

III.—*Notice of the Brochs or Large Round Towers of Orkney. With Plans, Sections, and Drawings, and Tables of Measurements of Orkney and Shetland Brochs. (Plates VII.—X.)*

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There are in the northern counties of Scotland many ruinous buildings, apparently belonging to an early period of the country's history. They are locally known by the name—"Picts' houses;" but as that includes buildings differing greatly from each other apparently in design as well as in construction, no definite information is conveyed by the announcement that a Pict's house has been discovered. As it would however be difficult, and perhaps not desirable, wholly to discard the name, I have, in endeavouring to classify the ancient buildings in Orkney, restricted its application to a class of structures generally of a conical form, of which one on Wideford Hill, near Kirkwall, opened by me in 1849, and described by Dr Daniel Wilson in his "Prehistoric Annals of Scotland," may be taken as a type. They are either wholly or mostly above ground, and are totally distinct from the subterranean buildings, which are also found in considerable numbers in Orkney. But there is a third class of structures very numerous in Orkney and Shetland, and of a very different construction from either of those already mentioned. I refer to the "burgs" or "brochs;" and as the ruins of several of those in Orkney have lately been excavated and examined, my object at present is to endeavour, from notes and measurements taken on the spot, to give a description of them, and of the relics found during the excavations.

As a preliminary, and tending to prove the very considerable antiquity of the brochs, I may call attention to the opinion expressed by the late Professor Munch, that the Scandinavians, on their arrival in Orkney, gave the name of Burgar-ey (Burg-island) to an island where are still to be seen the ruins of two brochs near the sea-shore, within a few hundred yards of each other, and, at no great distance from them, a large mound, supposed to be the ruins of a third broch. Another fact corroborative of the antiquity claimed for these buildings, is the great number of farms in Orkney bearing the name of

“Broch.” There is always a mound in their vicinity; and where the mound has been opened, the ruins of the old “*burg*” have been found. Lately, the names “Over or Upper Broch,” and a “Nether Broch,” in the parish of Harray, led me to suppose that there must have formerly been brochs in the locality. I have since ascertained that there is a large broch in the *township* of Over-Broch, and a similar one in Nether-Broch. The term “broch” was probably at first limited to the old round tower, and afterwards gradually extended to the surrounding lands, until it embraced a district large enough to form a town (the old Norse “*Tún.*”)

The burgs or brochs in Orkney are all so much dilapidated, that probably none of those now remaining exceeds one-third of the height of the original structure, as is shown not only by the extent of the ruins, but also by an examination of the broch of Mousa in Shetland, which, although incomplete, is yet about forty-four feet high. They were massive round towers, varying considerably in size, and occasionally in form. The outer face of the wall of the Orkney brochs is either nearly perpendicular, or, as at Ingas-howe, in the parish of Firth, gradually curves inward from the base, till, at its present height of 9 feet, the outer edge of the wall is 2 feet within the line of the outer edge of the base. At Burian, in Harray, the batter of the wall is about 10 inches in 5 feet. The only opening externally is the door or entrance. Generally, there are various outworks, such as earthen or stone ramparts, fosses, and encircling walls; but these are apparently of a later date than the tower. Additions and alterations have also been made in the interior of most of the brochs, which makes it often difficult to distinguish between the original structure and the later additions.

#### THE BROCHS IN BURRAY.

Both the brochs near the shore in the island of Burray, already mentioned, have been excavated by Mr Farrer. The first was opened about fifteen years ago, and cost much labour and expense. The mound formed by the ruins was about 20 feet high, and was covered, as usual in such cases, by a beautiful green sward, through which stones cropped out here and there. It is surrounded by an embankment which has not been cut into, but appears to be constructed of earth and stones. The embankment starts from the sea-beach or cliff on the east side, sweeps round the broch to landward, and returns to and terminates at the beach on the

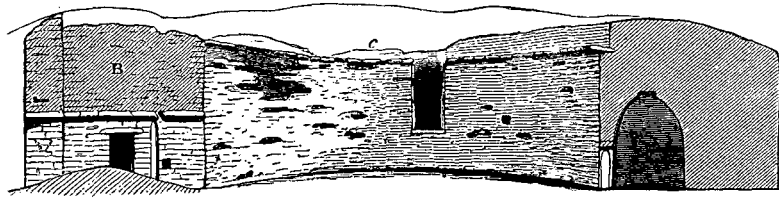


Fig. 2.—East Broch, Burray. Section on a line C to H.

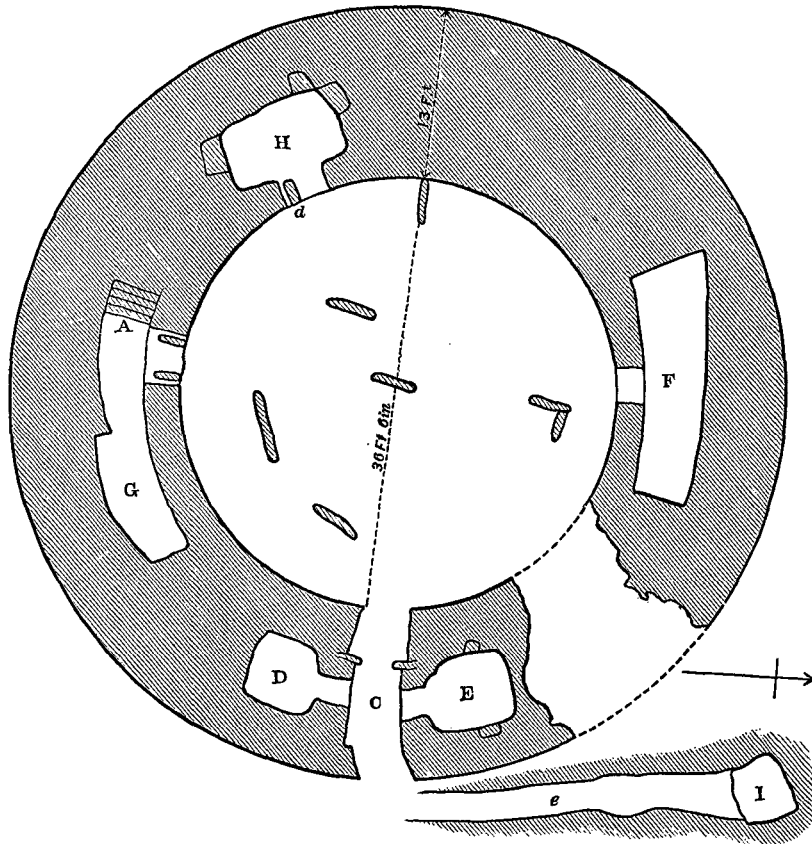


Fig. 1.—East Broch, Burray. Ground Plan.

[Scale one-sixteenth inch to one foot.]

west side of the building, The door or entrance passage is close to the point where the embankment approaches the curve of the broch, on the east side. About mid-way through the passage there is a low narrow opening on the level of the floor, on the right hand side, leading to the chamber E, and a similar opening on the left into the chamber D. (See the accompanying ground-plan, Plate VII., fig. 1). These chambers have no other aperture of any kind. The entire length of the entrance passage C is 15 feet, which is the thickness of the wall of the broch. The inner end of the passage opens into the interior of the building or enclosed area, which is about  $36\frac{1}{2}$  feet in diameter. Nearly opposite the inner end of the passage is the low entrance to the chamber H, while on the right and left hand sides respectively, about  $2\frac{1}{2}$  feet above the level of the floor of the broch, are the entrances to the chambers F and G. The chambers D, G, and H, have their roofs entire. The appearance of the chamber G, which is filled with stones and rubbish at the outer end opposite to its entrance, leads me to think that it has been a chamber at the foot of a staircase. The staircases of two other brochs in Orkney which I have examined are constructed in the same way.<sup>1</sup> Over the entrance passage is a recess (B, fig. 2) of nearly the same width as the passage, extending across the wall to within 3 feet of the outside. As the roof is wanting, the original height of the recess is not known.

