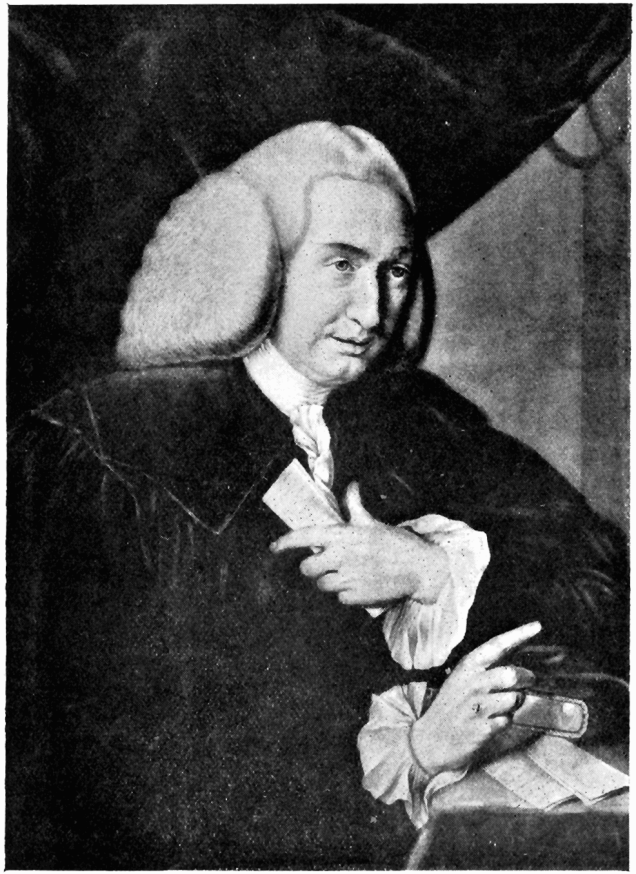


WILLIAM CULLEN (1710–1790)
(Original picture by Cochrane, in Hunterian Museum, Glasgow)

ROBERT WHYTT (1714–1766)
(Original by Belluci, preserved at Mount Melville, Fifeshire)

CHAPTER XIII

MEDICINE AT EDINBURGH IN THE LATTER HALF OF THE EIGHTEENTH CENTURY

THE Rebellion of 1745 produced great confusion in the arrangements for medical teaching, as well as in other departments of social activity throughout Scotland. By the winter of 1746–1747, however, affairs had settled down, and various re-arrangements took place in the Medical Faculty. Dr. Innes had in the meantime died, and it became necessary to appoint a successor. The Town Council accordingly elected Dr. Robert Whytt to succeed Dr. Innes as professor of the institutes of medicine, and at the same time he was elected professor of the practice of medicine on 26th August, 1747. Dr. John Rutherford had been lecturing on the practice of medicine for over twenty years, and it is not quite clear why Dr. Whytt now took over these duties. The reason is probably to be found in the fact that Dr. Rutherford began in the winter session of 1746–1747 to deliver clinical lectures in the Infirmary, and that these occupied a great deal of his time and energy. He still, however, nominally lectured on the practice of physic for another twenty years, when he resigned, and he died in 1779. Andrew Sinclair, before this time, seems to have fallen out of notice as a lecturer, and Andrew Plummer, the fourth of the original professors, devoted himself latterly entirely to chemistry.

John Rutherford, in commencing his clinical lectures, described his plan as follows:—

> "I shall examine every Patient capable of appearing before you, that no circumstance may escape you, and proceed in the following manner. 1st, Give you a history of the disease. 2ndly, Enquire into the Cause. 3dly, Give you my Opinion how it will terminate. 4thly, lay down the indications of cure yt arise, and if any new Symptoms happen acquaint you them, that you may see how I vary my prescriptions. And 5thly, Point out the different Method of Cure. If at any time you find me deceived in giving my Judgement, you'll be so good as to excuse me, for neither do I pretend to be, nor is the Art of Physic infallible, what you can in Justice expect from me is, some accurate observations and Remarks upon Diseases."[1]

Robert Whytt received his early education at Kirkcaldy, and later went to St. Andrews University, where he graduated in Arts in 1730. The next four years he spent in Edinburgh, studying medicine at the school which Monro *(primus)*, Sinclair, Rutherford, Innes and Plummer had done much to develop in the previous decade. In 1736, he graduated M.D. at Rheims, and, returning to Scotland next year, received the degree of M.D. also from St. Andrews University. In 1737, he

[1] MS. Notes of Rutherford's Clinical Lectures in the Royal College of Physicians' Library, Edinburgh, p. 7.

joined the Edinburgh College of Physicians as a Licentiate, started medical practice in Edinburgh, and became a Fellow of the College in the following year.

About the time that Whytt commenced to practise, great public interest was manifested in the search for substances which would dissolve stones in the bladder. This was probably due to several well-known persons having suffered from calculus about the period, but the condition seems in any case to have been commoner then than now. Whytt had taken a great deal of interest in this subject, and carried out an elaborate series of experiments in the Royal Infirmary of Edinburgh with lime-water made from calcined egg-shells, cockle-shells, oyster-shells, etc., which he found had a considerable power in disintegrating calculi. Not only had he tried the effects of the solvent *in vitro*, but he had carried out courses of injections into the bladder of various patients in the Infirmary who were suffering from vesical calculus. His "Essay on the Virtues of Lime-water and Soap in the Cure of the Stone" was first published in 1743. The treatment upon which he finally settled was to administer daily, by the mouth, an ounce of alicant soap and three pints or more of lime-water.

Whytt was one of the first doctors in Scotland to devote himself to medical research in the modern connotation of this term, and he busied himself, for some years after his appointment as Professor in the University of Edinburgh, chiefly with physiological researches. To this period belong "An Essay on the Vital and other Involuntary Motions of Animals," first published in 1751; and two "Physiological Essays" published in 1755. Of these, the one was "An Inquiry into the Causes which promote the Circulation of the Fluids in the very small Vessels of Animals." The other was entitled "Observations on the Sensibility and Irritability of the Parts of Men and other Animals: occasioned by M. de Haller's late Treatise on these Subjects."

