

## CHAPTER X.

## WORKS OF DEFENCE—FORTS, CAMPS, AND BROCHS.



It is more than probable that during the earlier stages of human civilisation the uninhabited portions of the earth were gradually peopled by nomadic families of hunters who lived on wild fruits and the produce of the chase. Their daily avocations thus led them to penetrate farther and farther into the primeval forests, mountain recesses, and other haunts of wild animals. In these circumstances there can be no doubt that they found congenial homes in such caves and rock-shelters as they came across in their wayward wanderings. As evidence of the presence of these early colonists in Scotland, we have the remains of the Oban Troglodytes and the whale-hunters of the Carse of Stirling, already referred to. When, however, more settled communities began to arise, these natural retreats, even if always conveniently situated, would not suffice as means of defence, and hence the necessity of resorting to artificial methods of protection. The sites selected for this purpose, in the first place, would be those whose natural features facilitated their speedy conversion into places of strength and safety, such as rocky eminences with precipitous es-

carpments, and promontories more or less surrounded by water or impenetrable bogs. For it must never be forgotten that, during the whole period of man's career on earth, the principal enemies with which all struggling communities had to contend were their fellow-creatures.

### I. FORTS, CAMPS, MOTES, &c.

Throughout nearly the whole of Scotland there are numerous remains of strongholds and works of defence in the form of (1) enclosures, of various sizes, fortified with ditches and ramparts of earth and stone; (2) mounds of earth, often terraced, and surrounded with a ditch or moat; (3) stone-built forts, generally situated on commanding eminences and defended by intrenchments. These different monuments are not uniformly distributed over the country, some parts being thickly crowded, while other parts are entirely destitute of them; nor is this irregularity in their distribution altogether accounted for by the disposition of land capable of cultivation, so that there is more than a surmise that the element of strategy had something to do with their erection. The hill-forts, being constructed of stones, have their materials still lying upon their sites (except in localities where the stones have been removed for agricultural improvements), so that their structural peculiarities are hidden under a mass of ruins. As a rule, their outlines and dimensions were determined by the contour of the summits of the hills on which they were built. If placed on the brink of a precipice, the assailable sides only were usually fortified with walls and ramparts. Those situated on the plateaux and lower grounds were almost invariably circular or oval. Some covered only a few yards in diameter, while others were of great extent, often occupying the whole top and flanks of a hill.

From historical evidence we know that Scotland, since its occupation by the Romans, has been inhabited by various races—Picts, Scots, Danes, Anglo-Saxons, and Scandinavians—all of whom must have left some traces of their respective habits and customs. In no class of antiquities could such traces be more readily preserved than in forts, camps, battle-fields, and the sites of warlike operations. But all these remains have become reduced in the course of time to a uniform state of dilapidation, so that from their external aspect it is now impossible to form a correct idea either of their original appearance or of the period to which they belonged. Careful excavations might, however, be the means of determining their origin by bringing to light stray relics of their inhabitants, or some special features in their structure.

In Scotland the large majority of forts are circular or oval, except where the local peculiarities of the site necessitated an irregular form. The Romans, however, were in the habit of making their camps square or rectangular, and were always guided in their construction by precise rules and measurements. Although the dimensions varied according to the number of men to be accommodated, the interior arrangements, and the relative proportions of the buildings, were generally the same. When an army took the field it never halted, even for a night, without throwing up an intrenchment consisting of a ditch and a rampart, the earth from the former being thrown inwards to form the latter, over which was then placed a palisade. This uniformity in the construction of the Roman camp has been of some service to archæologists, as it furnishes them with a *primâ facie* clue to Roman camps as distinguished from those of native races. Thus, in Britain, all rectangular encampments are usually regarded as the work of the Romans. But, of course, this rule cannot be accepted as infallible, since the Romans themselves

sometimes utilised native camps—a fact proved to have been of frequent occurrence in Illyricum,<sup>1</sup> and even in Scotland there are indications that the hill-fort of Birrenswark, which has a very irregular perimeter, was occupied by the Romans.

After eliminating from the category of works of defence the artificial islands called *crannogs*, and the peculiar stone towers known as *brochs*, both of which, being constructions of a *sui generis* character, will be separately described, there remain in Scotland upwards of 1000 monuments which fall to be included in the list of prehistoric forts. Traditionally and locally they are known under various designations, often descriptive of some special feature in their structure or appearance, such as *mote* or *moat*, *burh*, *dun*, *rath*, *lis*, *caer*, &c.—words whose etymology can be readily traced to one or other of the languages now, or formerly, spoken in the country. Many of them, being conspicuous objects in a landscape, have been visited, described, and illustrated in numerous articles and special works, the most important among the latter being those of Miss C. Maclagan<sup>2</sup> and of Dr David Christison.<sup>3</sup>

The most natural division of the subject, and that which lends itself most conveniently for our present purpose, is into earth-works and stone-works; between which, however, there are no well-defined boundaries, as some are constructed of both materials. To throw up an intrenchment, as a ready means of defence, was not a monopoly of any people at any time; but it could only be most advantageously used in localities where wood for palisades was abundant. So common was the practice of palisading among the Romans,

<sup>1</sup> Rambles and Studies in Bosnia, p. 365.

<sup>2</sup> The Hill Forts and Stone Circles of Scotland, 1875.

<sup>3</sup> Early Fortifications of Scotland, 1898.

that each soldier on the march carried a certain number of wooden stakes along with his intrenching tools. It is not likely, however, that stakes used in these intrenchments, owing to their liability to decay under the vicissitudes of a British climate, would survive to the present day; for it is only when wood is immersed in water, or embedded in bogs, that it is preserved for any length of time.

The numerous earthworks scattered over the country, chiefly in the south-western counties, vary greatly both in size and structure. They are usually called *motes* or *moats*, and *moot-hills*. But the latter, which are mere artificial mounds without any fortifications, may be at once eliminated from the category under discussion, as they do not appear to have much, if anything, to do with military works. They were places of meeting for the transaction of public business, the administration of justice, and the punishment of criminals. Whatever may be the origin of the word *moothill*, as used in the Lowlands of Scotland, its exact equivalent in Gaelic is *dun a mhoid*, from the word *mòd*, a meeting or court. Moothill has also a parallel in the Tynwald Hill in the Isle of Man, which is still used on the occasion of the promulgation of new laws.

The mote consists of an artificial mound of earth, generally in the form of a truncated cone, flanked with terraces at lower levels and a circumambient ditch at its base. Adjacent to the mound there was often a court surrounded with an intrenchment. That these earthworks are the foundations of wooden fortresses and castles which, according to Chalmers, must be relegated "to the Scottish period when stone and lime were not much used in building," is rendered probable from collateral evidence, such as the illustration from the Bayeux Tapestry of the fortification of Dinan, reproduced by Dr Christison.<sup>1</sup> These motes are found in considerable

<sup>1</sup> *Op. cit.*, p. 6.

numbers in various parts of England and Ireland. In Scotland their distribution is almost exclusively confined to the counties of Ayr, Wigtown, Kirkcudbright,<sup>1</sup> and Dumfries—a fact which suggests their Irish origin, since they are very numerous on the opposite coast of Ireland. One of the most perfect motes I have ever seen is near the town of Ballymena, county Antrim.

Under the name *motte* or *mothe* such remains are abundant in France, as shown by the frequency with which these words enter into the composition of French place-names. M. G. de Mortillet<sup>2</sup> gives a tabulated list of 167, distributed over nearly the whole of France. According to him they dated from the fifth century, but they greatly increased in number in the middle ages. French archæologists have excavated many of their *mottes*, the results of which leave no doubt that they are the remains of habitations constructed for military purposes. Heaps of broken bones and other remains of food, together with Roman and medieval pottery, were invariably found in the excavations. In low-lying places the surrounding ditch, or ditches, contained water, so that they were veritable moated castles. The area of the distribution of motes extends into Belgium, Germany, and part of Austria.

But besides the motes there are other circular intrenchments, enclosing areas of different dimensions, which have no artificial mound—the essential characteristic of a mote—and between which and some of the stone forts there seems to be no difference except that the one is of earth and the other of stone. What kind of inner structures they possessed, or what was their special function, there is little evidence to show.

<sup>1</sup> Mr F. R. Coles classifies the various fortifications in Kirkcudbrightshire as follows: Motes 27, forts 34, doons or doonhills 18, doubtful and fragmentary 19. (Proc. Soc. A. Scot., vol. xxvii. p. 92.)

<sup>2</sup> Revue Mensuelle, 1895, pp. 261-283.

Some of the hill-forts are among the grandest ruins of our country, reminding one of the giant's tales of olden times. Of this description the two Caterthuns, in the highlands of Forfarshire, are striking examples. The White Caterthun, occupying the southern spur of an isolated ridge, is of an oval form, and encloses a central area 470 feet long by 210 broad. Beyond this there is a succession of stone ramparts and ditches, surrounding the height at lower elevations, which gives the fortress the appearance of great strength. The Black Caterthun, occupying a rival eminence about a mile to the north, contains an inner enclosure measuring 280 feet by 190 feet. The surrounding defences are nearly circular, and extend down the slopes in a series of concentric intrenchments of earth, but if they ever contained stones these have been removed long ago.