A remarkable feature in this broch, which I have seen also in others, is a projecting ledge of stones around the inner face of the wall, at a height of about 12 feet above the floor of the broch. (See Plate VII., fig. 2). Immediately above the stone ledge the inner face of the wall recedes about half a foot; and as the projecting stones also extend half a foot beyond the face of the wall beneath them, the entire breadth of the ledge is about a foot. On a level with this ledge is an entrance or doorway, which appears to lead to a gallery in the thickness of the wall.<sup>2</sup> This arrangement is still more clearly seen in other Orkney

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<sup>1</sup> Since the above was written I have ascertained that my conjecture was correct; for, having employed some men in July 1866 to dig into the ruins at the point mentioned, a roomy and tolerably well constructed staircase, having twenty stone steps, was found at the spot I had indicated. (See A in plan).

<sup>2</sup> The entrance has been found by the clearing out of the rubbish from the staircase to open into the gallery; to which the stairs give access from the lower part of the tower.

brochs. I have now ascertained, by an examination of the brochs of Mousa and Clickamin in Shetland, that it is only the lower storey of the Orkney brochs which remains, and that there has been a gallery running round the building, as at Mousa, but that it only commenced at a height of about 12 feet from the ground, while below that level the wall was, with two exceptions, a solid mass, with an occasional chamber here and there in its thickness. The upper part of the broch, consisting of two concentric walls, with a considerable space or gallery between them, could be more readily thrown down than the lower portion, which was almost entirely a solid mass of building.

The lintel over the entrance to the chamber H presented an interesting proof of the long time that the building had been occupied before it became wholly ruinous and entombed. The under side of the lintel, especially at one end, had been so rubbed and worn that it had broken across, and had then been propped up by a stone, *d*, which still remains to support it. (See fig. 3). Returning to the doorway or entrance passage, we find on each side of it, and about 5 feet from the inner extremity, a large flagstone set on end, reaching from the floor to the roof, and projecting edgewise a few inches into the passage from the wall on each side. Behind and supported by these projections, a door of wood, or more probably of stone, was no doubt placed; for a little

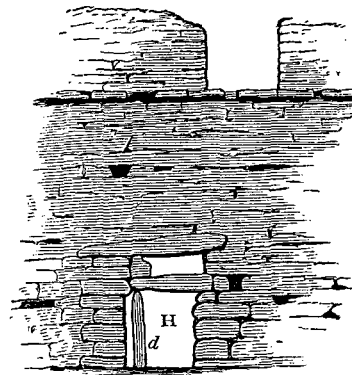


Fig. 3.—Entrance to Chamber, Ledge, and Entrance to Gallery in East Broch, Burray.

behind the jambs or projecting flagstones are holes in the wall which have evidently been made to receive the ends of the bars by which the door was secured on the inside, while just *outside* the jambs are the entrances to the guard chambers, already mentioned, on either side of the doorway. The large stone lintels which form the roof of the entrance passage, also serve for the floor of the recess above it. There is generally sufficient space between the lintels for a spear or other similar weapon to be thrust down from the recess into the passage. This perhaps afforded another means of harassing or killing any one who attempted to force the doorway.

In clearing away the rubbish on the sea-side of the building, the accidental lifting of a large stone led to the discovery of a well (I, fig. 1), the

lower part of which has been dug out of the rock. Rudely formed steps lead down to it. The stairs terminate at the top in a passage (*e*, fig. 1), which leads in the direction of the door of the broch, and probably had a concealed entrance or sort of trap-door within the doorway, by which access to the well was at all times secured.

A little to the westward of the broch now described, the ruins of another were partially examined a few years ago by Mr Farrer. I measured and made plans and sections of the portion that was opened. The wall was about  $12\frac{1}{2}$  feet thick, and the enclosed space 31 feet in diameter. A chamber was found in the thickness of the wall, opening on one side into the enclosed space, and on another into a gallery (also in the thickness of the wall), which was traced nearly half way round the broch. Near the farther end, the gallery communicated by a wide doorway with the interior.

#### OKSTROW BROCH, BIRSAI.

Several years ago, Mr Leask of Boardhouse, in the parish of Birsay, employed men to remove a large accumulation of stones (*a*, fig. 4) which covered a knoll on his farm. This led to the discovery that underneath those stones was a great number of short cists or graves (*b b*, fig. 4)

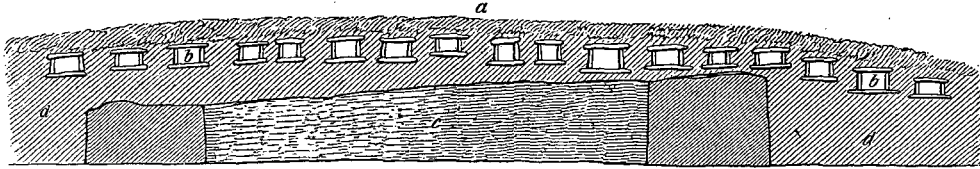
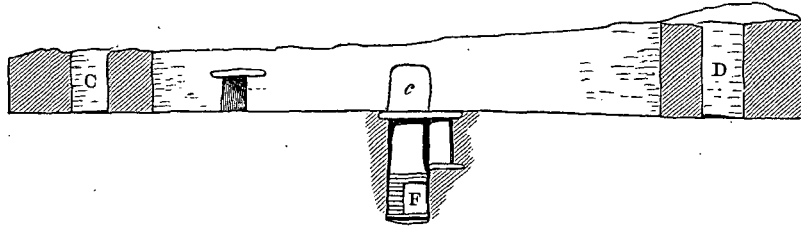


Fig. 4.—Section across the Mound of Okstrow, showing the short cists overlying the ruins of the Broch.

from  $2\frac{1}{2}$  to 3 feet in length, and a foot and a-half in width and depth, formed in the usual way by flags set on edge with stone bottoms and covers. The cists contained burned bones and ashes. A large bowl-shaped stone urn containing ashes and fragments of bones was found in one of the cists; and at the bottom of another which had been opened before I saw it I picked up the half of a small bronze ring. I was informed by Mr Leask, on whose testimony I can thoroughly rely, that the figure of an *eagle* was boldly cut on the covering stone of one of the cists. He kindly promised to hand it over to me if it could be found, but unfortunately it had been left



Okstrow Broch, Section on the line *d, c*.

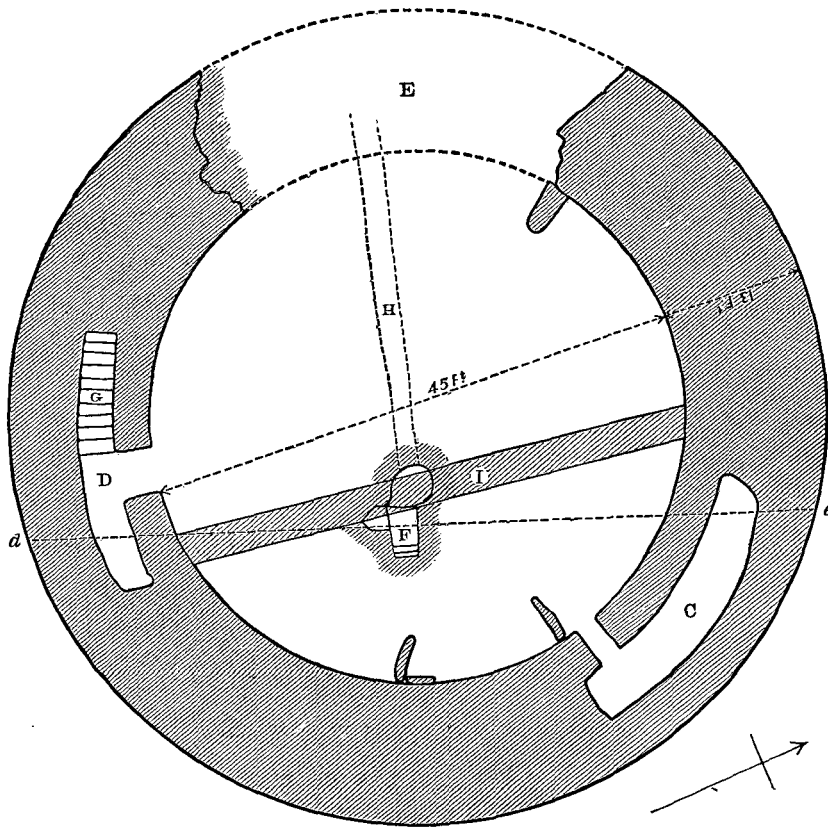


Fig. 5.—Ground Plan of Okstrow Broch.