The Essay on Vital and Involuntary Motions contains a record of numerous experiments dealing especially with the reflex movements. Whytt was the first to localise a reflex by showing that lasting dilatation of the pupil might be due to compression of the optic thalamus.[1] He also showed that the brain is unnecessary for reflex action, and that a portion of the cord suffices for this, for in a brainless frog the reflexes of the upper and lower limbs are in different parts of the cord.[2] These were the first attempts, I believe, since the time of Galen, to localise the seat of reflex acts. They preceded by nearly a century the important memoir presented to the Royal Society by Marshall Hall (1833) on "The Reflex Function of the Medulla Oblongata and Medulla Spinalis."

One of the Essays published in 1755, "On the Sensibility and Irritability of the Parts of Men and Animals," brought Whytt into conflict with Albrecht von Haller, and so gained for him prominent notice in Germany, Switzerland and

[1] "Works of Robert Whytt, M.D.," published by his son, 1768, p. 71.
[2] Op. cit., p. 203.

France. The whole dispute, both on the side of Haller and on that of Whytt, was of a dialectic character, and tended rather to involve the names of things than actual facts of nature. It must be remembered, too, that the dispute took place between sixty and seventy years before the experiments of Bell (1811) and Magendie (1822) showed the separate existence of motor and sensory nerve paths. Whytt advanced some telling arguments in support of his contention that all muscular action was governed by nervous control.

Of much more permanent interest, however, is Whytt's "Observations on the Nature, Causes and Cure of those Disorders which are commonly called Nervous, Hypochondriac, or Hysteric." This was published in 1764. It shows great clinical acumen and is well worth reading still, particularly for the vivid accounts that Whytt gives of a great number of cases of hysteria and similar conditions. He refers to "a particular sympathy between the nerves distributed to the teguments of the abdomen and those of the intestines."[1] He also mentions the pain felt in the groins and down the thighs in scirrhus of the uterus.

Whytt's chief claim to lasting remembrance, however, lies in the fact that he was the first to give a clear description of tuberculous meningitis, or, as he called it, "Observations on the Dropsy in the Brain." This is a short treatise of twenty-three quarto pages, included in the collected works published after his death. The disease is still described according to the three stages into which Whytt divided its symptoms, and even at the present day there is little to add to his description from the clinical aspect.

Monro *(secundus)*, who acted as Professor of Anatomy at Edinburgh from 1754 to 1798, and whose name is familiar to medical students in connection with the foramen connecting the lateral and third ventricles of the brain, has an interesting point of contact with Whytt in this connection. The foramen was first observed greatly dilated in a case of hydrocephalus which Monro and Whytt saw in consultation in the year 1764.[2]

To continue the facts of Whytt's life, in 1752 he was elected a Fellow of the Royal Society of London as the result of the reputation gained by his "Essay on the Vital and other Involuntary Motions of Animals." Several short communications were addressed to this Society. In 1761, he was made Physician to the King in Scotland, and in 1763 he was elected President of the Royal College of Physicians at Edinburgh. He had many friends and correspondents in various parts of the world, and in particular he maintained a close friendship with Sir John Pringle, who had been a fellow-student. He died in 1766.[3]

William Cullen, who had come from Glasgow to be professor of chemistry at Edinburgh in 1755, succeeded Whytt as professor of institutes of medicine

[1] "Works of Robert Whytt, M.D.," published by his son, 1768, p. 542.
[2] Alexander Monro: "Observations on the Nervous System," 1783, Plate III, Fig. 4.
[3] See further, Comrie: "An 18th Century Neurologist," *Edin. Med. Journ.*, November, 1925.

in 1766. At the same, time John Gregory, who had been mediciner at King's College in Aberdeen, succeeded Whytt as professor of practice of medicine. The developing medical school at Edinburgh thus had, at an early stage, important connections with Glasgow and Aberdeen.

William Cullen (1710–1790) was born at Hamilton, his father being factor to the Duke of Hamilton and proprietor of Saughs, a small estate near Bothwell. William Cullen was the second of a family of nine, and on the death of his father and elder brother, at an early age, Cullen assumed the responsibility for the education of the younger members of the family. His preliminary education took place at the Grammar School at Hamilton, and at the age of seventeen he went to the University of Glasgow to study those subjects which were then considered part of an education in polite letters.

At this time, although there were several medical professors in that University, they were professors in title only and delivered no lectures, so that after Cullen had been for two years apprentice to Mr. John Paisley, a surgeon of Glasgow, he went, in 1729, to London to further his education and prospects. Obtaining a position as ship's surgeon, he sailed from London to the West Indies on a two years' voyage, and, on his return, spent a few months with Mr. Murray, an apothecary in Henrietta Street.

Towards the end of 1731, he returned to Scotland, set up in practice for some months at the village of Shotts, and afterwards commenced a practice at Rothbury in Northumberland. This somewhat varied experience is a good example of the type of medical education which was in vogue in the early part of the eighteenth century, and is reminiscent of the career of Smollett's "Roderick Random" in Glasgow and elsewhere.

Cullen, however, aspiring to a status above the average in his profession, determined to take the degree of M.D., and betook himself in the year 1734 to Edinburgh, where he attended the medical school in the sessions 1734–1735 and 1735–1736. This was some eight years after the foundation of the Medical Faculty in the University. During his stay in Edinburgh he joined himself, in the year 1735, to a private debating club of students, from which later developed the Royal Medical Society.

Returning again to Hamilton in 1736, Cullen became medical attendant to the Duke and Duchess of Hamilton, a position which he mentions that he held at a financial loss to himself, although that aristocratic connection proved of great value to his subsequent advancement. Very shortly after settling in Hamilton, he took as apprentice a youth from the neighbouring village of Longcalderwood, who afterwards became the celebrated physician William Hunter, and with whom Cullen maintained friendly intercourse to the end of Hunter's life.