Another very remarkable specimen is on the summit of the Barmekyne of Echt, a conical hill in Aberdeenshire. The inner enclosure, which was apparently reduced to a uniform level, is nearly circular, and measures about 300 feet in diameter. It is surrounded by five concentric ramparts of stone walls, with intervening trenches. Five entrances can still be traced, three on the south and two on the north. In their vicinity the walls appear to have been more strongly built, and so arranged as to have each a narrow opening (about 3 feet) commanded by the rampart immediately above it.

But perhaps the most striking of all the hill-forts is the East Fort on Bennachie, Aberdeenshire, which is perched on the top of a rugged granite hill, some 1400 feet above the plain. The summit consists of a small natural plateau 100 feet long, 70 feet wide, and 70 feet high, which has its almost perpendicular sides strangely scarred into deep chasms. No artificial ruins are on the plateau itself, but at its base there

are some remains of fortifications and round huts. It is not until we descend about 120 feet that the main rampart shows itself, stretching from cliff to cliff for 690 feet, with an average breadth of 24 feet. On a terrace continuous with a portion of this wall may be seen the ruins of some more round houses.

As a characteristic example of the pure earthworks, in the form of a fortified camp on an elevation among cultivated lands, that on the Midhill Head, Mid-Lothian, described and measured<sup>1</sup> by Mr W. Galloway, may be noted. Here are four earthen ramparts, still retaining a height of 4 or 5 feet, with intervening ditches, enclosing a central area 410 feet in length, from east to west, and 284 feet in breadth. There are three entrances to the interior, one at each end and another on the south side. Mr Galloway, who made a careful plan of this fortification, gives expression to the opinion that its constructors had no theoretical considerations to guide them in determining its form beyond the natural conformation of the hill. "This strict adherence to the natural formation of the ground," he writes, "combined in several points with a careful adaptation of its special features, clearly indicates that to whomsoever, or to whatever period, the origin of the camp may be attributed, beyond the necessity of enclosing a given area on a selected site, with fortified lines, its constructors were guided by no more formal or preconceived principles of castrametation."

But however interesting and precise such superficial details may be, they add little to the kind of knowledge archæologists are mainly in search of. Hitherto the range in time of these structures and the racial affinities of their builders have been absolutely guesswork. As a more important part of the subject, I shall now select for description a few specimens

<sup>1</sup> Proc. Soc. A. Scot., vol. xiv. p. 254.

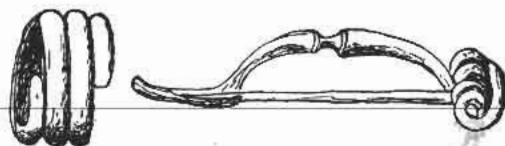


which, owing to their having been subjected to a partial exploration in recent times, have yielded some evidence of chronological value.

Last summer I visited a fort, situated on a spur of the Ochil range, some 600 feet above the carse-lands, which was then being investigated under the auspices of the Society of Antiquaries. The fort occupies the summit of Castle Law Hill, overlooking the town of Abernethy, and commands an extensive view across the Firth of Tay and the lower reaches of the Earn. The defensive works consisted of a dry-stone wall, from 18 to 25 feet thick, having a well-built outer and inner facing, with rubble-work between, and enclosing an oval space, 136 feet in length and 51 in breadth. Portions of these walls, from 6 to 8 feet in height, remained *in situ*, but prior to the excavations they had been so completely buried in the *débris* that the surface had the appearance of a grassy knoll, over which a few trees found a congenial habitat. In one of the outer facings it was observed that the dry-built wall had been strengthened by logs of wood running both longitudinally and transversely: the wood, however, had completely decayed, and the row of empty spaces, some 2 feet apart, left by the transverse beams, looked like the port-holes of an old man-of-war. At a short distance along the most accessible part of the hill there was a dilapidated portion of an outer wall or tower; but, strange to say, there was no evidence of a gateway, which, if it existed, could only have been at this part of the fort.

Within the enclosed area the natural rock cropped up here and there, and the hollows were occupied with ashes, broken bones, &c. In one place a circular rock cistern, 7 feet in diameter and 7 feet deep, was discovered, and among the rubbish cleared out of it there were numerous bones of the ox, the goat, and the pig, together with some blades of iron

much corroded. The principal relics found in the course of the excavations are as follows: A bronze fibula of late La Tène type, remarkable as showing that the pin, with one coil attached to it, had been broken, but subsequently made serviceable by passing a bit of bronze wire through all the coils; so that, as found, it had the pin moving loosely on the inserted piece of bronze wire. In this form it might have been taken for one of those fibulæ of later times, so frequently associated with Roman and Romano-British remains (fig. 218). A spiral finger-ring of bronze (fig. 217). Portion of a bracelet of lignite; also a ring (fig. 219) and a polisher of the same material. Two stone lamps with nicks for the wick; a well-shaped stone axe (fig. 220), and a few rudely worked flints.



Figs. 217, 218.—*Bronze finger-ring and fibula found in the fort at Abernethy (3).*

Two portions of wooden dishes; a deer-horn handle; two pellets of burnt clay (supposed to be sling-bolts), like those found at Ardoch and the Glastonbury lake-village; a few fragments of hand-made pottery, like that of the cinerary urns.

The fort at Forgandenny, also situated on a commanding eminence, some 900 feet in height, was partially excavated during the summer of 1892 by the late Mr E. Watson Bell.<sup>1</sup> On the summit, beneath a grass-grown surface, excavations exposed the bases of two oval-shaped walls, an inner and an outer. The former was 18 feet thick and the latter 15 feet, and between them there was an intermediate zone, varying in breadth from 16 to 52 feet. The entire length of the fort is 456 feet, from east to west, and the breadth, from north to

<sup>1</sup> Proc. Soc. A. Scot., vol. xxvii. p. 16.

south, 190 feet. At the east end there was an entrance from a causewayed road into the intermediate zone, and from the south corner of the gateway a short wall ran across the latter to the inner wall, so that any one entering had always to turn to the right. There was no evidence of a gateway leading through the inner wall to the central enclosure, a feature which was also noticed in the Abernethy fort. The slope of the hill, especially on the south, was traversed by a number of ramparts and ditches in the usual manner.

In course of the excavations portions of the fort walls, from

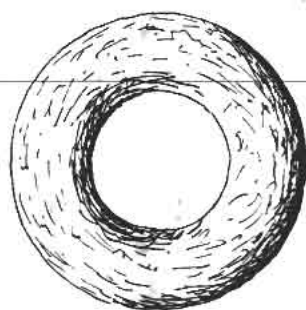


Fig. 219.—Ring of lignite,  
Abernethy fort ( $\frac{2}{3}$ ).

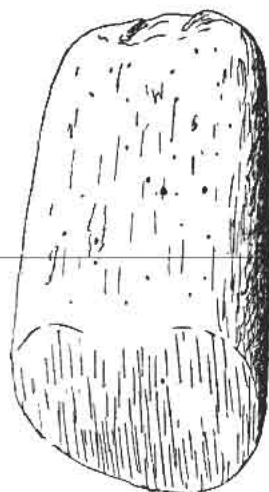


Fig. 220.—Stone axe,  
Abernethy fort ( $\frac{1}{2}$ ).

2 to 6 feet in height, were found *in situ*, showing inner and outer well-built facings with rubble-work in the interior. Some empty square holes, like those observed in the Abernethy fort, were supposed to have originally contained logs of wood. The relics found are a few whetstones and stone hammers, part of a jet bracelet, and a few fragments of coarse pottery. Bones of the ox (abundant), pig, and roe-deer were found along with charcoal and ashes.

The peculiarity presented by a wall, constructed of logs

of oak alternating with layers of stone, was first noticed in this country by Dr James Macdonald, while conducting excavations at Burghead nearly forty years ago. This structural feature is thus described by Dr Macdonald: "The wall is built of unhewn stones, some of them of considerable size, carefully laid, but without mortar. It has only one face; but to strengthen it, beams of solid oak, still measuring from 6 to 12 feet in length, take here and there the place of stones; and similar beams, inserted endways, pass into the mass behind."<sup>1</sup> During the summer of 1890 Mr Hugh W. Young, the present proprietor of Burghead, made some further explorations into the old walls of the fort. He penetrated the rampart, from where Dr Macdonald left off, till he reached the outer facing at no less a distance than 24 feet. "The two facing-walls," writes Mr Young, "are joined and strengthened by oak logs. The logs cannot be measured, as the state of decay is very great. Some of them I traced fully 12 feet into the rampart. These logs were joined across by oak planks and logs, riveted together by iron bolts," &c.<sup>2</sup>

A similar method of constructing ramparts by stones and beams is described by Cæsar (book vii. c. 23) as peculiar to the Gauls—a statement the truth of which has been confirmed by the discovery, in modern times, of the actual woodwork in several of the ancient forts of France in the department of the Lot.<sup>3</sup> The special advantages of the method are thus described in the Commentaries (*loc. cit.*): "This work, with respect to appearance and variety, is not unsightly, owing to the alternate rows of beams and stones, which preserve their order in right lines; and, besides, it possesses great advantages as regards utility and

<sup>1</sup> Proc. Soc. A. Scot., vol. iv. p. 350.

<sup>2</sup> Ibid., vol. xxv. p. 436.

<sup>3</sup> Congrès Arch. de France, 1875. p. 427.

the defence of cities; for the stone protects it from fire, and the wood from the battering-ram, since it [the wood] being mortised in the inside with rows of beams, generally 40 feet each in length, can neither be broken through nor torn asunder." These Gaulish methods of binding together loose stones and earth by means of mortised beams may be paralleled with those used by the crannog-builders for consolidating the composite materials of which the artificial islands were composed, as described on p. 431.