[Scale one-sixteenth inch to one foot.]

amid a heap of other stones ; and Mr Leask found to his chagrin that some masons then working at Boardhouse had built the stone into a wall of one of his farm offices, from which it could not be recovered.

On removing the cists, a large mass of building (c, fig. 4) was found beneath them. It is now known as the "Broch of Okstrow." The circumstances in which this broch was discovered, *beneath* so large an accumulation of cists belonging to the Pagan period, and apparently to the Bronze age, prove its claim to considerable antiquity. We must allow a long period to have elapsed before so massive a building could have been so greatly dilapidated as to leave only a few feet in height of the wall, and to have been thereafter buried beneath an accumulation of earth sufficient for the formation of a large cemetery belonging to the cremation period.

Of the brochs I have examined, the one at Okstrow has the greatest diameter. The wall is 12 feet thick, and the enclosed area 45 feet in diameter. A portion of the wall (see Plate VIII., E, fig. 5) had been removed before I visited the place, but I believe, from the description I received from some of the labourers, that the entrance was on that side. On the opposite side there is a long chamber C which follows the curve of the wall, and nearly facing it is the entrance to a staircase D in the thickness of the wall, which doubtless led to the galleries in the upper portion of the broch. There is also a well (?) F beneath the floor of the enclosed area, and a drain (H) leading from it to the broken portion of the wall. I was told that a wall (I) extended over the well across the area. If so, it must have been an addition made at a date subsequent to the erection of the original building. Several large stones set on edge projected from the circumference of the area.

#### BROCHS IN HARRAY.

There are several brochs in the parish of Harray. Two of them have already been referred to. A third was opened some years ago by the Rev. Dr Trail, in the course of some improvements which he was making near his manse. The large mound beneath which the ruins lay did not appear to have been disturbed for long centuries. The wall of the broch is about 12 feet thick, and the enclosed area about 33 feet in diameter. The outer end of the doorway (see Plate IX., B, fig. 6) was about  $2\frac{3}{4}$  feet wide. The same width continued for about 6 feet. At that distance from the outside



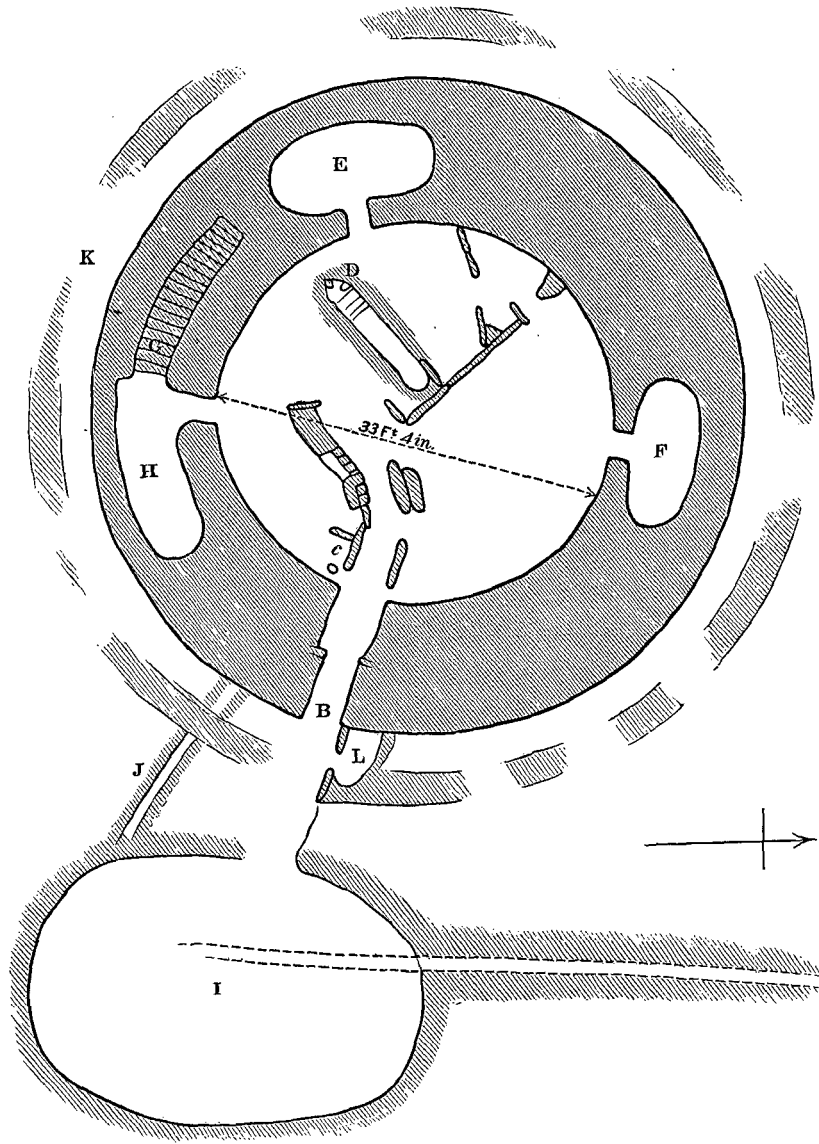


Fig. 6.—Ground Plan of Broch at Manse of Harray.

[Scale, one-sixteenth inch to one foot.]

a stone set on end and let into the wall on each side of the passage served as jambs. The passage throughout the other six feet between those jambs and its inner extremity was 4 feet wide. On a line with and close to the left-hand side of the doorway in the interior of the broch there stood a large stone, *c*, about 4 feet 9 inches in height, and 4 feet 6 inches broad. There was a hole about 2 inches in diameter through this stone, about midway between the top and bottom, and within 14 inches of the inner edge (see fig. 7). Close to the wall at the back of this stone (*c*) a human skull was found. Fragments of walls and stones set on edge were discovered in various parts of the

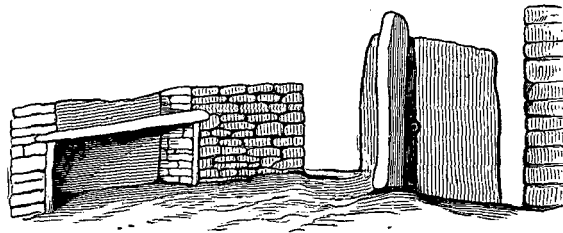


Fig. 7.—Holed Stone and Recess.

enclosed area, but none of them appeared to belong to the original structure. A subterranean passage and steps near the middle of the area lead down to a cavity or well, *D*, excavated in the rock. The bottom of the well (*d*, fig. 8) is about 9 feet below the level of the floor of the broch, and I always found water in it. There are two ruinous chambers, *E* and *F*, in the thickness of the wall, also a staircase, *G*, containing nineteen steps, and apparently the remains of another chamber, *H*, at its foot.

The broch was surrounded at a distance of 3 feet by a rough stone wall about 3 feet thick, which, I was told, was only faced on the side next the broch.

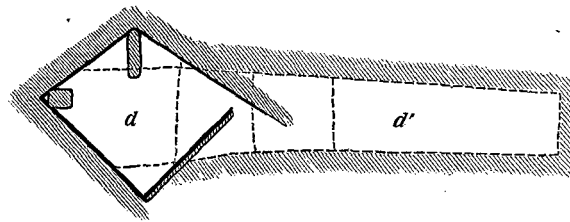


Fig. 8.—Ground Plan of Well.