In the year 1740, Cullen took the M.D. degree at Glasgow University with the intention of limiting his practice to that of a physician, and in November,

1741, he married. In 1744, he removed his practice to Glasgow, and two years later he formed a teaching connection with this University by obtaining permission from Dr. Johnstoun, then titular Professor of Medicine, who, however, had never delivered lectures, to give a six months' course of lectures on Practice of Medicine.

Next year he joined Mr. Carrick, a practitioner of the city, in giving a course of lectures on Chemistry, and in the following year added Materia Medica and Botany. Carrick having died in 1750, Cullen continued to give lectures on Medicine and Chemistry for the rest of his stay in Glasgow. The interest which he succeeded in creating for the subject of Chemistry is shown by the fact that the University of Glasgow, in 1747, sanctioned the spending of £52 in order to fit up a chemical laboratory. Later the amount was raised to £136, and a grant of £20 annually was made for the maintenance of the laboratory. The apparatus must have been of a somewhat elaborate type, because considerable difficulty was experienced in procuring part of it even in London. In this chemical class Cullen had another pupil, Joseph Black, who subsequently attained great fame as a chemist. Black remained his pupil for six years in Glasgow, went to Edinburgh in 1751, where Dr. Plummer was then lecturer in Chemistry, and three years later graduated M.D.

In 1751, Cullen succeeded Dr. Johnstoun as Professor of Medicine in the University of Glasgow, and continued to give lectures upon chemistry and medicine for four years until 1755, when he secured an appointment as Joint Professor of Chemistry with Plummer in the University of Edinburgh. Plummer died of apoplexy some months later, and under Cullen the class of Chemistry prospered greatly, rising from seventeen students in the first session to fifty-nine in the second, and gradually developing into a class of 145.

Teaching chemistry did not, however, satisfy Cullen's medical ambitions, and in 1757 he undertook to deliver clinical lectures in the Royal Infirmary of Edinburgh, a new type of lecture upon the cases of patients, which had been commenced by Dr. Rutherford ten years earlier on the model of lectures that he had heard given in the Hospital at Leyden. In 1766, Cullen became Professor of Institutes or Theory of Medicine (Physiology), and, in 1769, an arrangement was effected with Dr. John Gregory by which Gregory and Cullen gave alternate courses in Practice of Medicine. Cullen became sole Professor of this subject when Gregory retired in 1773, and by this time he had also developed a large, lucrative and aristocratic consulting practice in Edinburgh.

It is interesting to note that Cullen did not succeed to the professorship of medicine till he was 63 years old, an age at which many men of the present day are preparing to retire. Throughout his professional life Cullen lived and saw his patients in a small house in Mint Close or South Gray's Close, which, despite its confined character, was one of the principal

residential districts of the day. In 1778, however, the cares of practice were decreasing, and he purchased Ormiston Hill House, near Kirknewton, some nine miles west of Edinburgh, where he spent much time in laying out a garden and sylvan retreat. Here, after resigning his Chair in 1789, he died in 1790.

Cullen's reputation in his own day, and his subsequent fame, rest almost entirely upon his skill as a teacher and sagacity as a consultant. With regard to research, as the term is understood at the present day, his only work was a short pamphlet recording experiments "On the Cold produced by Evaporating Fluids." He took an active part in preparing the new edition of the "Edinburgh Pharmacopœia," issued in 1774, and in obtaining a new hall for the College of Physicians. In 1783 his persevering endeavours secured the incorporation of the Philosophical Society as the Royal Society of Edinburgh.

His works were all text-books elucidating various departments of medicine, and included "Lectures on Materia Medica," which was at first pirated and published without his consent in 1771, but subsequently issued as a "Treatise on Materia Medica" by him in 1789; and "First Lines on the Practice of Physic," published in 1776–1784, and in numerous subsequent English, French and German editions. But the work which brought him the greatest measure of fame was his "Nosology," published in 1769, a small pamphlet which aimed at a rigid classification of diseases by their symptoms on the same arbitrary principle as Linnæus had adopted for classifying plants. It arranges all diseases by classes, orders, genera and species and, regarding them as fixed entities, makes in a sense a system of the whole of medicine. Although up to a certain point logical, such a system is unnatural, and while Cullen's classification greatly simplified medicine and established his reputation during his lifetime, it fell into complete disuse half a century after his death.[1]

The influence that he exerted on the public mind, and the great attraction that he exercised in bringing students from a distance, were due to his clearness of perception, sound reasoning and judgment, more than to any originality. As a lecturer, he had powers of interesting his students and inspiring them with enthusiasm. One of his pupils highly commended his excellent arrangement, his memory of facts, and the ease, variety, vivacity and force of his lectures. He lived at a time when medical practice was driven hither and thither by conflicting theories and systems, which his clear mind and power of expression enabled him to codify and set in their proper places. In his day, theories as to the nature of life and vital processes were considered all-important, a matter which is difficult to understand in the present age, when the human mind accepts the mystery of life as a fact, and inquires only into the ways in which it is manifested.

Cullen adopted a standpoint somewhere between the views of his immediate predecessors, Stahl and Boerhaave. Stahl had explained all vital phenomena by

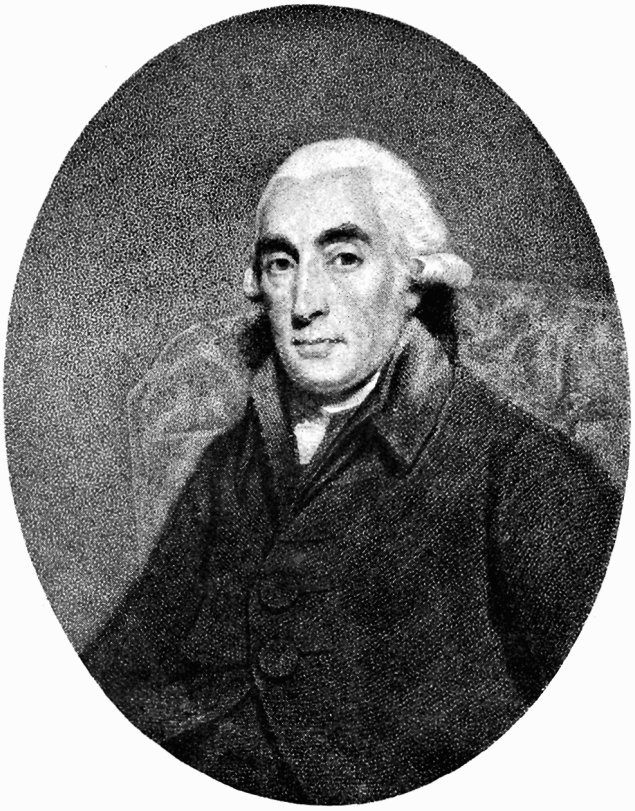
[1] See Thomson: "Life, Lectures, and Writings of William Cullen, M.D.," Edinburgh, 1859.