General Roy, in his 'Military Antiquities of the Romans in North Britain,' identified Burghead as the *Ptoroton* of the now discredited *De Situ Britannia*, which is described in that treatise as the capital of a Roman province of *Vespasiana*. For a review of this question, and of other interesting problems in connection with the history of Burghead and its remarkable promontory, I would refer my readers to an able article by Dr Macdonald, entitled "Burghead as the site of an Early Christian Church; with Notices of the Incised Bulls and the burning of the Clavie."<sup>1</sup> See also Sheriff Rampini's 'History of Moray and Nairn,' chap. i.

From behind the town of Ardrossan there extends north-westwards an elevated plateau, presenting towards the sea a steep escarpment, which overlooks a narrow strip of sandy soil lying between it and the sea-beach. The geologist at once recognises here an ancient sea-cliff, which in the course of time has become moulded into a succession of deep gullies, rounded knolls, and bluff headlands, around which nature has thrown a variegated garb of the richest vegetation. The tops of some of these commanding knolls have been converted into a series of forts, but as to the period of their occupancy, or the military exigencies that necessitated their erection, both history and tradition are silent.

<sup>1</sup> Trans. Glasgow Arch. Soc., vol. ii., N.S., pp. 63-115.

One of these forts, situated on a grassy mound at Seamill, was explored in 1881,<sup>1</sup> the result of which may be thus epitomised: The oval contour of the mound supplied the design for the outlines of the ramparts, which on the sea-side consisted of two walls 5 or 6 feet thick. These walls, which were only a few feet apart, coalesced into one at the ends and on the north side. In their construction large undressed stones were used, without any cementing element, and the interstices were filled with smaller stones and earth. An ordinary partition wall along the shorter axis of the

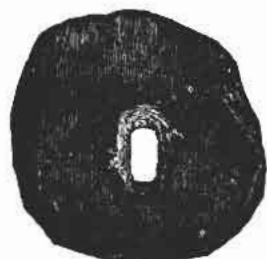


Fig. 221.—*Spindle-whorl of cannel coal, Seamill fort, Ayrshire (†).*

enclosure divided it into two unequal compartments, the smaller of which, next a projecting ridge from the mainland, was found to have been partly paved with stones. The stuff lying over the area of this rude pavement was nearly all trenched over, in the course of which were found some charcoal and ashes, bones, horns, sea-shells, and all the following relics except the hammer-stone, which was dug up near the centre of the outer enclosure:—

*Stone.*—Hammer-stone of a flat oval pebble; globular ball artificially rounded with rubbing marks; two fragments of granite querns; a spindle whorl of cannel coal (fig. 221), and several other portions of this material showing cutting marks.

*Bone.*—A pointer made of a splinter of a leg bone 5 inches long; portion of bone perforated at each end and cut with a sharp instrument (fig. 222).

*Iron.*—Numerous portions, greatly oxidised, probably of blades and socketed spears or daggers.

*Bronze or Brass.*—A perforated bronze disc (fig. 223), and a wheel-like object attached to an ornamental stem (fig. 224).

<sup>1</sup> Collections of the Ayr and Gal. Arch. Association, 1882, p. 59.

*Pottery and Glass.*—Two small fragments of green glass, and a small bit of reddish pottery faintly showing three parallel lines.

*Organic Remains.*—Bones of ox, pig, sheep, and deer;



Fig. 222.—*Bone implement, Seamill fort* (†).

horns of the deer; and shells of several species of edible molluscs.

In 1827 Dr John Jamieson, in describing the fortifications on the top of the Laws, Forfarshire, says:—

“This fort consists of two walls of vitrified matter which surround the hill. The outer wall runs along its slope, and forms a kind of circle, although by no means perfect. . . . The circumference of the outer wall, including the angular part, is, according to my measurement, 500 paces. . . . The inner wall surrounds the summit of the hill, at the distance of several paces from the outer. This varies,



Fig. 223.—*Bronze disc, Seamill fort* (†).

however, according to the nature of the ground. At the north-east corner, and round in that direction towards the north-west, are seen the foundations of several houses within

the inner wall, which here seems to have formed the back wall to these houses. On the west side of the hill, the interstice between the two circular walls has been filled up

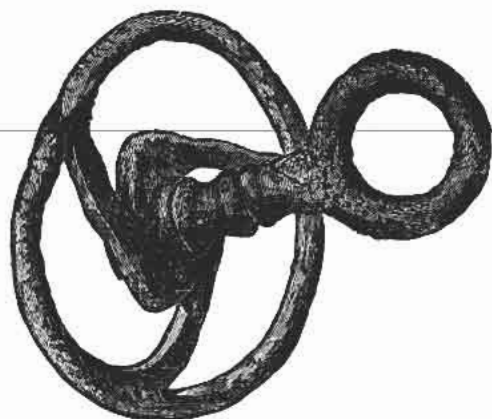


Fig. 224.—Bronze object, Seamill fort (†).

by buildings of a small size. A wall runs nearly through the middle of the fort, extending from the south to the north side of the inner wall. The design of this has undoubtedly been to form a separation between the defenders and their cattle; for in the eastern division we observe

no foundations of buildings, except a few on the wall itself. . . .

“Besides the gate formerly noticed, there seems to have been one on the west side. The vitrification here is as perfect as that of the fort of Finhaven, and assumes the very same appearance. Here, as well as there, the stones have been so completely fused, as in many places to seem as if they had been connected by some cement resembling melted ore; but this can be viewed only as the *scoriæ* forced from the stones themselves when in a state of fusion.”<sup>1</sup>

In 1859, when these ancient structures were again examined by Mr James Neish,<sup>2</sup> the fort was in a ruinous condition, owing to the removal of its stones for agricultural purposes, and no definite conclusions could be drawn from the remains then extant. Dr Stuart, in a supplementary note on Mr Neish's paper to the Society, thus writes: “I have twice

<sup>1</sup> Transactions of the Royal Society of Literature, vol. ii. p. 274.

<sup>2</sup> Proc. Soc. A. Scot., vol. iii. p. 440.



carefully examined the remains, and have found it difficult to form any feasible opinion as to their original shape, or to account for the arrangements of those walls which still remain. It seems obvious, however, from what we hear of the great quantities of stones which have been carried away from the hill, and the enormous masses of ruined walls still scattered over its top, that the buildings, when complete, must have been of great size and height."

Mr Neish collected a number of relics in the course of the excavations, most of which were subsequently sent to the National Museum in Edinburgh,<sup>1</sup> among which the following may be noted:—

*Stone.*—Small cup, whorls and discs of sandstone, two flint chips, portions of vitrified sandstone with impressions of charred wood, stone with concentric circles.

*Bone.*—Double-edged comb and an implement with one end perforated.

*Bronze.*—Pin of a fibula, spiral finger-ring with four twists, a flat circular band of brass, an armlet with a pattern, and a copper coin.

*Iron.*—A small buckle, a pin with a ring-head, some large axes and an adze-head, portion of a single-edged sword, nails, needles, and fragments of implements.

*Organic Remains.*—Two bottles containing charred wheat and barley; a cowrie, and some land- and sea-shells; teeth of the horse, horn of a roebuck, and bones of domestic animals. Human remains were also found in stone cists, as well as elsewhere in the excavations.

One or two other excavated forts might be mentioned which have yielded a few relics, but their value, with regard to the question of chronology, is of no significance. I exclude the Dunbuie Fort, described by the late Mr Adam Millar,<sup>2</sup>

<sup>1</sup> Proc. Soc. A. Scot., vol. xvii. p. 300.

<sup>2</sup> Ibid., vol. xxx. p. 291.

because the strangely ornamented objects found in its *débris* appear to me not to be relics of any phase of Scottish civilisation. The presence of a couple of upper quern-stones among the relics vitiates the whole argument that this was a pre-Celtic fort of the Stone Age, as suggested by Mr Millar.

Forts perfectly analogous to the ordinary fortifications in Scotland are met with throughout the larger portion of Central and North-western Europe, and extend eastwards as far as the southern parts of Russia and the shores of the Black Sea. In Germany they are called *Burgwälle* or *Rundwälle*, and are distinguished as *Voroslavisch*, *Slavisch*, and *Spätoslavisch*—a distinction which has been suggested by the character of the pottery. Slavish pottery is always well burnt, and when it is decorated the ornamentation is in wavy lines running parallel to the rim—the well-known *Wellenlinie*. Wooden sub-structures are sometimes met with on the sites of the *Burgwälle*, especially in those situated in marshy localities, and also the remains of gangways in the form of a double row of the stumps of piles. The superstructures, of which nothing now remains, are supposed to have been of wood, agreeing in this respect with the motes of Scotland.

#### *Vitrified Forts.*

The variety of Hill-Forts known as “Vitrified Forts,” on account of a peculiarity in their structure, has gathered around it an extraordinary amount of literature, chiefly of a controversial and speculative character. Mr John Williams started the discussion by the publication, in 1777, of a work entitled, ‘An Account of some Remarkable Ancient Ruins, lately discovered in the Highlands and Northern Parts of Scotland,’ in which he enumerates six or seven vitrified

forts around the head of the Moray Firth, and two in other districts (Finhaven and Bochastle).