There was also a number of small cells or chambers outside of the building, chiefly on the east side, but I saw only one (*L*, Plate IX.) When I first visited the place a space had been cleared directly in front of the door of the broch. I noticed that two walls, at a considerable distance from each other, had been cut through in making the clearing. Their ends were seen on each side, but I had not time then to measure the distance between them. I have since been told by the Rev. Dr Trail that they formed an oval enclosure, *I*, as shown on the plan. There was also a deep

well, having a number of steps leading down to it, at one side of the space which had been cleared in front of the doorway. It has since been covered up; but my recollection of it, and a note which I took of its distance from the entrance to the broch, leads me to think that it was within the elliptical enclosure; and Dr Trail is of the same opinion. The small conduit, J, which extends from a burn on the upper side of the broch through the enclosure, is supposed to have terminated in the well. At one place (marked K) two large rude fire-baked clay urns containing some fragments of burnt bones were found. They had carefully cut triangular stone covers, which were nearly on a level with the original floor of the broch. I regret that other interesting features presented by this broch and its adjuncts were destroyed

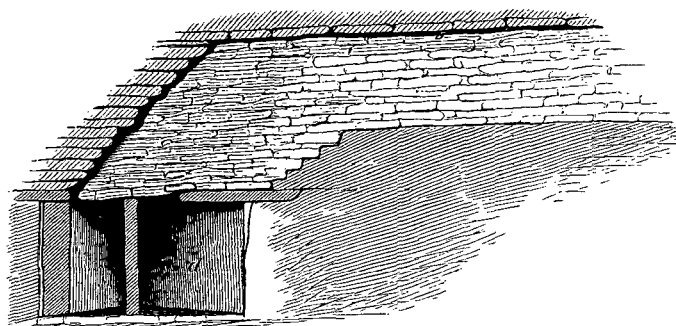


Fig. 9.—Section of the Well.

before I could examine and record them; and experience has taught me that I can trust implicitly only to notes taken on the spot.

#### BORROWSTON BROCH, SHAPINSHAY.

Shortly after the discovery of Maeshowe, Mr Balfour of Balfour and Trenabie employed some men to open a large mound at a place called Borrowston, near the sea-shore in the island of Shapinshay. On the invitation of Mr Balfour I repeatedly visited the place, and took careful measurements and notes, from which the plans and sections now sent were prepared. The ruins have since been also carefully planned by Sir Henry Dryden, Bart.

The wall, A, A (see Plate X. fig. 10), of the Borrowston broch is about 13 feet thick at the entrance, and 14 feet opposite to it, while at other points it is only 10 feet or rather less in thickness. It is now only from 13 to 14 feet

high, and encloses a circular space, B, about 35 feet in diameter. The original doorway or entrance, C, fronts the sea, from which it is about 32 yards distant, and is about 13 feet long, about 4 feet wide, and 6 feet high. An addition, D, of 12 feet or thereby to its outer end connects it with an oblong enclosure or building, E, about 42 feet in length, and about 15 feet in width, from which there was apparently an outlet or passage in the direction of other outworks.

On the south side of the entrance is the doorway of a chamber, H, which is  $7\frac{1}{2}$  feet high, 5 feet wide next the entrance, and follows the curve of the wall of the broch for about 12 feet, when its inner extremity, which is there both very low and narrow, was found to be choked with rubbish. There is, as usual, a stone jamb on each side of the main passage, but the one is nearer to the inner end of the doorway than the other. A wall, I, occupying a considerable portion of the enclosed area opposite to the doorway, and leaving a space of 6 feet in width between it and the wall of the broch, is evidently of a later date than the latter. The intervening space, K, between these walls was probably all roofed over with flagstones, forming a gallery or series of chambers, of which the roof and ruined chamber at the south side appear to be the remains.

As in the Burray broch a ledge, generally about 18 inches broad, runs round the inner face of the broch at Borrowston, 10 or 11 feet above the floor (see fig. 12); and nearly on a level with the ledge, there are two openings in the inner face of the wall, one opposite to the entrance to the broch, and the other on the south side. The one is  $3\frac{1}{2}$  feet, and the other about 2 feet 9 inches long, and about  $3\frac{1}{2}$  feet wide. Both open into a gallery 2 feet 8 or 9 inches wide. There are two ascending steps remaining in the gallery at one point, and three at another. In the area, opposite the doorway, and within two feet of the wall, I, there is a hole, L (fig. 12), of an irregular figure about 4 feet in diameter one way, and 2 feet the other, and 10 feet deep. The lower part has been dug out of the rock, and the upper portion built with undressed stones in the rudest manner. This may have been merely a place of concealment for stowing away treasures in time of danger, but as the rock, in almost all the examples that I have seen, has been reached and more or less dug into, it seems not improbable that such holes were wells.

The Borrowston broch appears to have been surrounded at a distance of 9 feet by a stone wall, M, of which a portion remains,  $3\frac{1}{2}$  feet thick (figs. 10, 11). Outside this wall is a fosse, S S, from 16 to 18 feet wide at bottom, and the

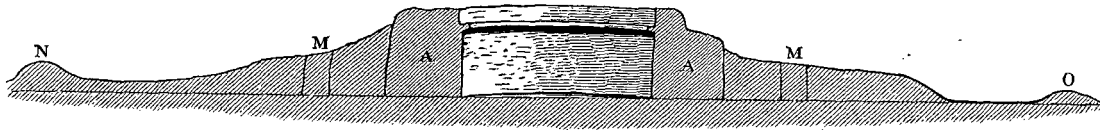


Fig. 11.—Broch of Borrowston. Section on the line N. O.