reference to the activity of a "sentient soul," while Boerhaave, the great upholder of the iatro-mechanical school of thought, was purely materialistic in regard to the action of the nervous system. Cullen adhered to the views of his predecessor in the Chair of Medicine, Robert Whytt, who maintained a "sympathetic" action of all parts of the body connected by nerves and vessels; but he also supported the views of Haller, who postulated a *vis insita* in the individual tissues which rendered them excitable for independent action.

JOHN BROWN (1735-1788)

Out of the question of "excitability" arose a great deal of trouble, about the year 1778, between Cullen and a rival lecturer, Dr. John Brown. Brown revived the ancient methodism of Asklepiades and promulgated a simple idea with regard to the nature of vital processes and disease, which is known as the "Brunonian Theory," and which attributed disease processes to a state of too great or too little excitability of the tissues. All therapeutic measures, therefore, resolved themselves into stimulation if the excitability was lessened, and soothing remedies if the excitability was too great. Brown's system, which was both easy to understand and required very little knowledge of medicine, not only appealed strongly to the Edinburgh students, but secured him a great following among scientific men all over Europe. He and Cullen engaged in much polemic writing on the subject, but Brown ultimately died from a practical application of his theories to his own person, by alternate recourse to stimulants and sedatives, and the dispute, so far as Edinburgh was concerned, ended.

Another link with the Glasgow Medical School is formed by Joseph Black (1728–1799), who may be described as the first of the scientific chemists as distinguished from medical chemists. He was born at Bordeaux, of Scottish parents, and, in 1746, commenced the study of medicine at Glasgow, where he had William Cullen for his teacher in chemistry. A close friendship sprang up between the two, which continued when Black went to Edinburgh in 1751 to continue his medical studies.

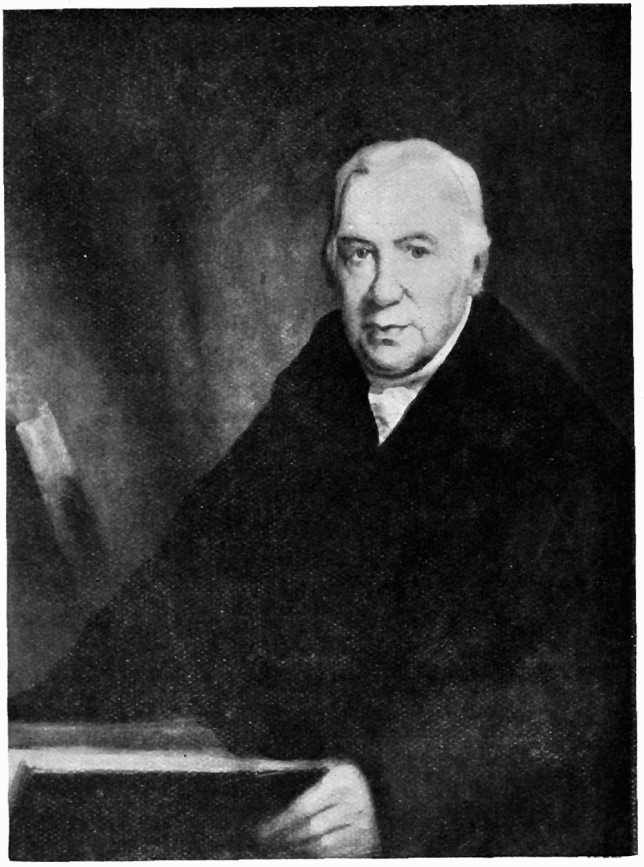


JOSEPH BLACK (1728-1799)

During 1752 – 1753, Black busied himself in research for a solvent of urinary calculi. In the course of his experiments he discovered that the difference between calcareous earth (limestone) and quicklime was produced by the expulsion of a "fixed air," and that by the action of slaked lime upon the mild alkalies these were in turn rendered caustic by the transference of their "fixed air" to the slaked lime, whereby the latter again became mild. By quantitative experiments he found further that instead of gaining something from the fire (phlogiston) as was then the general view, the limestone had sustained a substantial loss owing to the escape of a gas to which, therefore, he gave the name of "fixed air."

This discovery of carbon dioxide was embodied in his thesis submitted in 1754 for the degree of M.D., entitled "De Humore Acido a Cibis Orto, et Magnesia Alba." He seems to have had some modest doubts as to whether this discovery was sufficient for an M.D. thesis. A fuller account in English of his experiments was published next year under the title "Experiments upon Magnesia Alba, Quicklime, and some other Alcaline Substances."

Black suggested to his friend Professor Cullen the investigation of the effects in producing cold by evaporating fluids, upon which Cullen subsequently published a short treatise. In the same connection Black, in 1762, discovered the principle of latent heat, which was described in a paper to the Philosophical Club of Glasgow, but was not published till it appeared in Black's "Lectures," edited by Robison, in 1803. The practical importance of Black's discovery was at once recognised by James Watt, through whose genius latent heat was transformed into useful mechanical work in the invention of the steam engine.