In his account of the fort on Knock Farril he describes the whole wall as having been run together and vitrified into a solid mass by the action of fire. Writing generally of these forts, he says: "But what is most extraordinary, these walls have been vitrified, or run and compacted together by the force of fire, and that so effectually that most of the stones have been melted down, and any part of the stones not quite run to glass has been entirely enveloped by the vitrified matter; and in some places the vitrification has been so complete that the ruins appear now like vast masses of coarse glass or slag." Since Mr Williams's time nothing has been written or discovered which, to my mind, in the least impugns the correctness and scientific value of his observations. That he did not excavate the whole wall, or that he mentions in one place a few stones which were not included in the vitrification, cannot surely be advanced as sufficient evidence to discredit his general statement that the whole wall was "less or more vitrified." Would it be possible under the ordinary circumstances then available, whatever the process or object may have been, to vitrify the walls of a fort so thoroughly as to leave no portion or stone unaffected? The fact is that none of the forts, even those which disclose in the clearest manner that their vitrification was the work of design, has been completely vitrified.

The real problem at issue is to account for the vitrification which, to a greater or less extent, is, or rather was, to be seen on the surrounding walls of some fifty stone-built forts scattered throughout the northern and south-western districts of Scotland, and covering a broad band stretching from the shores of the Moray Firth to the counties of Argyll and Wigtown. Of the various hypotheses advanced to account for this phenomenon

some may be at once ruled out of court, as, for example, that it is of volcanic origin, or that a liquid slag was poured like mortar between the stones when the fort was being built.

Looking at the problem from a practical point of view, the first observation to which I would direct attention is that the vitrification was effected by the external application of a great fire to the wall after it had been erected. Of the truth of this statement there can be no reasonable doubt. I have satisfied myself of its accuracy by a careful inspection of the more important vitrified forts in Scotland. On that at Carradale there is an uninterrupted portion of the eastern wall, extending for upwards of 100 feet, which is absolutely consolidated for a depth of 3, 4, and 5 feet from the top. In one or two places where previous visitors had picked a hole right through the wall it was clearly seen that the vitrification was less in the lower and central parts, and disappeared altogether towards the base, which consisted of small, flat, and mostly water-worn stones. If this be so, the only point on which there is room for a difference of opinion is, whether the vitrification was due to incidental causes arising from the action of beacon-fires, &c., or to fire kindled for the express purpose of fusing and thereby consolidating the materials of the wall. Present writers seem to range themselves as advocates of one or other of these alternative theories. For my own part, I see no reason for accepting either as a rigid dogma, to the exclusion of the other. Effects produced incidentally could be repeated designedly, so that vitrified forts may owe their peculiarity partly to the one and partly to the other. Nay more, it is even probable that it was the striking effect produced by beacon-fires on the wall which first suggested the idea of treating the entire wall in the same manner. At the same time, I hold firmly to the opinion that the vitri-

faction in many of the forts examined by me was the work of design, the special object being to consolidate into a mass the small stones of which the walls are usually composed.

All trap-rocks are readily fused under a moderate heat without a flux; and with the addition of an alkali, such as might be supplied by wood-ashes or dried seaweeds, most of the ordinary stones could be converted into the pudding-stone appearance and consistency presented by the walls of vitrified forts. Dr M'Culloch<sup>1</sup> makes an important observation, to the effect that the stones readily fusible were selected and carried from a distance by the fort-builders, and hence he justly argues "that they designed from the beginning to vitrify their walls." It is also noteworthy that vitrified walls are scarcely half as thick as those great stone walls with well-built double facings, such as we have seen in the forts of Burghead, Forgandenny, and Abernethy; so that, without some cementing element, the small stones of which they are composed could hardly be kept together or be of any use as a protective barrier. The economy in utilising collections of small stones by vitrification might also be an element in the construction of these forts, as the materials, being close at hand, could be easily carried to the tops of the hills on which they are generally situated.

As to the *modus operandi* by which vitrification was produced, the conclusion to which I came is, that the fire was laid over the entire wall, both sides and top being covered with the combustible materials. In a section of the wall at Beregonium, near Loch Etive, I noticed that, while the top and sides had a crust of vitrified materials over them, the interior was only partially affected. Some of the stones in the interior had large drops of slag adherent to them,

<sup>1</sup> Highlands and Western Isles of Scotland, vol. i. p. 292.

evidently due to the trickling of the stuff while in a liquid state.

Mr John Honeyman<sup>1</sup> has recorded some careful observations on the structure of the vitrified walls of several forts in the west of Scotland. In a portion of the walls at Rhufreosan and Dunagoil he describes the vitrified mass as a wedge, the thin edge penetrating downwards through the interior of the wall; and hence he forms a theory that the heat was applied to the top of the wall and not to the sides. But the facts he has recorded are, in my opinion, quite compatible with the supposition that the combustible materials were heaped both on the sides and top of the wall. If a flux were needed to produce vitrification it would be placed on the top of the wall, and here then fusion would first begin to take place, and so the liquid stuff, if in abundance, would readily flow down through the centre of the wall. I confess, however, that the phenomenon noted by Mr Honeyman has not come within my own experience, but, on the other hand, I have frequently noticed vitrification greatest at the sides and top, as at Carradale, already referred to. In regard to this fort, Dr Christison appears to have come to a similar conclusion, as he states that the masses are "much less vitrified below, particularly in the centre, than in the upper part."<sup>2</sup> This was clearly the case with the wall at *Arka Unskel* at Arisaig, described by Dr E. Hamilton,<sup>3</sup> who also maintains that the fire was applied on all sides. "This is proved," he writes, "by the internal part of the wall being unvitrified, solely because the heat did not extend so far, leaving the stones in their original condition, or only partly agglutinated, and only not fused because unable to be affected by the fire applied externally."<sup>4</sup>

<sup>1</sup> Trans. Glasgow Arch. Soc., vol. ii. p. 29, and vol. i., N.S., p. 340.

<sup>2</sup> *Op. cit.*, p. 182. <sup>3</sup> Arch. Journal, vol. xxvii. p. 227. <sup>4</sup> *Ibid.*, p. 241.

Mr James Macdonald's excavations on the Tap o' Noth conclusively showed that in this case the vitrification was confined to the upper part of the wall. This is one of the largest of the vitrified forts in Scotland, being 345 feet long and 126 feet broad, and still shows great masses of vitrification here and there all along its circumference; so that if the occurrence of beacon-fires is to be accepted as the incidental cause of this phenomenon, the fires must have been placed at regular intervals along the entire circuit of the wall.<sup>1</sup>

*Eilean Buidhe* (the yellow island), one of the Burnt Islands in the Kyles of Bute, has been long known as the site of a vitrified fort.<sup>2</sup> This fort, occupying the summit of the rocky islet, stands 21 feet above sea-level. According to the Rev. Mr Hewison,<sup>3</sup> it is in the shape of a "complete circle, 67 feet in diameter from crest to crest of the ruined wall, which in many parts is quite levelled and overgrown with rough grass, through which the fragments of the vitrified work appear. At other points the wall is in good preservation, showing at the north-east a face 4 feet high and 5 feet thick, and also on the south-east a solid mass of vitrification over 5 feet thick." Mr Hewison directs attention to a remarkable feature of this fort—viz., "the apparent stances of four towers at the cardinal points of the compass," each 14 feet in diameter.

It is a very rare occurrence to find the wall vitrified to its base, and when this is the case the vitrification generally rests on the solid rock, as at Dùn Skeig and Craig Phadrick. On the other hand, at Dunagoil there was to be seen a few years ago a large portion of the vitrified wall reposing on a basis of loose stones—a fact which readily accounts for the large masses, some tons in weight, which now lie at the base of the

<sup>1</sup> See Trans. Huntly Field Club, July 1887.

<sup>2</sup> Trans. Roy. Soc. of Edinburgh, vol. x. p. 79.

<sup>3</sup> Proc. Soc. A. Scot., vol. xxvii. p. 292.

Dun on its sea side. Large fragments may also be seen at the foot of Dùn Skeig, but in this case it requires some searching among the long heather to find them. At Dunideer the base of the sow-back hill on which the fort stood—for there is little of it now remaining—is strewn with pieces of slag, and, strange to say, some of them may be seen in the ruins of the old castle of stone and lime which had been subsequently built within the walls of the vitrified fort.

I have not observed any facts to indicate that, as regards the dimensions of the area enclosed, the vitrified differ from the non-vitrified forts. In this respect they are both alike in showing a wide range of variability, as may be gathered from the following notes:—

Carradale stands on a detached portion of a rocky promontory on the east side of Cantyre which, at high water, becomes an island. The surface, a small plateau some 70 feet above the sea-level, is almost entirely occupied by the fort, leaving little more than space to walk round it on the outside. Large portions of the walls, 3 to 5 feet thick and about the same in height, enclosing an oval space 60 paces in length and 26 in breadth, still remain *in situ*. Among the rocky *débris* at the base of the plateau, on the west side, I observed several portions of vitrified materials which had evidently fallen from the fort.

The fort of Dunagoil occupies the surface of a precipitous ridge of porphyritic trap, extending along the sea-shore at the south end of the island of Bute. This ridge, rising to the height of about 100 feet, presents a perpendicular face on the north and west, an accessible slope on the east, and an uneven plateau on the top. It is only on the south side and east end that the remains of vitrified walls are now to be seen. The area thus fortified by walls and cliffs is about 90 paces in length, and varies in breadth from 26 yards at the west end



to 12 yards at the east end, where there was an entrance. The wall followed the bow-shaped contour of the south margin of the ridge, and near its middle there was a short transverse wall dividing the enclosed space into two nearly equal divisions.