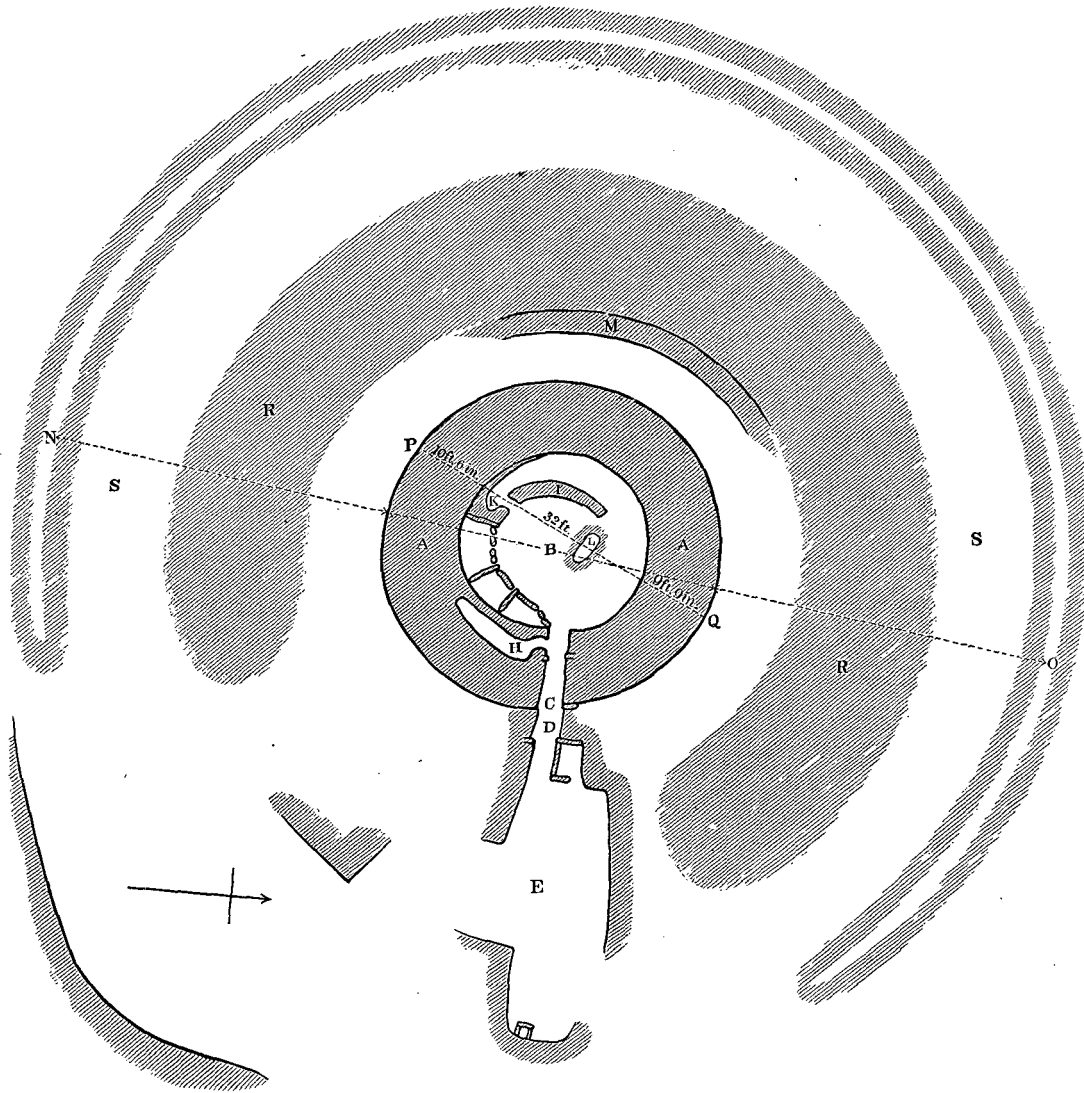


Fig. 10.—Ground Plan and Section of the Broch of Borrowston, Shapinshay.

[Scale, one-sixteenth inch to one foot.]

whole is surrounded by an earthen embankment, N. The entire diameter of the Broch and outworks is about 170 feet. The whole appearance of the

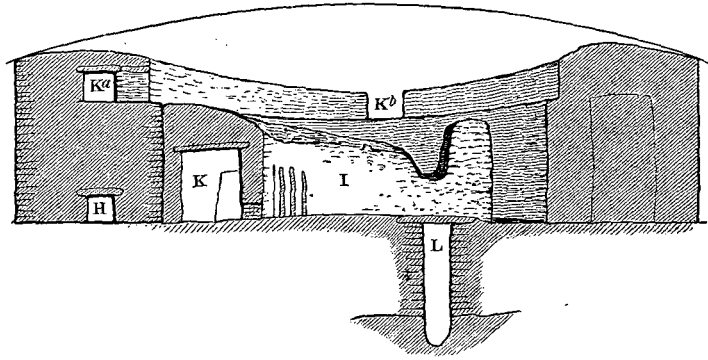


Fig. 12.—Section of Broch of Borrowston, showing Well (L) in the Area.

outworks, both at Borrowston and other places, renders it doubtful whether any of them belong to the original structures.

#### BROCH AT REDLAND, PARISH OF FIRTH.

Excavations were made by Mr Farrer in 1858 in the ruins of a broch at Redland in the parish of Firth. It was greatly dilapidated, and was much smaller than the others I have mentioned. The wall was only 9 feet thick, and the enclosed space 27 feet in diameter. Nearly in the centre of the broch a well was found partially dug out of the rock. Steps led down to it, but as they were above the level of the floor, the well could not have been concealed, unless the stair had been hidden from view in the thickness of a wall running across the interior of the broch as at Borrowston, which seems probable. The wall of the broch had evidently begun to bulge outwards and give way on one side, and had been propped up by a rudely built facing, in which the stone with a spiral or volute cut on one end, and lately sent to the Society's Museum in Edinburgh, was found. The stone with the crescent and sceptre, also lately sent to the Society's Museum, and figured in the second volume of the "Sculptured Stones of Scotland" (Plate CIV.), was said to have been found near the broch, and built by the finder into the wall of his house. I also picked up at the same place a piece of undressed freestone with a mark having a rude resemblance to the "broad arrow," rudely made, and about 5 inches in length, cut on it. A similar figure appears among those cut on

the walls of the so-called Pict's house in Papa Westray, and about three years ago I observed on a stone found on the cover of one of a group of cists in a barrow in the parish of Deerness a rude three-pointed figure, which I sketched on the spot. In the same barrow another block of freestone had three cavities cut slightly on its surface.

#### BROCHS OF BURGAR AND HOXA.

The brochs of Burgar and Hoxa having been described by Captain Thomas, R.N., in his "Celtic Antiquities of Orkney,"<sup>1</sup> it is unnecessary to give their dimensions here. I may, however, remark that the plan of the Burgar broch shows, that it had probably resembled the West Broch of Burray, in which a gallery was traced round the wall as far as the excavations were made. The walls dividing the gallery into cells were in all likelihood afterwards added—indeed after the broch had become a mound of ruins, and had been appropriated as a place of sepulture.

I can enumerate between forty and fifty mounds in various parts of Orkney, including those already referred to, which are certainly the ruins of brochs. The greater number are close to the sea-shore, and only a few are inland—and even these are chiefly near the margin of a lake.

#### CONTENTS OF THE BROCHS.

I have reserved until now an enumeration of the principal relics found during the excavations of the brochs which have been lately examined in Orkney, as they can thus be more readily compared with each other.

*East Broch, Burray.*—The following articles,<sup>2</sup> which are deposited in the Museum of the Society, were found during the excavations, viz. :—

Several stone vessels of various sizes—generally very rudely fashioned—one of them apparently a lamp.

A broken circular plate of mica-schist polished.

A flat circular perforated stone, like a miniature quern. I have seen several of this kind. Similar stones are used in Iceland at this day to crush or pound dried fish.

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<sup>1</sup> *Archæologia*, vol. xxxiv. pp. 88–186.

<sup>2</sup> See woodcuts on p. 91.

Several small circular stones, and bones like beads, each with a hole through the centre.

A bone scoop and a large bone cup made of a vertebra of a whale (fig. 3).

Four long-handled and two double-edged bone combs more or less broken, one of them having iron rivets in it (figs. 2, p. 91).

Two bone pins, one  $1\frac{1}{2}$  inch, the other  $3\frac{1}{2}$  inches long; and several pointed bones with and without heads (fig. 4 and 5, p. 91).

Part of a wheel (?) made of a portion of a bone of a whale.

A large piece of deer's horn, with a longitudinal slit in it, apparently for the insertion of a thong.

A small fragment of red "Samian ware."

A bronze pin (fig. 6, p. 91), and an iron knife and chisel.

The last two articles may have been accidentally dropped in the ruins long after the other relics had been buried beneath them, or they may have belonged to the later occupants of the broch.

A quantity of charred bere or barley lay at the bottom of the enclosed area, and the bed of clay on which it rested bore strong traces of fire.

It was observed by Mr Farrer when making the excavations, that there were in the debris large quantities of bones of horses, sheep, and cattle, with deer's horns, tusks of boars, together with masses of the more common sea-shells, in which the limpet predominated, that the deer's horns were all at a considerable depth, and principally among the rubbish on the outside of the main wall, and mingled with ashes and portions of burnt stone, having apparently been thrown outside the wall from some of the upper chambers. Some of the deer's horns had evidently been cut with a sharp instrument.

When on a visit to the broch two years ago, I found that I could get admittance to the chamber on the south side which had previously been blocked up, and on entering it, I found a great number of fragments of bones of cattle stuck into holes in the walls. I pulled out several, and invariably found that the bones had been broken and split as if to get at the marrow. The cell had not been previously entered since the mound was opened, for I had to enlarge the opening, which had been made by the falling of a portion of the wall, and even then it was with difficulty and at some risk that I could squeeze through into the chamber. This cell has since fallen in.

*Broch of Okstrow, Birsay.*—In the ruins of this building were found great



quantities of fragments of rude clay vessels, but these appeared to have come from the cemetery above the ruins, or at all events to have been deposited in the mound after the broch became a ruin.

The following articles were also discovered :—

Several bone combs and other bone implements of rude form.

Pieces of deer's horns, some pointed, but almost all bearing marks of cutting on them. One piece of horn appears to have been a rude whistle. (?)

A large vertebra of a whale, very light and porous when found.