DANIEL RUTHERFORD (1749-1819)

Black and Cullen were two active early members of the Royal Society of Edinburgh, which was re-organised from the Philosophical Society with a Royal Charter in 1783. In 1757, Black was appointed professor of chemistry and medicine at Glasgow on the death of Professor Hamilton. In 1766, when Cullen was transferred from the Chair of chemistry at Edinburgh to that of institutes of medicine, he was succeeded by his friend Joseph Black. Black had engaged during his time at Glasgow in busy practice as a physician, but on coming to Edinburgh he devoted himself to research, mainly on the subject of latent heat, and to teaching. In 1795, Thomas Charles Hope was appointed joint professor of chemistry with him, and Black died in 1799. After his death, his lectures, expanded from his own notes, were published by his friend and colleague, Professor John Robison, in 1803, as "Lectures on the Elements of Chemistry, delivered in the University of Edinburgh."

A younger contemporary of Joseph Black was Daniel Rutherford (1749–1819), the son of Dr. John Rutherford. In 1772 he submitted for the degree of M.D. a thesis entitled "De Aere Fixo Dicto, aut Mephitico." In this he pointed out that after Black's "fixed air" had been removed from respired air by caustic lye, the air still extinguished both flame and life no less than before, although it produced no precipitate with lime-water. This was the discovery of nitrogen gas. Although Daniel Rutherford's inclinations lay towards chemistry, he was later appointed professor of medicine and botany in 1786.

The professorship of botany had been separated from that of materia medica in 1768, when Dr. Francis Home, an army surgeon, was appointed to fill the Chair of Materia Medica. In 1798 he retired, and was succeeded by his son, Dr. James Home. Dr. Francis Home wrote several treatises of great importance on the virtues of the water of Duns, on bleaching, on agriculture, and on croup, as well as a text-book, the "Principia Medicinæ," published in 1758.[1]

FRANCIS HOME (1719-1813)
(From Kay's "Portraits")

The comprehensive course of lectures on anatomy begun by Professor Monro in 1720 was continued every winter for nearly forty years, a period during which the numbers of students attracted to Edinburgh yearly increased. His best-known work is a "Treatise on Osteology," which went through many English editions, and which was translated into French and published as a large folio volume with magnificent copper-plates by M. Sue, Demonstrator of Anatomy to the Royal Schools of Surgery at Paris (1759). Besides this he published some fifty short papers, some anatomical, some surgical, not of any great importance or permanent interest.

His son, Alexander Monro *(secundus)* (1733–1817), was educated with a view to succeeding his father in the Chair of Anatomy, and at the age of twenty-one was elected Conjoint Professor, taking full charge of the department at the age of twenty-five, in 1758, when the first Monro restricted himself to teaching clinical medicine. Placed in easy circumstances from the outset, and provided with

[1] Bower: "History of the University of Edinburgh," Vol. III, p 120.

a class which came to him independently of any attractions he had to offer, Monro *secundus* might well have failed to reach the success as a teacher and as a citizen to which the first Monro had by his efforts attained. Yet the second Monro showed himself the greater man, both as a teacher and investigator, and, among more brilliant colleagues than those with whom his father had had to compete, he maintained an easy equality and was the acknowledged head of the developing medical school.

It is useful, as showing the progress of the Edinburgh Medical School, to consider the number of students attending the Anatomy class during the decennial periods throughout the regime of the first two Monros.[1]

In 1720	57	Average 1760–1770 . . .	194
,, 1730	83	,, 1770–1780 . . .	287
,, 1740	130	,, 1780–1790 . . .	342
,, 1750	158	After 1800 over . . .	400

A short account of the lectures delivered by Monro *secundus* is given in the Memoir of his son. Monro was accustomed, after very careful preparation, to lecture in an extempore manner from headings, but a manuscript copy in excellent handwriting, taken down by one of his students, is preserved in the Library of the Edinburgh College of Physicians, and another in the Museum of the College of Surgeons.

ALEXANDER MONRO *(secundus)*
(1733-1817)
(From Kay's "Portraits")

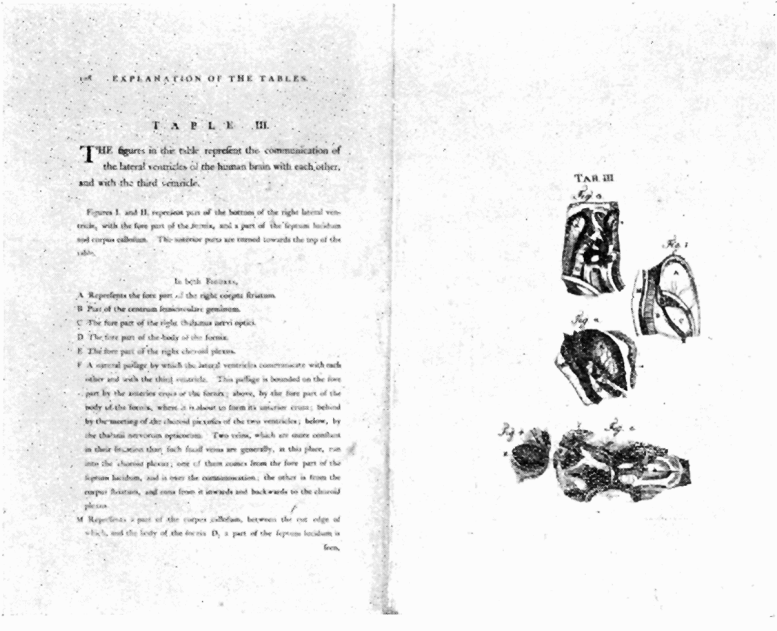
With regard to the contributions made by Monro *secundus* to the increase of anatomical knowledge, it is a striking fact that none of the great works on which his reputation chiefly rests was published till after he was fifty years of age. These were "Observations on the Structure and Functions of the Nervous System" (1783), "The Structure and Physiology of Fishes explained, and compared with those of Man and other Animals" (1785), "Description of the Bursæ Mucosæ of the Human Body" (1788), and "Treatise on the Brain, the Eye, and the Ear" (1797).

