, cinchona bark, and catechu, on account of their astringent properties, have been found to be useful. Good yellow soap is, we believe, an admirable cleansing agent.

The Breath.—Usually, the cause of a fetid breath is either a bad state of the stomach, or half-rotten and ill-cleaned teeth. Bringing the stomach into a proper condition by medical advice, or seeking the assistance of a dentist, will effect a remedy. Nothing, however, can obviate the daily use of washing and brushing the teeth. A valuable wash for the teeth and gums, consists of borax and tincture of myrrh and camphor, thus prepared: Dissolve two ounces of borax in three pints of warm water; before quite cold, add thereto one tea-spoonful of tincture of myrrh, and one table-spoonful of spirit of camphor; bottle the mixture for use. One wine-glass of the solution, added to half a pint of tepid water, is sufficient for each application.

The Nails.—Keeping the nails of the fingers in order is a proper duty of the toilet. They should be brushed with soap and water when washing the hands. While still wet, or when wiping the hands with the towel, push back the skin which is apt to grow over the nail, and thus keep the root of the nails neatly rounded. The points of the nails should be regularly pared once or twice a week. For *whitening* the nails, we have seen the following mixture recommended: Two drachms of diluted sulphuric acid; one drachm tincture of myrrh; and four ounces of pure soft water. The nails to be dipped into this mixture after the hands have been thoroughly cleansed with soap and water. Without adverting to the danger of such preparations, it may be remarked that the nails have naturally a delicate flesh or pinkish colour and shining polish, and that to *whiten* them is as absurd as to stain them *yellow*, after the fashion of the orientals.

The Hair.—In a sound and healthy constitution, the best preserver and beautifier of the hair is regular and careful cleaning. Washing, combing, and brushing are quite sufficient to keep it in proper order; and where these fail, no amount of oils, lotions, powders, or appliances, will remedy the evil. We might almost say the same thing of baldness, which is for the most part constitutional. At the first symptom of baldness, shaving the head sometimes proves successful.—*Stray hairs* sometimes grow in the nose and ears to an uncomfortable extent. Thin or shorten them with a toilet-scissors; or if it is wished to remove them—which is not always a very safe plan—do so smartly with a pair of tweezers. The chemical *depilatories* in use in the fashionable world are almost without exception highly objectionable preparations, having the effect not only of removing the hair, but destroying likewise the vitality of the skin to which they may be incautiously applied. The majority of them are composed of quicklime, orpiment, and some strong alkali—substances the name of which may warn parties against their application.—*Hair-dyes* are equally objectionable, and are all only temporary expedients, as the hair, upon growing, soon leaves an undyed surface beneath. They are principally of two sorts—those into which litharge and quicklime enter, and those in which nitrate of silver forms the chief ingredient. Thus, to render the hair instantaneously black, we are directed 'to moisten it with a solution of nitrate of silver in water (1 to 7 or 8), and then with a weak solution of hydrosulphuret of ammonia!'

Pomatum.—This is a soft unguent, which is frequently used for softening the hands, and preventing them chapping in cold dry weather, or for moistening the hair. It was originally named from its containing apple (*pomum*, Latin), and consisted of lard, rose-water, and the pulp of apples. It now consists of perfumed hog's-lard, the apple being omitted. The famed *sultana pomatum* is made as follows: Melt together half a pound of beef-suet, the same of bears-grease, an ounce of white wax, and two ounces of olive-oil; and add to it, tied up loosely in muslin, one ounce of bruised cloves, half an ounce of cinnamon, two bruised Tonquin beans, and four grains of musk; strain, and put into pots. The article called bears-grease usually sold in the shops, is little else than perfumed beef-marrow and lard; and the many oils offered for restoring and softening the hair are chiefly olive or almond oil, perfumed with different scents. In general, if the hair be well brushed, no such applications are necessary, and

in most cases they create a scurf on the head, which rots the hair, and requires considerable trouble to get rid of.

Pomade Divine.—This is a soft and valuable unguent, possessing a fine aromatic odour. Dr Biddoes recommends it to be made as follows: Steep twelve ounces of beef-marrow in water ten days—changing the water occasionally—and then steep it in rose-water. Put it into a jar with half an ounce of flowers of benjamin, the same of storax and orris-root in powder, and two drachms each of cinnamon, nutmeg, and cloves, in powder. Cover the jar closely, set it in a vessel of water, and put it on the fire; and when the pomade is thus melted, strain it for use. As a very small quantity is ever used at a time, in general it will be found much more economical to buy a small pot of it than to prepare the article.