The vitrified fort of Dùn Skeig stands on the summit of a high conical hill on the south side of the entrance to Loch Tarbet. No position could be more suitable as a signalling station than this spot, as it commands extensive views both towards the mainland and the islands, including on clear days the north of Ireland. The ruins of the fort occupy the highest point of the hill, being only a few paces from the brink of the precipice. It has an oval shape, measuring 28 paces from east to west, and 18 from north to south. The vitrification would appear, from the traces still remaining, to have extended continuously along the entire wall. Here and there bits of slag might be seen resting on the natural rock, where it crops up, and others lying on a basis of loose stones. It was difficult to estimate with accuracy the original thickness of the wall, but, so far as I could judge, it would not be more than 6 to 8 feet. What its height may have been there is no evidence to show.

The famous vitrified fort which crowns the picturesque hill of Knock Farril, some two miles west of Dingwall, Ross-shire, overlooks the richly cultivated valley of Strathpeffer. My last visit to it was in the summer of 1896. The summit is an elongated oval, some 200 paces in length by 40 in breadth, narrowing, however, at both ends. The remains of the walls of the fort are still considerable, enclosing a space 126 paces long by 30 broad; but at the ends there are other remains of walls which, though now detached from the central division, were probably part of the original fort. Along the lines of these walls several masses of vitrified materials, two of them

measuring about 9 feet in length, may still be seen cropping up through the greensward which clothes the summit.

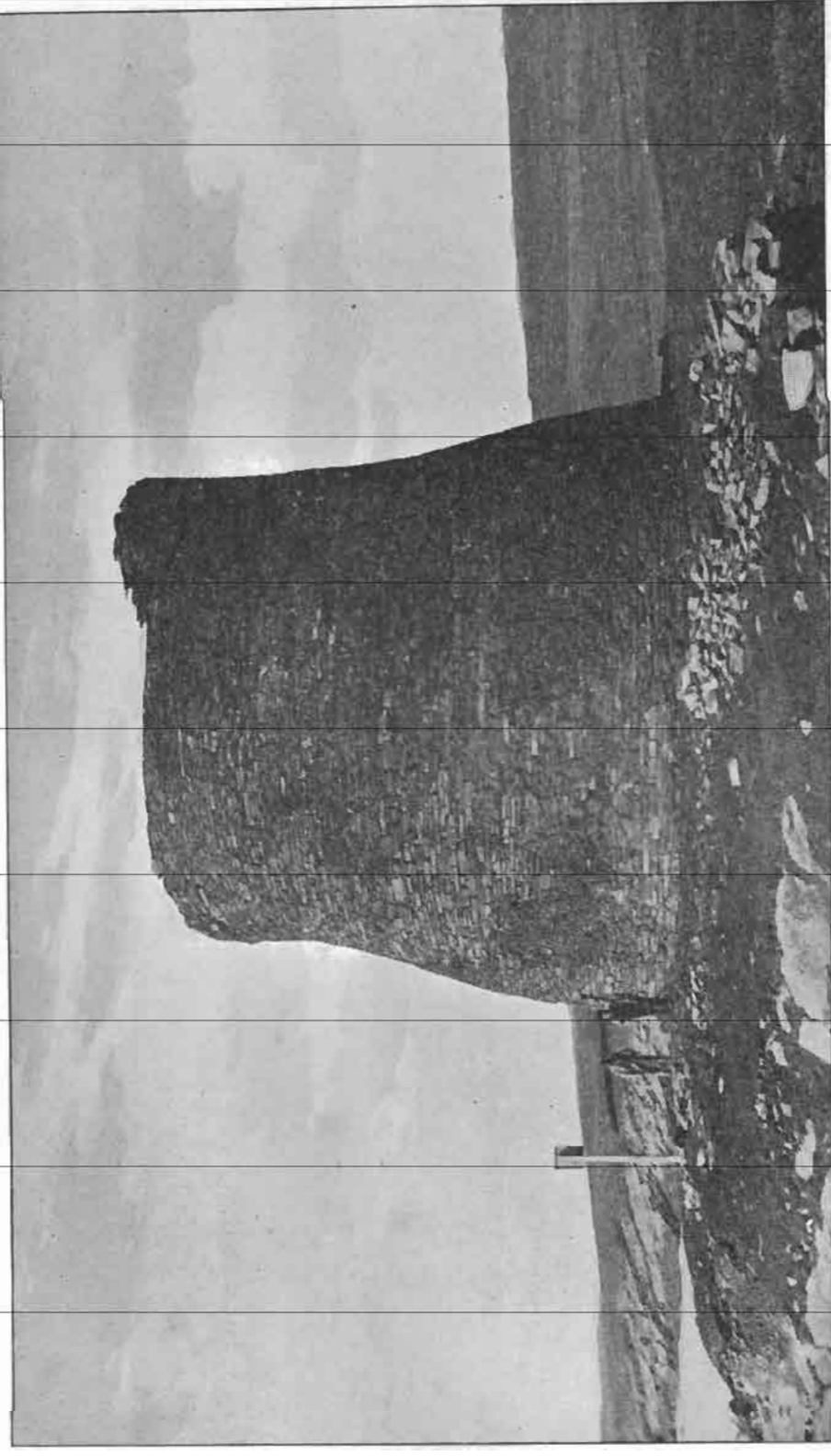
Neither do the relics found on the sites of vitrified forts suggest that they differ chronologically from the ordinary forts. Dr Angus Smith,<sup>1</sup> in the course of his excavations at Beregonium, found a single-edged dagger-blade of iron, 10 inches long, having a thick back and a tang for insertion into a handle; a finger-ring of bronze; and an enamelled disc of bronze ornamented with a series of concentric circles of red enamel of Late Celtic character. The structure on the top of the Laws in Forfarshire is the only other vitrified fort which has yielded relics, and, as already seen (p. 379), these do not carry us back beyond the Iron Age.

Outside the Scottish area the distribution of vitrified forts is somewhat remarkable. Four are stated, on the authority of Dr Petrie, to be in Londonderry<sup>2</sup> and one in Cavan.<sup>3</sup> I am not aware of their existence in England, unless we accept as such some calcined walls found in British camps at Bristol. In the vicinity of the Clifton Suspension Bridge there are, or rather were, three great intrenched forts occupying promontories on the precipitous cliffs on both sides of the Avon. One is at the Clifton end of the bridge, and the others—"Bower Walls" and "Stoke Leigh"—on the opposite side. It is stated<sup>4</sup> that when the ramparts of the Bower Walls were demolished the innermost, which stood 22 feet above its ditch, contained a central core of a hard material like cement. Quantities of a similar material may be seen on the remains of the Clifton fort near the end of the bridge. The calcification appeared to me to be the result of exposure of the materials of the wall to great heat; but the stones being lime-

<sup>1</sup> Proc. Soc. A. Scot., vols. ix., x., xi., and xii.

<sup>2</sup> Stokes's *Life of Petrie*, p. 223.    <sup>3</sup> *Trans. R. I. Acad.*, vol. xiii. p. 123.

<sup>4</sup> Proc. Somerset. Arch. Soc., vol. xv. p. 27.



*From a Photo by J. Valentine, Dundee.*

PLATE XV.—BROCH OF MOUSA, SHETLAND.

stone, the effect was a calcination rather than a vitrification. This phenomenon is worth looking into, as camps with similarly constructed walls have been described in France.<sup>1</sup>

Of the ordinary vitrified forts, several have been noticed in Brittany and Normandy,<sup>2</sup> Saxony, Bohemia, Silesia, Thuringian Forest, and the Rhine district.<sup>3</sup>

## II. BROCHS.

Like the vitrified forts, those massive tower-like buildings known as *Brochs*, and found nowhere else but in Scotland, have given rise to a considerable amount of controversial literature. Before they succumbed to the ravages of time, which have now reduced the great majority of them into an unrecognisable heap of ruins, some 400 might have been seen conspicuously dotting the more fertile lands along the shores and straths of the counties of Caithness, Sutherland, Ross, Inverness, Argyll, the islands of Orkney, Shetland, Bute, and some of the Hebrides. Outside this area only seven examples have as yet been recognised as true brochs—viz., two in Forfarshire, and one in each of the counties of Perth, Stirling, Mid-Lothian, Selkirk, and Berwick. The special characters of these remarkable buildings are so uniformly alike that, except in regard to a few minor differences—chiefly dimensions—it may be asserted, as literally true, that what applies to one applies to the whole—so much so, indeed, that it has been seriously maintained that they were all built at the same time and from one plan.

The most perfect now extant is the broch of Mousa (Pl. XV.), situated on a small island in Shetland. It is built

<sup>1</sup> Camps vitrifiés et Camps calcinés. Barthélemy.

<sup>2</sup> Mem. de la Soc. Antiq. de France, vol. xxxviii. p. 83.