One of Monro's earliest fields of inquiry was on the function of the lymphatic vessels, and his dispute with William Hunter for priority in the elucidation of their nature was one of the celebrated medical controversies of the eighteenth century. Nobody up to 1755 had supposed that the lymphatic vessels were more than a class of very small

[1] J. Struthers: "The Edinburgh Anatomical School," Edinburgh, 1867, p. 23

veins originating like the "red veins" from the arteries. Monro *secundus*, while in Berlin in 1757, published a Latin thesis, "De Venis Lymphaticis Valvulosis," in which he deals with their origin from spaces in the connective tissues. Hunter had mentioned the same thing in his lectures, and suggested that the lymphatics are the absorbents of the body, and Monro charged Hunter with having adopted the idea from him.

He supported his contention by a letter from Joseph Black, dated 24th March, 1758, in which Black states that Monro had shown him a paper in 1755 in which he maintained that the lymphatics "are a distinct



EXPLANATION OF THE TABLES.

TABLE III.

THE figures in the table represent the communication of the lateral ventricles of the human brain with each other, and with the third ventricle.

Figures I. and II. represent part of the bottom of the right lateral ventricle, with the fore part of the fornix, and a part of the septum lucidum and corpus callosum. The anterior parts are turned towards the top of the table.

In both Figures,

A Represents the fore part of the right corpus striatum.
B Part of the transverse semicircular ganglions.
C The fore part of the right thalamus nervi optici.
D The fore part of the body of the fornix.
E The fore part of the right choroid plexus.
F A natural passage by which the lateral ventricles communicate with each other and with the third ventricle. This passage is bounded on the fore part by the anterior crura of the fornix; above, by the fore part of the body of the fornix, where it is about to form its anterior crura; behind by the meeting of the choroid processes of the two ventricles; below, by the thalami nervorum opticorum. Two veins, which are entire confluent in their situation that such small veins are generally, at this place, run into the choroid plexus; one of them comes from the fore part of the septum lucidum, and is over the commissura; the other is from the corpus striatum, and runs from it inwards and backwards to the choroid plexus.

M Represents a part of the corpus callosum, between the cut edge of which, and the body of the fornix D, a part of the septum lucidum is seen.

TAB III

Fig. 2

Fig. 1

Fig. 3

Fig. 4

Fig. 5

PAGES FROM MONRO "ON THE BRAIN"

Showing his original description and figures of the "foramen of Monro"

system of vessels, having no immediate connection with the arteries and veins, but arising, in small branches, from all the cavities and cells in the body, into which fluids are thrown; and that their use is to absorb the whole, or the thinner parts, of these fluids, and restore them to the mass of circulating humours."[1] Monro's main method of proof had been by injecting the arteries in such a way as to rupture them, when he found that the injection fluid passed from the alveolar spaces into the neighbouring lymphatics, and, on the balance of probability, the original discovery that the lymphatics form an independent absorbent system is really his.

[1] Monro: "Observations, Anatomical and Physiological," 1758, p. 27.

A similar controversy was later raised with Hewson, who had been a pupil of Monro in Edinburgh and of Hunter in London, and who published in 1774 his celebrated "Description of the Lymphatic System in the Human Subject and in other Animals." The dispute this time was whether he or Monro had first discovered lymphatics in birds, amphibians, etc.[1] It is quite clear that Monro had shown injections of the lymphatics in these animals to his class before Hewson became a medical student, but he certainly never described and figured them with the fullness and accuracy of the latter's work.

Monro's "Observations on the Structure and Functions of the Nervous System" (1783) not only summarised and illustrated by admirable plates the current knowledge of the time, but contained numerous additions from his own observation. Among the new points described may be mentioned the foramen connecting the lateral and third ventricles, which has made his name familiar to every medical student. Monro's description runs:—

> "So far back as the year 1753, soon after I began the study of Anatomy, I discovered, that the Lateral Ventricles of the Human Brain communicated with each other, and, at the same place, with the Middle or Third Ventricle of the Brain. And, as a passage from the Third Ventricle to the Fourth is universally known, it followed, that what are called the Four Ventricles of the Brain are in reality different parts of one cavity."[2]

ALEXANDER WOOD
("Lang Sandy Wood") (1725-1807)
(From Kay's "Portraits")

JAMES RAE
Deacon of Surgeons, 1764
(From Kay's "Portraits")

[1] Monro: "Structure and Physiology of Fishes," 1785, p. 39.
[2] Monro: "The Brain, the Eye and the Ear," 1797, p. 9.

The first observation of this foramen was made on a case of tuberculous meningitis seen in consultation with Robert Whytt, which also furnished the latter with part of the material for his original description of this disease.[1]

"The Structure and Physiology of Fishes" (1785) was the first important work on Comparative Anatomy in Edinburgh, and founded in Scotland a taste for that branch of Science which had been recently introduced and elaborated by the Hunters and their pupils in London. Monro's "Description of the Bursæ Mucosæ of the Human Body" (1788) was of a more practical type, and of great importance in relation to surgery.

The development of the Faculty of Medicine in the University during the first three-quarters of a century of its existence was chiefly along the lines of medicine, although several important representatives of surgical practice were found in the College of Surgeons. The subject of surgery was treated simply as an appendix to the lectures on anatomy delivered by the first two Monros, of whom the second was a consulting physician with a large practice. Efforts were made to bring about more thorough teaching of surgery, but were resisted as an infringement of the interests of the Monro family, until the College of Surgeons, by an amusing expedient which will be mentioned later, forced the appointment to the University of a professor of surgery in 1831.