A fragment of red "Samian ware." Holes remain to show where it had at one time been mended.

Three stone cups or lamps, one with a perforated short handle, and several stone vessels very rude and of various sizes.

A small bronze ring brooch or fibula, and a bronze pin.

Stone and bone beads of various sizes, and part of a bone ring.

I was told lately by a person who had been working in the neighbourhood of the broch, that he went down into the well, and while groping through the mud at the bottom, he found a plain cylindrical piece of silver like the head of a walking-stick, with a hole or cavity extending about a quarter of an inch up through one end. It was about  $2\frac{1}{2}$  inches long, and about  $\frac{3}{4}$  of an inch in diameter. I was sorry to hear that it had been sold to a watchmaker in Kirkwall, and melted down.

*Broch of Borrowston, Shapinshay.*—The articles found here were not numerous. They consisted chiefly of fragments of deer's horns, a great number of bones of the ox, sheep, &c., and several rude stone vessels, of different sizes. The stones are generally water-worn, and have been converted into rude vessels by cutting a cavity in one of the sides. The form of the hole or cavity is generally adapted to the outline of the stone.

At one side of the enclosed area a large mass of limpet shells was found, and a considerable quantity of fish-bones lay in another place amongst the rubbish, mixed with fragments of shells.

*Broch of Stirlingo, Firth.*—Besides the incised stones already mentioned, portions of a stone quern and a stone vessel were found in this broch. The cavity of the stone vessel was 10 inches long, 8 inches wide, and 2 inches deep. The earth, which was heaped above the floor of the broch near the wall, contained a great number of small lumps of what appeared to be a bright blue pigment or dye. During excavations, which have lately been made in another ancient building, a piece of apparently a

red-coloured stone shaped like a small brick was found. On cleaning it, the finder was surprised to discover that it was "red keel," or a red pigment made up into its present shape, and that on wetting it and then rubbing it on the hand it produced a bright red colour. A smaller piece of the same substance had been previously found in the same ruins; and I have since seen a small stone vessel with a lump in it, of a whitish-looking pigment, bearing the marks of having been kneaded—it was also found in the same place where the red substance was discovered. The pigment adhered firmly to the bottom of the box. A red pigment was also found in the ruins at Saverock, near Kirkwall, in 1849.<sup>1</sup>

*Broch near Manse of Harray.*—I have not yet seen all the relics found in this building, but they include stone vessels of the usual rude form, remains of stone querns and stone and bone implements.

*Broch of Dingis-how, parish of St Andrews.*—In the ruins of this broch, which stands on the top of a sandy knoll, and was opened by Mr Farrer, several fragments of pottery, much harder and better formed than is usually the case, were found. The vessels had bulged out considerably in the middle, and had a lip or rim around the mouth. I found between a stone set on edge and the wall of the broch several water-worn stones lying together in a heap. They very nearly approached the common form of stone celt; and I lately saw at Skaill in Sandwick a stone similar to them in shape, but half formed into a celt. I have no doubt those I found had been selected as approaching nearest to the desired shape, and therefore requiring

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<sup>1</sup> Since the foregoing was written, I found a fragment of iron ore in the ruins of the broch of Burrian in Harray, and examined a similar piece of mineral in the possession of Mr William Watt, which he had discovered in the same ruins in which the red pigment just referred to was found. On dipping the piece of ore in water and then rubbing it on the skin, a red mark was made similar to that made by the pigment; and on scraping the ore with a knife a red powder was easily produced, apparently identical with the pigment. Having directed the attention of General Lefroy to it during his visit to Orkney in the autumn of 1867, he took a specimen to London to get it analysed, and shortly afterwards I received from him the following note addressed to him by Mr Abel of the Royal Arsenal, Woolwich. "The specimen of iron ore is Silicious Hæmatite, which does not contain any manganese—a trace of cobalt is present in it." General Lefroy remarks in his letter which accompanied Mr Abel's note:—"Hæmatite = anhydrous sesquioxide of iron, sometimes contains as much as 70 per cent. of iron, and always produces a red streak when drawn across a rough surface, such as unglazed pottery. This, I suppose, may have recommended it to the artless dames of Skaill." It was at Skaill where the pigment was found.

little labour to manufacture them into celts. One of them is still in my possession.

*Broch of Burgar, Evie.*—In 1825 this broch was partially explored, when a human skeleton, a long-handled bone comb, and part of a deer's horn were found. Fifteen or twenty years afterwards the ruins were re-opened by the late proprietor Mr Gordon. Dr Daniel Wilson states in his "Prehistoric Annals" that two fine gold armillæ, with other valuable relics, now in Lord Zetland's possession, were then discovered. The later find has been described to me by two intelligent gentlemen, by both of whom the relics were seen. Neither of them recollected the gold armillæ; and they could not tell me whether the relics had been preserved, as they had repeatedly heard that Mr Gordon threw the whole into the sea rather than surrender them to the Crown, for whom they had been claimed. The description I received referred to a highly ornate silver vase or beaker, which would contain about half a gallon of liquid, and to beads, chains, &c., with which it was nearly filled. One of the gentlemen referred to told me that the vase or beaker bulged out about the middle, the mouth and bottom being considerably narrower. Round the middle were many projecting knobs, and various ornamental figures or designs were stamped or incised on its surface. It was nearly filled with the following articles, viz., a great number of amber beads, from 3 to 4 inches in diameter down to the size of a pea, including many of the size of half-crowns; several silver combs of various sizes, some 6 inches long, with long teeth, the back or upper part being rounded and perforated by numerous holes; five or six silver pins, some silver buckles or fibulæ, and several pieces of silver chains, consisting of three links interwoven, and resembling modern watch chains. It is to be hoped that those valuable relics have not been destroyed, as has been supposed; but that Mr Gordon carried out his intention of sending them to Lord Zetland, and that they are safe in his Lordship's possession.

From the circumstances in which the relics were found at Burgar, it would appear that they had been deposited there as well as the human skeleton, *after* the building had become a heap of ruins.

I have obtained from some of the ruins of the brochs, such as at Birstane, Deerness, Redland, and Orphir, a stone of the accompanying figure (see fig. 13). A similar stone was found at the broch of Hoxa in South Ronaldsay.<sup>1</sup>

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<sup>1</sup> In most of the brochs "knocking stones," or stone mortars for bruising grain with,  
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## CONCLUDING REMARKS.

Owing to the greatly dilapidated state of the brochs, and the imperfect manner in which the ruins have hitherto been explored, very little progress

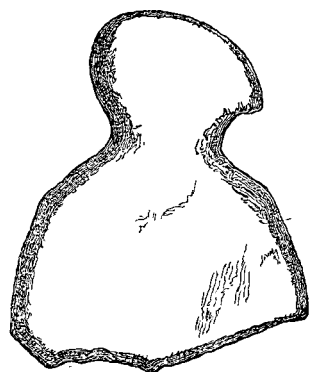


Fig. 13.—Dressed Stone from a Broch.  
(13 inches in length).

has yet been made in tracing their history; but I think it may be safely assumed that they existed in Orkney long before the arrival of the Norsemen; that they were probably occupied over a long period by successive invaders; that while a few were still tolerably entire when the Norsemen invaded the islands, and were thereafter occupied by them, as we learn from the Sagas, many, if not most, of the brochs were heaps of ruins, and had been used as burial mounds even by invaders who preceded the Norsemen. At least it would seem that some of the brochs

had been suddenly deserted, and that their inhabitants had in their hurried departure left many of their rude weapons and domestic utensils behind them; for not only were such found in the enclosed area, but not a few have been discovered in the rubbish surrounding the outside of the building, evidently the debris of portions of the upper chambers and galleries that had fallen outwards.