<sup>3</sup> Lake-Dwellings of Europe, p. 332; Proc. Soc. A. Scot., vol. viii. p. 145.

of dry-stone masonry, 50 feet in diameter and 45 feet high. At some distance it looks like a truncated cone, but closer inspection shows it to be a circular wall, 15 feet thick, and enclosing an open court 20 feet in diameter. The outside wall-face slants a little inwards from base to top, but the inner is nearly perpendicular. An entrance passage, 5 feet 3 inches high and 2 feet 11 inches wide, with jambs and lintels of flagstones, forming a kind of tunnel right through the wall, is the only access to the court. Four door-like openings may be seen in the wall facing the court near the ground-level, and about equidistant from each other. Three of these openings lead into oval-shaped beehive chambers, constructed in the solid wall and having their major axes in the direction of the curve of the wall. The other opens into a small recess from which a spiral stair made of undressed flagstones ascends to the top. On mounting the stair for about 10 or 11 feet we find that the surrounding wall, which up to this point is solid, with the exception of the beehive-chambers already referred to, now becomes split into two walls, leaving a vacancy, about 3 feet in breadth, between them. At successive intervals upwards this inter-mural space is bridged over with flagstones, thus dividing it into a series of galleries running round the entire building. The lower galleries are from 5 to 6 feet high, but as we ascend they diminish in height. The stair continues its spiral course to the top, intersecting these galleries, and thus gives access to them all. They are lighted from the interior by shallow openings, or windows, which look into the court. No access to any part of this curious structure can be got except by the passage on the ground-level, about the middle of which there is evidence to show that it had been protected by a stone door barred from within. In other brochs there is usually a guard-chamber on one or both sides of the entrance

passage, constructed in the solid wall, after the manner of the beehive chambers.

Of the other brochs there are now only a few which show any considerable portion of their walls above the fallen *débris*, the rest looking like dilapidated tumuli or cairns. Sometimes, indeed, a cultivated hillock, over which the plough has regularly passed for centuries, conceals beneath it the well-defined foundations of a broch. Of their present ruined condition the broch at Ousdale, Caithness, excavated by Mr James Mackay<sup>1</sup> in 1891, furnishes a good example. The situation and general appearance of the ruins are thus described: "It stands on a prominent eminence near the confluence of the Ousdale and Borgue burns—one mile from the Ord of Caithness, four miles from Berriedale, and about 400 yards from the sea, commanding a good sweep of the latter. On one side it is protected by the steep precipice of the Borgue burn, and on the remaining sides by ramparts consisting of a well-built wall about 8 feet thick, and faced apparently with a dry ditch. The outworks surround the tower on three sides, and show signs of a second occupancy by a later and inferior race. The style of building of the hut-circles, of which the outworks are composed, is to a certain extent copied from that of the original broch in so far as the overlapping of the stones for the purpose of forming arches consist, and they were probably built with material taken from the tower after it had fallen into ruins.

"The broch presented the usual appearances of a grass-covered mound with stones cropping up over the surface. The entire diameter of the tower is 50 feet, and the diameter of the inner area or court 24 feet. The walls are 14 feet thick at the entrance, and 12 feet thick at the other side. The highest part of the wall remaining is 14 feet; and although

<sup>1</sup> Proc. Soc. A. Scot., vol. xxvi. p. 351.

this hardly shows sufficiently the traces of galleries, the presence of stairs shows their former existence. The inner court was completely filled up with stony detritus to a depth of 10 feet,

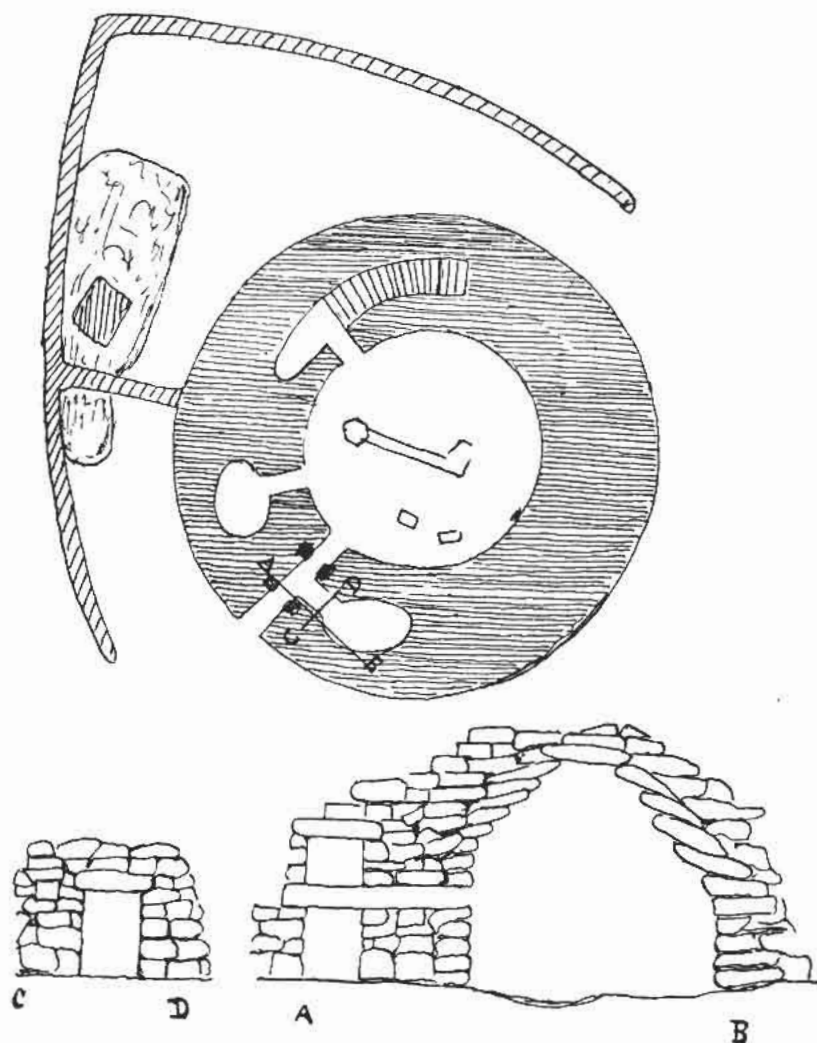


Fig. 225.—Ground-plan and sections of broch of Ousdale, Caithness.

and the remaining 4 feet consisted of charcoal and what appeared to be ashes of peat in alternate layers."

As will be seen from the plan and sections (fig. 225), the broch contained an entrance-passage, with wall-checks for

two doors and a guard-chamber between them; a chamber in the wall entering from the court; and a third chamber from which the stair ascended. All these chambers were constructed with beehive roofs, and the doorways heavily linteled. In the guard-chamber "was found a cist, 2 feet square, covered over with a flag, and containing ashes, charcoal, and a dark unctuous clay. . . . At a height of 8 feet from the floor a scarcement or ledge, nearly a foot in width, ran round the entire inner court; but, unlike that in most brochs, it is undoubtedly part of the original building, and not a secondary construction." In clearing out the chamber at the foot of the stair a human skeleton was discovered, head downwards, roughly built in and covered with small stones and earth. Of the interior and its contents Mr Mackay gives the following account: "At about 4 feet above the real floor were found traces of a second occupation, probably after the tower may have been partly in ruins, several partitions of large slabs set on end being found at this level. The real floor of the central court consists of 2 feet of fine puddled clay laid on the natural bed. This floor was covered with layers of ashes and charcoal, which contained large quantities of animal bones, many half burnt, and some split for the purpose of extracting the marrow. Large quantities of shells of the limpet and periwinkle were also found, and a considerable quantity of wild-hazel nuts. The following articles were also found amongst the ashes on the floor and throughout the building: A damaged stone hatchet, with a slight groove round the centre; a granite mortar carefully hollowed out, the hollowing being 1 foot in diameter and 10 inches deep; several very rude mica-schist querns, some of which are broken; stone mullers; stone hammers or 'pounders,' generally much abraded at one end, and sometimes at both; three mica-schist discs, eight inches in diameter, with holes two inches in diameter through the centre; several



whorls in sandstone and steatite ; a large quantity of fragments of very coarse hand-made pottery, fire baked, some composed of a layer of black clay inside and a layer of red outside,—the shapes appeared to be globularly bulging, with everted rims ; part of a small cup of a finer blue clay, with flat bottom and slightly bulging sides ; several specimens of whetstones ; part of a wooden dish or scoop with everted rim, apparently about 5 inches in diameter and 2 inches in depth ; a piece of polished lignite, which may have formed part of an armlet.”

The animals represented by the osseous remains, as identified by Dr R. W. Reid, Professor of Anatomy in the University of Aberdeen, were deer, ox, sheep, hare, and a large bird.

From historical evidence we know that many of these brochs were formerly much higher than they are now. Dun Carloway, on the west coast of the island of Lewis, is said to have been 40 feet high in the end of last century ; and it is still, next to that of Mousa, the best preserved. Pennant describes the broch at Glenelg as being in his time (1776)  $30\frac{1}{2}$  feet high, and he adds that  $7\frac{1}{2}$  feet had just been removed. Mr Low, in his ‘Tour through Orkney and Shetland’ (1774), states that the “Pight’s” castle at Burray, in the island of Yell, was 20 feet, and that at Cullswick 23 feet, in height. The natural inference is that formerly they were all sufficiently lofty to prevent an attacking party from climbing over the walls.