Glycerine.—This is a valuable substitute for all kinds of pomatum, and may be had cheap from druggists. Latterly *glycerine jelly* has been introduced, and we can confidently recommend it as the best application for softening the hands, and some other purposes. Glycerine jelly will prevent chapping of the hands in cold weather.

Cold Cream.—This is a simple and cooling ointment, exceedingly serviceable for rough or chapped hands in winter, or for keeping the skin soft. It is very easily made. Take half an ounce of white wax, and put it into a small basin, with two ounces of almond-oil. Place the basin by the side of the fire till the wax is dissolved in the oil. When quite melted, add two ounces of rose-water. This must be done very slowly, little by little; and as you pour it in, beat the mixture smartly with a fork, to make the water incorporate. When all is incorporated, the cold cream is complete, and you may pour it into jars for future use.—*Bears-grease*, which possesses no virtue or superiority over other animal fat, has rather an unpleasant odour, and is always sold—when sold at all—disguised with perfumes. A factitious article may be prepared as follows; Hog's-lard, 16 ounces; flowers of benzoin and palm-oil, of each one half-ounce. Melt together until combined, and stir till cold. This mixture is said to keep long without becoming rancid, and may be scented at pleasure.

For moistening the hair when weak and dry, the simplest and cheapest application, and one that is as effectual as any, is a little pure olive oil, with a few drops of essence of bergamot added to keep it sweet. To keep the hands soft, and prevent chapping, rub them well with a few drops of the oil, and wipe with a dry towel.

A very fragrant Lavender-water may be prepared by mixing together English oil of lavender and oil of bergamot, of each 3 drachms; oil of rosemary, 1 drachm; oil of cloves and otto of roses, of each 5 drops; musk, 3 grains; benzoic acid, 30 grains; honey, 1 ounce; water, 3 ounces; and rectified spirit, 20 ounces.

Eau de Cologne of superior quality may be made of oils of orange, bergamot, rosemary, and lemon, of each 1 drachm; oil of neroli, half a drachm; cardamom seeds, 1 drachm; and rectified spirit, 20 ounces.

Spermaceti Ointment.—This is a cooling and healing ointment for wounds. Take a quarter of an ounce of white wax, and half an ounce of spermaceti—which is a hard white material—and put them in a small basin with two ounces of almond-oil. Place the basin by the side of the fire till the wax and spermaceti are dissolved. When cold, the ointment is ready for use.

The Feet—Corns.—To keep the feet in a proper condition, they should be frequently soaked and well washed. At these times, the nails of the toes should be pared, and prevented from growing into the flesh. Corns are the most troublesome evils connected with the feet. They are of two kinds—soft and hard. Soft corns are those which grow between the toes, and are best treated with ordinary soap-plaster, or a plaster made of soap and opium, or ivy leaves steeped in vinegar. Hard corns, which grow on the outside of the toes, are caused by friction from the shoes; and we know of nothing so likely to prevent them as easy soft shoes and very frequent soaking of the feet in warm water. Every method of extracting corns seems but to afford temporary relief, and never will be attended with complete success unless attention is paid to the shoes. It is very dangerous to cut corns too deep, on account of the multiplicity of nerves running in every direction in the toes. They may be removed by the continued application of glacial acetic acid, a convenient form of which is the popular 'corn-pencil,' or nitrate of silver; and the pain in walking is generally relieved by wearing a 'mechanical plaster,' which consists of a piece of amadou or felt with a hole in the centre, which is placed immediately over the corn.—*The bunion*, or swelling on the ball of the great toe, is produced by the same cause as the corn—pressure and irritation by friction. The treatment recommended for corns will succeed in cases of bunions; but in consequence of the greater extension of the disease, the cure of course is more tedious.—For *Chilblains* in the early stage an approved liniment is tincture of soap and opium, two ounces; tincture of cantharides and strong solution of ammonia, of each three drachms. When the skin is broken, they may be treated with oxide of zinc ointment; or with a dilute solution of borax in glycerine and water, or with glycerine alone slightly diluted.

Cosmetics.—These consist of washes and pastes for improving the skin, and are in general highly objectionable; for the greater number contain poisonous ingredients, and while removing from the surface any discoloration, drive the disease inward, and therefore do much more harm than good. Lotions for pimples, freckle-washes, milk of roses, rouge, and all such trash, we studiously discommend. The best of all purifiers is water with a sponge; the best beautifiers are *health*, *temperance*, *exercise*, and GOOD-TEMPER.

INDEX.

*** The Figures in the columns indicate the pages of the Text in which the particular term or subject is explained.

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