I take the liberty to suggest that every means practicable be taken, with a view to ascertain the geographical distribution of the brochs, as that would help, I believe, more than anything else to throw light upon their origin and history. There are no traces of similar buildings in any part of Scandinavia; but it is suggestive that “Edin’s Hall,” near Dunse, which has

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beach stones for pestles or crushers, and quantities of charcoal are found, while limpet, oyster, whelk, and other shells are abundant. Remains of rude clay pottery are also found in the debris; and not unfrequently fire-baked clay vessels are discovered deposited in the ruins, and sometimes in the soil immediately outside the wall. Circular covers of clay slate of various sizes, which have been used to cover the rude clay vessels, are often picked up. Some of them bear marks of fire around their margin where they have projected beyond the mouth of the vessel.

doubtless been a building of the same class as the northern brochs, and in the arrangement of the cells in the thickness of the wall, has closely resembled the broch of Burgar, stood on Cockburn Law, which is reputed to have been the last place where the Picts made a determined stand in Scotland.

A great deal of valuable information relating to the brochs on the west coast has been collected by Captain Thomas, R.N., while several in Shetland have been examined by Sir Henry Dryden, Bart., and Mr Irvine of Bath. It remains for those antiquaries connected with the other districts in which these interesting buildings are found, to perform a similar service. Were that done, I believe we would know much more of their history than we do at present.

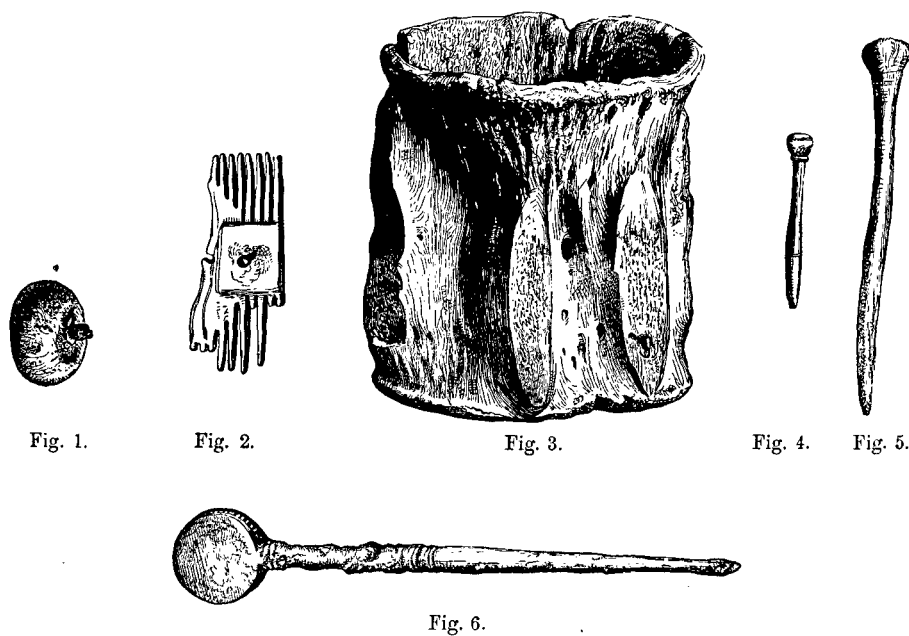


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Objects found in East Broch, Burray.

(Presented to the Museum by James Farrer, Esq., Hon. Mem. S. A., Scot., 1855.)

Fig. 1. Bone Button with iron shank. Fig. 2. Portion of Bone Comb with iron rivet. Fig. 3. Bone Cup (4½ inches high) made of the vertebra of a whale. Figs. 4 and 5. Bone Pins. Fig. 6. Bronze Pin, with flat head, 3 inches in length.

[APPENDIX.]

## APPENDIX. No. I.

*Dimensions of Brochs or Round Towers in Orkney, from Measurements (with the exception of that of Burgar) taken by George Petrie, Kirkwall.*

|   | Exterior Diameter. |     | Interior Diameter. |     | Thickness of Wall. |     |
|---|--------------------|-----|--------------------|-----|--------------------|-----|
|   | Feet.              | In. | Feet.              | In. | Feet.              | In. |
| Broch of Burgar, Evie, Mainland, . . . . .  | 60                 | 0   | 26                 | 0   | 17                 |     |
| Okstro Broch, Birsay, do., . . . . .  | 69                 | 0   | 45                 | 0   | 12                 |     |
| Broch near Manse of Harray, do., . . . . .  | 57                 | 0   | 33                 | 0   | 12                 | 0   |
| Do. at Stirlingow, Redland, Firth, do., . . . . .   | 45                 | 0   | 27                 | 0   | 9                  | 0   |
| Do. of Ingis-how, Firth, do., . . . . .   | 60                 | 0   | 33                 | 0   | 13                 | 6   |
| Do. at Oyce, near Finstown, do. do. . . . .   | Indistinct.        |     |                    |     | 16                 | 0   |
| <i>Note.</i> —The wall of this broch had been increased in thickness to 31 feet 9 inches on the west side by another wall 15 feet 9 inches thick, of much smaller stones, built on the outside; but this outer wall was evidently a later addition. |                    |     |                    |     |                    |     |
| Broch at Birstane, St Ola Parish, Mainland, . . . . .   | 60                 | 0   | 33                 | 0   | 13                 | 6   |
| Do. of Dingis-how, Parish of St Andrews, Mainland, . . . . .  | 57                 | 0   | 33                 | 0   | 12                 | 0   |
| Do. on top of Mound at Langskaill, do. do. . . . .  | 40                 | 0   | 20                 | 0   | 10                 | 0   |
| East Broch, Island of Burray, . . . . .   | 66                 | 6   | 36                 | 6   | 15                 | 0   |
| West Broch, do., . . . . .  | 56                 | 0   | 31                 | 0   | 12                 | 6   |
| Broch of Hoxay, South Ronaldsay, . . . . .  | 58                 | 0   | 30                 | 0   | 14                 | 0   |
| Do. of Borrowston, Island of Shapinshay, . . . . .  | 55                 | 6   | 31                 | 6   | 12                 | 0   |
| Do. at Lamb-head, Island of Stronsay, . . . . .   | 69                 | 0   | 45                 | 0   | 12                 | 0   |
| Do. at Hunton, do., . . . . .   | 0                  | 0   | 0                  | 0   | 13                 | 6   |

*Note.*—The broch at Hunton is entirely concealed beneath a cultivated field, and was only accidentally discovered by a plough turning over a stone and exposing an opening, which extended down to the door or entrance, the floor of which was about 10 feet below the surface. Mr Farrer and I went down through the opening, when I measured the entrance passage, which I found entire, and only a few loose stones in it; but all access to the interior of the broch was prevented by the stones which were heaped up in front of the inner end of the passage.

*Dimensions of Brochs in Shetland, from Measurements by Sir Henry Dryden, Bart. of Canons Ashby, and J. T. Irvine, Esq., Coom Down, Balh.*

|  | Exterior Diameter. |     | Interior Diameter. |     | Thickness of Wall. |     |
|--|--------------------|-----|--------------------|-----|--------------------|-----|
|  | Feet.              | In. | Feet.              | In. | Feet.              | In. |
| Broch of Clickamin, Mainland, . . . . .    | 66                 | 4   | 26                 | 0   | 20                 | 2   |
| Do. of Brindister, do., . . . . .          | 68                 | 0   | 17                 | 0   | 12                 | 6   |
| Do. of Levenswick, do., . . . . .          | 54                 | 6   | 28                 | 6   | 13                 | 0   |
| Do. of Burreland, do., . . . . .           | 55                 | 0   | 37                 | 0   | 9                  | 0   |
| Do. in Island of Mousa, . . . . .          | 49                 | 0   | 20                 | 0   | 14                 | 6   |
| Do. of Howbie, Island of Fetlar, . . . . . | 58                 | 0   | 33                 | 0   | 12                 | 6   |
| Do. of Snawbroch, Unst, . . . . .          | 63                 | 6   | 27                 | 6   | 18                 | 0   |
| Do. of Undahool, do., . . . . .            | 55                 | 9   | 25                 | 9   | 15                 | 0   |
| Do. of Broch, do., . . . . .               | 50                 | 0   | 26                 | 0   | 12                 | 0   |
| Do. of Burreness, . . . . .                | 57                 | 0   | 27                 | 0   | 15                 | 0   |
| Do. of Culswick, Mainland, . . . . .       | 50                 | 8   | 24                 | 8   | 13                 | 0   |

*Note.*—I had an opportunity last summer of visiting and measuring the brochs of Mousa, Brindister, and Clickamin in Shetland, and of comparing them with those in Orkney.