As regards the structural peculiarities and special design of brochs, Dr Joseph Anderson, one of our most distinguished investigators of brochs, thus expresses himself : “The design of the whole structure and the arrangements of all its separate parts exhibit a careful and laborious adaptation of means and material to the two main objects of shelter and defence. The clever constructive idea of turning the house outside in as it were, placing its rooms within its walls, and turning all their

windows towards the interior of the edifice, implies boldness of conception and fertility of resource. The height of the wall, which effectually secured the inmates against projectiles, also removed its essentially weak upper part beyond reach of assault, while the pressure of its mass knit the masonry of the lower part firmly together, and its thickness made it difficult to force an entrance by digging through it—if such a wall could be approached for this purpose when the whole of its upper materials were deadly missiles ready to the hands of the defenders. The door, securely fastened by its great bar, is too strong to be carried by a rush. Placed 4 feet or more within the passage, it can only be reached by one man at a time, and the narrowness of the passage prevents the use of long levers. In all probability the door itself is a slab of stone, and impervious to fire. But even if it is forced, and entrance gained to the interior court, the enemy finds himself as it were in the bottom of a well 30 to 40 feet in diameter, with walls 50 feet high, pierced on all sides by vertical ranges of windows, or loopholes, commanding every foot of the same space below, and rising to the number of twenty or more, immediately over the door which gives access to the galleries. In short, the concentration of effort towards the two main objects of space for shelter and complete security was never more strikingly exhibited, and no more admirable adaptation of materials so simple and common as undressed and uncemented stone, for this double purpose, has ever been discovered or suggested.”<sup>1</sup>

*Such being the structural characteristics* of the brochs, we have now to glance at some of the minor differences and peculiarities observed in individual specimens. And, first, as regards the more constant characters there may be slight variations. For example, the entrance-passage may have

<sup>1</sup> Scotland in Pagan Times, p. 203.

one or two doors, one or two guard-chambers, or none at all. Thus in the broch of Glenelg, Inverness-shire, the entrance-passage, at 4 feet from its outer end, has large slabs set on end as door-checks, but from this point inwards it widens, the roof becomes more lofty, and on the south side there is a guard-chamber. In the broch of Kettleburn there are two guard-chambers, one on each side of the entrance-passage. The broch of Carn-liath, in Dunrobin Park, presents a more exceptional deviation from the rule in having no chambers in the wall entering from the ground-floor, but instead of them there were in the court area two underground chambers faced with flags.

The broch of Kintradwell is described by Dr Joass<sup>1</sup> as having check-pieces fixed in the wall for two doors, the first 6 feet and the second 14 feet from the outer end of the entrance-passage, with a guard-chamber between them. Also at the side of the central area there was a well, 7 feet deep, with some stone steps leading down to near its bottom. On one of these steps a stone cup, 5 inches in diameter, was found, probably used as a drinking-cup. There were, however, some further peculiarities which, in the opinion of the explorer, formed no part of the original structure. Round the open court there had been constructed a wall, 8 feet high and 1 foot thick, the object of which was to supply a ledge or scarcement for supporting a wooden roof. Also, outside the broch proper, the ground was covered for a distance of 20 yards with a medley of the foundations of buildings of an inferior order of architecture. Among these ruins, at a depth of from 2 to 2½ feet from the surface, ten skeletons, in a much decayed condition, were discovered. Along with one of these skeletons there was an iron spear-head, and with another the blade of an iron dagger. Dr Joass considered

<sup>1</sup> *Archæologia Scotica*, vol. v. p. 95.

these burials to be of a later date than either the broch or its secondary buildings.

Similarly, the broch of Yarhouse, excavated by Dr Joseph Anderson, had associated with it, both outside and inside, a mass of secondary buildings, among the ruins of which human skeletons were found. These Dr Anderson believed to have been buried after the broch and its outhouses had already succumbed to the ravages of time to the extent of becoming a grassy mound. Near one of the bodies lay a flat circular brooch of brass, bearing an inscription which identifies it with brooches of the twelfth and thirteenth centuries. There were casual interments during Christian times, but there is evidence which connects the custom with paganism as well. Dr Petrie describes a small cemetery of stone cists with burials after cremation, overlying the ruined broch of Okstrow in Orkney.<sup>1</sup>

Like that at Kintradwell, the broch of Yarhouse contained an interior wall built of inferior masonry against the original wall of the broch, and attached to it were remains of partitions. "These partitions," writes Dr Anderson,<sup>2</sup> "were partly built, and partly formed of long slabs set on end. They rose to about 8 feet—the same height as the scarcement. The partitions and the inner wall forming the scarcement were founded on an accumulation of rubbish largely mixed with ashes and food-refuse, which covered the original floor of the broch to the depth of 12 to 14 inches. They were therefore clearly secondary constructions, made to adapt the broch to the purpose of a secondary occupation." Similar proofs of later adaptations of the brochs to different conditions of life have been observed in many other instances, as at Burwick, Kettleburn, Lingrow, &c.

Many of the brochs were built in positions evidently selected

<sup>1</sup> Arch. Scot., vol. v. p. 76.

<sup>2</sup> Scotland in Pagan Times, p. 229.

for natural strength, such as Cole's Castle, near Brora, Sutherlandshire, which occupies the top of an isolated eminence accessible only on one side.<sup>1</sup> Others occupied promontories or small islands in lakes, such as the brochs of Snaburgh and Burreness, both in the island of Unst, in Shetland, which were protected by fortifications and ditches on the land side. The broch of Clikamin, at Lerwick (Pl. XVI.), though on an island, was fortified by a thick stone wall which completely surrounded the island. Inside this enclosure was the broch proper, strengthened in the usual way. The loch is now lowered and visitors can approach the ruins on foot, but it will take them some time to master the intricacy of the structure with its doors, passages, guard-chamber, vaults, &c. The broch on Cockburn Law, known as Edenshall,—identified as such by the remains of a stair and beehive chambers in the thickness of the wall,—is important as being surrounded by a double rampart of earthworks in the ordinary manner of the British forts. The broch was one of the largest known, its wall being 17 feet thick and the area enclosed no less than 56 feet in diameter. Outside the broch, but within the area defended by the earthworks, are numerous ruins of circular huts and other buildings, as shown on the accompanying plan (Pl. XVII.), taken from Mr John Turnbull's account of this remarkable stronghold.<sup>2</sup>

The relics collected on the sites of brochs are not less instructive than the buildings themselves, inasmuch as they disclose, with tolerable fulness, the culture and social condition of their occupants. On comparing the various collections derived from the very considerable number of excavations now recorded, they appear so marvellously alike that, with the exception of one or two stray objects from

<sup>1</sup> Proc. Soc. A. Scot., vol. xv. p. 310.

<sup>2</sup> Proc. Berwickshire Nat. Club, 1879-81.



*From a Photo by G. W. Wilson, Aberdeen.*

PLATE XVI.—BROCH OF CLIKAMIN, LERWICK.

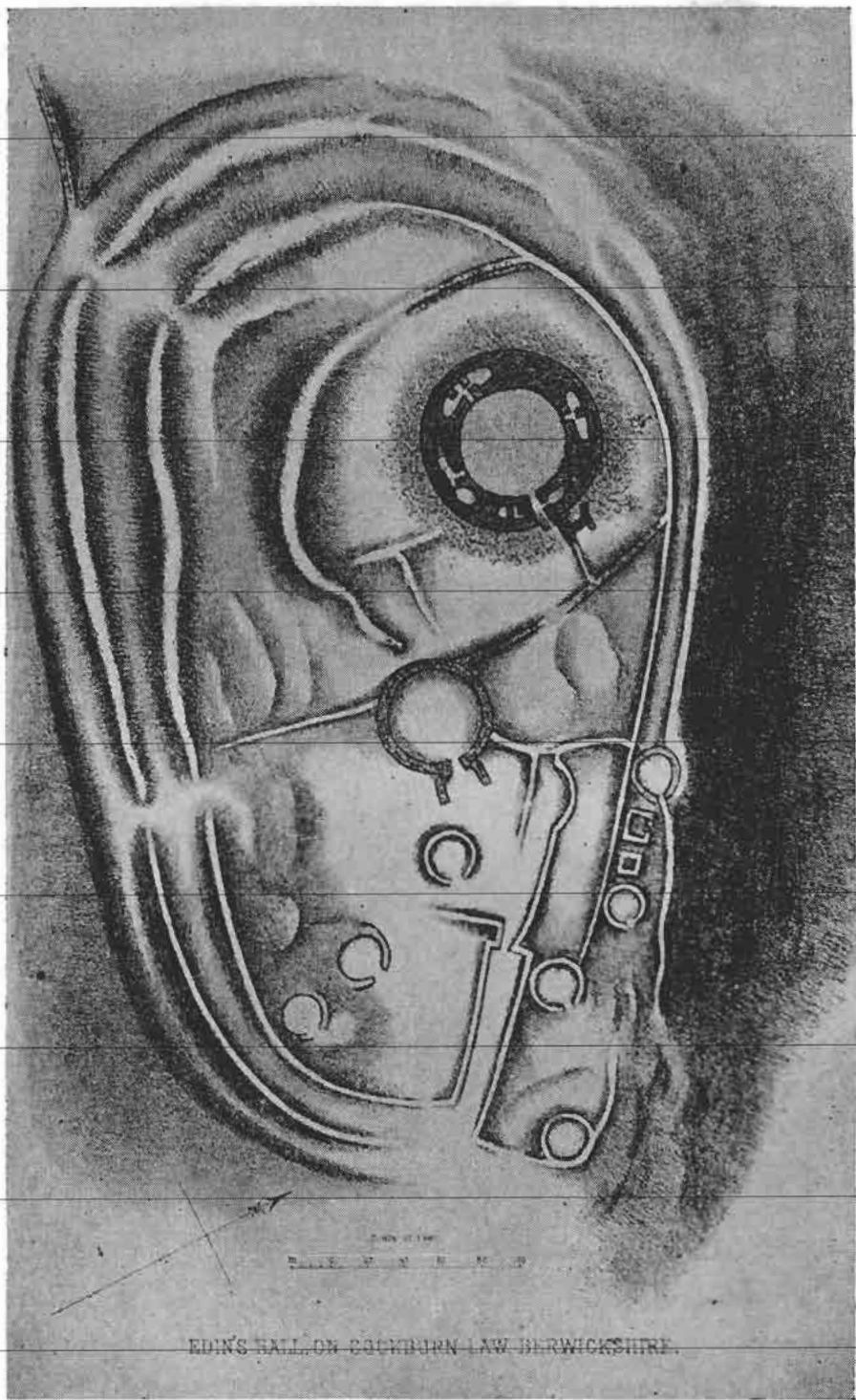


PLATE XVII.—EDENSHALL, COCKBURN LAW, BERWICKSHIRE.

foreign cultures, they may be discussed as one homogeneous group. The following may be noted as the most common :—

*Stone.*—Querns, rubbers, hammer-stones, polishers ; oval or circular cups, mortars, pestles, whorls, discs, balls, whetstones ; vessels of steatite, &c.