One of the best known of the 18th century Edinburgh surgeons was Alexander Wood (1725–1807), known to his contemporaries as "Lang Sandy Wood," and greatly respected for his dexterity in practice, which did much to raise the reputation of the surgical department in the Royal Infirmary, as well as beloved for his amiable social qualities. The general opinion of him, in a day when Edinburgh doctors were celebrated for disputation and bickering, is summed up in a couplet by the writer of a parody on Byron's "Childe Harold":—

> "Oh, for an hour of him who knew no feud—
> The octogenarian chief, the kind old Sandy Wood."[2]

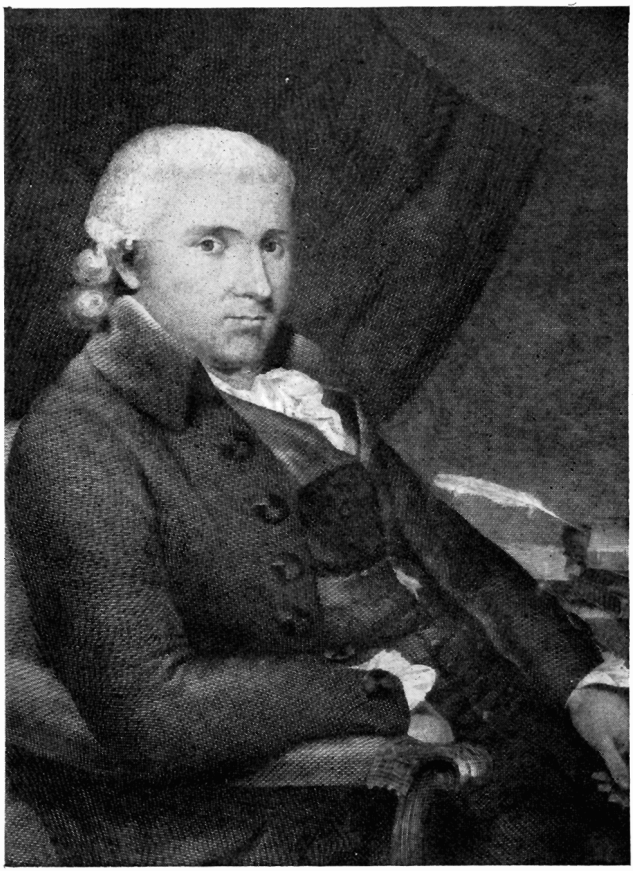
John Kay has represented him in wig and cocked hat with an umbrella under his arm, in allusion to the fact that he was the first person in Edinburgh to make use of the latter article. At a time when personal peculiarity was widely affected by Edinburgh people, Wood specially distinguished himself by going to see his patients accompanied by a pet sheep and raven.

James Rae was Deacon of the Incorporation of Surgeons in 1764, and was one of the first to urge that surgery deserved to be taught in a complete course of lectures apart from anatomy. For some years he conducted a private course in surgery and attracted a considerable number of students. He also gave lectures on diseases of the teeth and, in connection with his course in surgery, held lectures

[1] "Works of Robert Whytt," 1768, p. 728.
[2] "Fragment of a Fifth Canto of Childe Harold's Pilgrimage," Blackwood's Magazine, May, 1818.

on clinical surgery in the Infirmary. He may, therefore, be regarded as the first teacher in clinical surgery at Edinburgh.[1] He died in 1791.

Benjamin Bell (1749–1806) was a native of Dumfries, where he served an apprenticeship to Mr. James Hill, surgeon. At the age of seventeen, he came to Edinburgh to attend the medical classes, and afterwards spent two years in the great surgical school of Paris and in London, where he studied under William Hunter. His reason for going abroad indicates the character of the Edinburgh Medical School in 1770. He said: "Had I been now entering to the world as a physician, I should never have thought of going further than where I have been; but for a *surgeon*, I assure you Edinburgh comes greatly short of either Paris or London, and for that reason, Dr. Monro and any others that I have spoke to here upon the subject, approve of the scheme very much."[2]



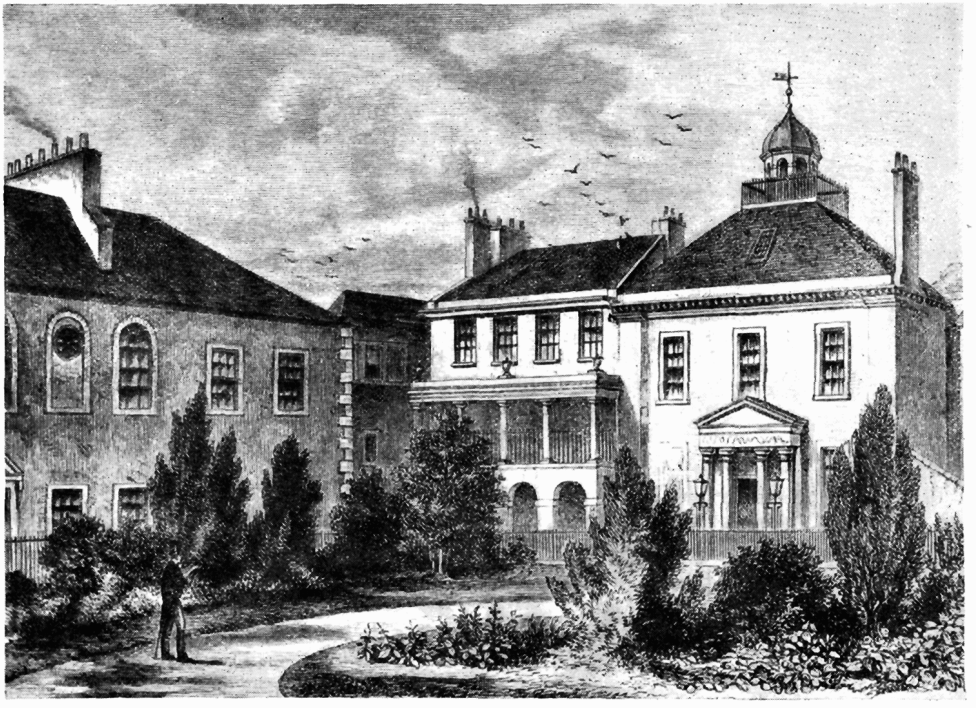
BENJAMIN BELL (1749-1806)

Benjamin Bell should be regarded as the first of the Edinburgh scientific surgeons. He was one of the first to seek for some means of preventing or diminishing pain in surgical operations, and, in his "System of Surgery," described several methods for effecting this, which, however, were superseded sixty years afterwards by the introduction of ether and chloroform. In his paper, "On the Chirurgical Treatment of Inflammation" (1777), he described the use of the seton, a practice recommended thirty years earlier by James Rae. His most important

[1] Alexander Miles: "The Edinburgh School of Surgery before Lister," London, 1918, p. 79.