APPENDIX No. II.

List of Brouchs in the Orkneys of which Ruins are known to Exist.

| Name of Brough and Locality where Ruins Exist.                                  | Remarks and References.  |
|---|--|
| <b>SOUTH ISLES.</b>   |  |
| 1. "Brough," near Burwick, South Parish, South Ronaldsay.                       | Measured in 1871 by Geo. Petrie. Described in Wilson's "Prehistoric Annals," and in "Celtic Antiquities of Orkney," by Captain Thomas.   |
| 2. How of Hoxay, North Parish, South Ronaldsay,                                 |  |
| 3. Small Brough (?) near How of Hoxay, South Ronaldsay.                         |  |
| 4. East Brough, Island of Burray, . . . }                                       | Excavated by Jas. Farrer, Esq. Both measured and planned by Geo. Petrie. Lowe's Tour.  |
| 5. West Brough, Island of Burray, . . . }                                       |  |
| 6. Brough in Island of Hunday, . . . . .  | Ruins known by name of "Ontaft."   |
| 7. Brough, Borrowston, in Parish of Walls.                                      |  |
| 8. Brough, Smiddybanks, South Ronaldsay, . . .                                  |  |
| <b>MAINLAND.</b>  |  |
| 9. Castle Howie, near Church of Holm, . . . . .                                 | Lowe's Tour.   |
| 10. Roseness, Holm, . . . . .   | Lowe's Tour.   |
| 11. Mound near Grameshall, Holm.  | At Loch near Manse, Lowe's Tour. Excavated by Mr Farrer, planned by Geo. Petrie.   |
| 12. Mound near Manse, Parish of St Andrews,                                     |  |
| 13. Langskaill, Parish of St Andrews, . . . . . }                               |  |
| 14. Dingishow, Parish of St Andrews, . . . . . }                                |  |
| 15. Brebuster, Deerness.  | Excavated by Tenant of Birstane. Planned by Geo. Petrie.   |
| 16. East Side, Deerness.  |  |
| 17. Birstane or Briston, Parish of St Ola, . . . . .                            |  |
| 18. Lingrow, Parish of St Ola, . . . . .  | Excavated by Geo. Petrie, from funds supplied by Mr Grame, yr. of Grameshall, the Society of Scottish Antiquaries, and Mr Young of Kelly. Measured and planned by Geo. Petrie. |
| 19. Saverock, Parish of St Ola, . . . . .                                       | Excavated by Captain Thomas, assisted by Geo. Petrie.  |
| 20. Ingi's-How, Parish of Firth, . . . . . }                                    | Excavated by Mr Farrer. Planned by Geo. Petrie.  |
| 21. Redland, Parish of Firth, . . . . . }                                       |  |
| 22. Remains at Oyce, Finstown, Firth, . . . . .                                 | Cut through in making new road. Some measurements made by G. Petrie.   |
| 23. Mound near Hall of Rendall.   | "Statistical Account." Wilson's "Prehistoric Annals." Geo. Petrie's Paper. Part of Gallery visible.  |
| 24. Burgar, Parish of Evie, . . . . .   |  |
| 25. How of Stenso, Parish of Evie, . . . . .                                    | Excavated by Mr Henry Leask. Geo. Petrie's Paper.  |
| 26. Aikerness, Parish of Evie.  |  |
| 27. Okstrow, Parish of Birsay, . . . . .  |  |
| 28. Skogar, Parish of Birsay.   | Geo. Petrie's Paper.   |
| 29. Overbrough, Parish of Harray, . . . . .                                     |  |
| 30. Netherbrough, Parish of Harray, . . . . .                                   | Geo. Petrie's Paper.   |
| 31. Brough at Church, Parish of Harray.   |  |
| 32. Brough at foot of hill north of Church, near Harray Road, Parish of Harray. |  |

| Name of Brough and Locality where Ruins Exist.                   | Remarks and References.   |
|--|---|
| <i>MAINLAND Continued.</i>                                       |   |
| 33. Burrian, Rusland, Parish of Harray, . . .                    | Excavated by Mr Farrer. G. Petrie's Paper.  |
| 34. Brough, near Manse, Parish of Harray, . . .                  | Excavated by Professor Trail. Geo. Petrie's Paper.                                |
| 35. Brough in Corston, Parish of Harray.                         |   |
| 36. Yeskinabie, Parish of Sandwick, . . .                        | "Statistical Account."  |
| 37. Burwick, Parish of Sandwick.                                 |   |
| 38. Tenston, Parish of Sandwick.                                 |   |
| 39. Brough of Clumlie, Parish of Sandwick.                       |   |
| 40. How, Parish of Stromness.                                    |   |
| 41. Brough near Churchyard, Stromness.                           |   |
| 42. Arion, Parish of Stromness.                                  |   |
| 43. Breckness, Parish of Stromness, . . .                        | Half of Ruins carried away by Sea. Measured and planned by G. Petrie.             |
| <i>NORTH ISLES.</i>  |   |
| 44. Brough (opposite Bugar), Island of Rousay.                   |   |
| 45. Brough (opposite Stenso), Island of Rousay.                  |   |
| 46. Brough (opposite Aikerness), Island of Rousay.               |   |
| 47. Brough in Island of Gairsay.                                 |   |
| 48. Burrowston, Island of Shapinsay, . . .                       | Geo. Petrie's Paper.  |
| 49. Lambhead, Island of Stronsay, . . .                          | Remains measured by Geo. Petrie. "Statistical Account."                           |
| 50. Hunton, Island of Stronsay, . . .                            | Partial Excavation by Mr Farrer and entrance measured by Geo. Petrie.             |
| 51. Rothiesholm, Island of Stronsay.                             |   |
| 52. Ruins of Brough (?) near U. P. Church, Island of Eday, . . . | Sculptured Stone found in Ruins by Mr Hebden.                                     |
| 53. Wass-how, Tressness, Island of Sanday, . . .                 | Partially excavated by Mr Farrer. "Statistical Account." Measured by Geo. Petrie. |
| 54. Quoyness, near Elsness, Island of Sanday, . . .              | Excavated by Mr Farrer. Planned and measured by Geo. Petrie.                      |
| 55. Small Brough near Elsness, Island of Sanday.                 |   |
| 56. Newark, Island of Sanday, . . .                              | Said by writer of "Statis. Account" to be like Mousa. "Statis. Account."          |
| 57. Ivar's Knowe, Island of Sanday, . . .                        |   |
| 58. Coliness, Island of Sanday, . . .                            |   |
| 59. Isgarth, Island of Sanday.                                   | Largest Brough in Sanday. "Statistical Account."                                  |
| 60. "Brough," Island of Sanday.                                  |   |
| 61. Brough, near Skar, Island of Sanday.                         |   |
| 62. Brough, Island of Westray, . . .                             |   |
| 63. Noup, Hoorness (probably from <i>Haugr-ness</i> ).           |   |
| 64. Remains at seashore of Gill, Island of Westray.              |   |
| 65. Hodgelie, at seashore of Garth, Westray.                     |   |
| 66. Mound at Skelwick, Island of Westray.                        |   |
| 67. At Loch of Tredwell near Burlin, Papa Westray.               |   |
| 68. Howan or Hooan, Island of Papa Westray.                      |   |
| 69. Burrian, Island of North Ronaldsay, . . .                    | Excavated by Dr Traill.   |
| 70. Mound near Lighthouse, North Ronaldsay.                      |   |

The whole of the mounds and remains mentioned in the foregoing List have been visited by me, with the exception of those numbered 6, 7, 10, 35, 42, 56, 61, 66, and 70, and I was present at excavations in eighteen broughs included in the above List.

GEO. PETRIE.

30th May 1872.