*Horn and bone.*—Pins, bodkins, buttons, knobs, long-handled combs supposed to have been used in weaving, toilet combs (fig. 226), needles ; handles for knives and instruments are largely represented.

*Bronze.*—Objects of bronze are not numerous, being confined to pins, armlets, and buckle-like brooches.

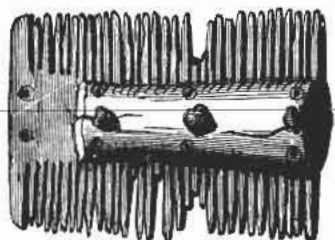


Fig. 226.—Bone comb from the Knowe of Saverough, Orkney ( $\frac{1}{2}$ ).

*Iron.*—Objects of iron are also sparingly represented, and they are generally so much corroded that it is difficult to identify them. As specific implements and weapons may be noted the knife, socketed chisel, spear, and dagger.

*Pottery.*—Fragments of pottery are common, showing a coarse unglazed ware in the form of globular vessels with everted rims.

The animals used as food by the inmates of the brochs are abundantly represented in the accumulated refuse-heaps found on almost all the sites hitherto explored. They are chiefly the following : Red- and roe-deer, ox, sheep, goat, pig, horse, dog, whale, seal, various kinds of fish, and the common edible molluscs.

Among the relics regarded as exceptional and special the following may be noted :—

1. In the broch of Carn-liath there were found rings of shale or lignite, some in the process of being manufactured ;



two plates of hammered brass ; and a silver fibula of Roman type.<sup>1</sup>

2. At Kettleburn a pair of bronze tweezers,  $4\frac{1}{2}$  inches long and  $1\frac{3}{4}$  inch in breadth, elegantly manufactured and ornamented after Late Celtic style.<sup>2</sup>

3. The broch of Dunbeath, excavated by Mr T. Sinclair, contained chambers loftier than usual, and among the relics were an iron spear-head and a whetstone. A quantity of charred grain, bere, and oats was found on the floor.<sup>3</sup>

4. In one of the brochs in the parish of Harray an ornamental bronze knob (fig. 227) was found, which is of much interest as being almost identical with a number of objects found on the crannog of Lisnacroghera<sup>4</sup> (Pl. VI., Nos. 28-30).



Fig. 227.—Bronze object found in a broch in Harray ( $\frac{1}{2}$ ).

5. Fragments of Samian ware were found in the brochs of Burray and Okstrow, as well as in one at Keiss, recently explored by Sir F. T. Barry ; and four silver coins of the Roman Empire, in the outhouses of the broch of Lingrow.

6. The broch of Torwoodlee, Selkirkshire, recently investigated by Mr James Curle,<sup>5</sup> is remarkable for the preponderance of relics emanating from Roman civilisation found on its site. These include Samian pottery, glass vessels of well-known Roman types, armlets of opaque glass with enamel, a bronze disc with enamel, and some harness-rings in Late Celtic style of art.

<sup>1</sup> Arch. Scot., vol. v. pl. xvi.

<sup>2</sup> Proc. Soc. A. Scot., vol. i. p. 266.

<sup>3</sup> Arch. Scot., vol. v. p. 146.

<sup>4</sup> Proc. Soc. A. Scot., vol. vii. p. 103, and 'Lake-Dwellings of Europe,' p. 383.

<sup>5</sup> Proc. Soc. A. Scot., vol. xxvi. p. 68.

7. Among miscellaneous objects are a stone pebble with a hollow streak (fig. 228), supposed to be a strike-light, a clay mould for casting bronze pins (Lingrow), disc made of bone (Burrian), double-edged combs like those from the Terp-mounds in Holland, a stone with two triangles crossed, the metatarsal bone of an ox with incised symbols of a crescent crossed with a V-shaped sceptre, a cross of Celtic form, a fish, an ogham inscription, and a cup made of the vertebra of a whale.

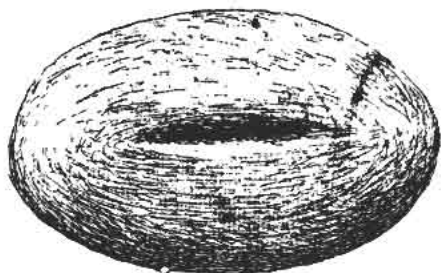


Fig. 228.—*Quartz pebble from the broch of Kintradwell ( $\frac{1}{2}$ ).*

This is but a meagre account of the archæological phenomena disclosed by the explorations of the Scottish brochs. The problem now to be considered is, Who were the people who constructed and inhabited them? Their geographical distribution coincides so fully with that of the roving Norsemen in their excursions to our shores, that in answer to the above question two possibilities are suggested: "Either they were erected by the Picts or Celtic races who inhabited these islands from the earliest times to which history and tradition ascend; or they were the work of the Norwegians who settled on the islands in or before the eighth century after Christ, and finally conquered and extirpated the Celtic inhabitants."

The problem at issue is fairly well set forth in the above statement by James Fergusson, F.R.S., who energetically defended the latter alternative, or Norwegian theory of the origin of the brochs, in a special treatise entitled 'The Brochs and the Rude Stone Monuments of the Orkney Islands' (London 1877). As Mr Fergusson's essay had to a large extent assumed a polemical character, mainly directed against

the views of Dr Joseph Anderson, who held the other, or Celtic, theory of the origin of the brochs, the latter was constrained to take up the challenge. His reply will be found in the 'Proc. Soc. A. Scot.,' vol. xii. pp. 314-356. I cannot recall any scientific controversy that repays perusal better than these two essays; but even should I have space to summarise the arguments *pro et con.*, it would be an injustice to my readers to deprive them of the full effect of the argumentative style and methods of two such able and competent controversialists. As I agree with Dr Anderson's views in this matter, it will suffice here to state, in a condensed form, the conclusions he arrived at in regard to the brochs, after a comprehensive survey of their structural characteristics, their geographical range, and their contents, with special reference to the questions of their origin and their relation to other antiquities in Northern Scotland. They are as follows:—

1. The brochs are allied by their structural characteristics to the Celtic and not to the Norwegian group of stone monuments, in which no instance of a vaulted chamber ever occurs.

2. Their geographical range and local distribution imply their native origin, and are incompatible with the theory that they were built by the Norwegians.

3. The Norwegian remains from graves of the Viking period in Scotland are wholly similar to the remains of the Viking period in Norway, and are thus easily distinguishable from the Celtic remains with which they are locally associated.

4. The general *facies* of the group of relics found in the brochs agrees completely with that of the group of relics of the post-Roman period of Celtic Scotland, and this is sufficient evidence that their occupants were not Norwegian.

Among the more recent investigations of brochs the most important are those conducted by Sir F. T. Barry, Bart., M.P., on his Keiss estate and elsewhere, in Caithness—no less than

eight brochs having been excavated by him during the last few years, including the "Harbour Mound," partially explored by the late Mr Samuel Laing, M.P., and described in his 'Pre-historic Remains of Caithness' (1866). A communication on the results of these excavations, by the explorer, was read at the Society of Antiquaries, London, on the 8th of June last; and its publication will be awaited with much interest, mainly to see if his discoveries have a tendency to shift backwards the chronological horizon usually assigned to these structures—as was the case with the remains found in the broch at Torwoodlee, which point to a period close on the Roman occupation of the district. The relics, some of which I recently saw at Keiss Castle, are generally of the same character as those already found on the sites of the northern brochs. Among them may be noted—long-handled combs, implements of deer-horn, pottery (including two small pieces of "Samian" ware), bone pins and a bone needle, whorls, whetstones, stone lamps, mortars and cups; also bones of the great auk, part of the antlers of the elk and reindeer, and the tooth of a bear (see p. 91). The broch of Nybster was on a small promontory, with precipitous sides, jutting into the sea. Before excavations its site was a greensward with a ditch across its narrowest part. Parallel to this ditch there was a stone wall, 15 feet thick, containing an entrance passage with check-pieces for two doors, and on each side of its inner end were a few steps of a stair leading to the top of the wall. The broch, with its entrance facing the south, was immediately beyond this rampart, and in front of it were remains of outhouses which, unlike the generality of brochs, showed no indications of having been due to secondary occupation. Indeed all these structures appeared to me to have been the component parts of one original fortification.