[2] "The Life, Character and Writings of Benjamin Bell," by his Grandson, Benjamin Bell, Edinburgh, 1868, p. 23.

contribution to surgery was his "Treatise on Gonorrhœa Virulenta and Lues Venerea," published in 1793, in which, for the first time, he distinguished clearly between these two diseases. His "System of Surgery," in six volumes, was an attempt to rival Heister's "System of Surgery," the great surgical text-book of that time, and though it was unfavourably criticised, both by his contemporary John Bell and by Sir Benjamin Brodie, it went through seven editions and was translated into French and German.[1]



SURGEONS' SQUARE IN 1829

Showing from left to right, Surgeons' Hall of 1697, Gordon's class-room, Royal Medical Society's Hall, and Knox's (formerly Barclay's) class-room

An important part in the educational advantages of the Edinburgh Medical School has been played almost since its beginning by a Medical Society of students which commenced in the year 1734. In August of that year, six men studying medicine at Edinburgh—Dr. Cleghorn, Dr. Cuming, Dr. Russel, Dr. Hamilton, Mr. Archibald Taylor and Dr. James Kennedy—who were in the habit of spending social evenings together at a tavern, decided that this little society should meet regularly once a fortnight at their respective lodgings, when

[1] Miles, Op. cit., p. 59.

a dissertation in English or Latin on some medical subject should be read by each of the members in rotation and criticised by the other five. In 1735, Cleghorn, who later became professor of anatomy in Dublin, was the only member left in Edinburgh. He and some other students, including William Cullen, who had come to Edinburgh as a student, and John Fothergill, continued the meetings, and the Society was definitely constituted as the Medical Society of Edinburgh by ten members towards the end of the year 1737.

The meetings took place in a tavern until the year 1763, when the Society obtained permission from the Managers of the Royal Infirmary to hold the weekly meetings in a room of the hospital. At the same time, the Society began to collect a library, which, by 1778, amounted to about 1500 volumes. A proposal was made about this time to build a hall for the meetings, which was warmly supported by various friends among the professors and the practitioners of Edinburgh, particularly by Doctors Cullen, Hope and Duncan. Finally, under the presidentship of Mr. Gilbert Blane, the foundation stone of the Medical Hall was laid by Dr. Cullen, and the Hall on the west side of Surgeons' Square was opened on 26th April, 1776.

The Society has included in its list of members the names of many men who afterwards attained eminence, and among those in the early days are the names of Mark Akenside (1740) and Oliver Goldsmith (1752). From its list of annual Presidents, many have become teachers in the Edinburgh School or have attained distinction in other places. In the present Hall are two memorial tablets to Presidents of the Society, Jacob Pattisson and Francis Foulke, who died during their term of office. The latter was killed in a duel on 22nd December, 1789. A quarrel with an officer, Mr. G., having occurred, a challenge ensued, and the two met on Seafield Sands attended by their seconds. At the third discharge of pistols, Foulke fell with a bullet in his heart.[1]

A Royal Charter was obtained for the Society from King George III. in December, 1779, largely by the exertions of Dr. Andrew Duncan. At this time there was a kind of obsession for the foundation of societies, both among the students and the practitioners of the town. These included the Medico-Chirurgical Society (founded in 1767), the Physico-Chirurgical Society (1771), the Chirurgo-Physical Society, the American Physical Society, the Hibernian Medical Society, the Chemical Society, the Natural History Society and the Didactic Society. All of these waned and were one by one absorbed by the Royal Physical Society, which was incorporated in 1788 after erecting a hall in immediate proximity to the Royal Public Dispensary in 1784.

The Royal Medical Society, however, continued to flourish as a meeting-place for students. Its objects, in the words of an early President, were " mutual improvement and the investigation of truth ; the development of the seeds of

[1] Grant : " Old and New Edinburgh," Vol. III, p. 266.

genius, and the detection of falsehood; the emancipation of the mind from the fetters of prejudice, and the cultivation of true friendship by social and liberal intercourse." At its weekly meetings during the winter session, the plan proposed at the beginning of the Society was followed, by which the members in turn submitted a dissertation on some prescribed subject, which was discussed by the Society, with occasional addresses from former members, and debates.

In the middle of the 19th century, partly in consequence of the Society having outgrown its premises at Surgeons' Square, partly because these premises were showing signs of decay, and partly because the character of the locality at Surgeons' Square had changed, the present Hall at Melbourne Place was opened on 7th November, 1852.[1]

During the latter half of the 18th century, Edinburgh was the great medical resort of all the Britons beyond the seas, much as Leyden had been the resource for those who wished to take a medical degree half a century earlier. The number of graduates is not, however, an indication of the number of students, for many men who studied medicine at Edinburgh took the qualification of the College of Surgeons, while right up to the passing of the Medical Act, in 1858, a large number of students were content to learn their profession as apprentices to some practitioner, and to take a few classes at some medical school, such as Edinburgh, without proceeding to graduation. Out of thirteen graduates in 1765, five belonged to Scotland, five were American, two English and one Irish. In 1787, after the troubles connected with the War of American Independence had subsided, out of forty-four graduates, nineteen were Scottish, nine English, six came from America, and ten were Irish.

Several of the most distinguished pioneers of American medicine graduated at Edinburgh: for example, William Shippen (with a thesis entitled "De Placentæ cum Utero Nexu," 1761), John Morgan ("De Puris Confectione," 1763), Samuel Bard ("De Viribus Opii," 1765), Benjamin Rush ("De Coctione Ciborum in Ventriculo," 1768), and Philip Syng Physic ("De Apoplexia," 1792).[2] Ephraim McDowell, the Kentucky ovariotomist, studied in Edinburgh (1793–1794), though he did not graduate.

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[1] Stroud: "History of the Royal Medical Society," Edinburgh, 1820.
[2] "Edinburgh Medical Graduates, 1705–1866," Edinburgh, 1867.