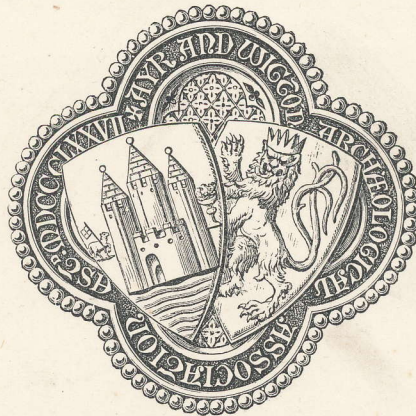


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FOR

DAVID DOUGLAS, EDINBURGH.

II.—NOTICE OF THE EXCAVATION OF A CRANNOG AT BUSTON, NEAR KILMAURS.

Discovery of the Crannog.—About half-way between Stewarton and Kilmaurs there is, on the farm of Mid Buston, the property of the Earl of Eglinton, a shallow basin, now converted into a richly cultivated meadow, but which formerly, as represented in Bleau's *Atlas*, formed the bed of a lake of considerable size called Loch Buston. Within the recollection of the present generation this area was a mossy bog in summer and a sheet of water in winter; and about fifty years ago, when the present tenant Mr. Robert Hay came to reside on the farm, there was a small mound or island situated about its centre, locally known as the *Swan Knowe*, on account of the numbers of wild swans that formerly used to frequent it. When subsequently engaged in reclaiming the bog, Mr. Hay states that as many as thirteen cartloads of timber were removed from the "Knowe," and he distinctly remembers that, in consequence of the difficulty of detaching some of the beams mortised into others, his father then made the remark, "There maun hae been dwellers here at ae time." He also states that until the land was thoroughly redrained, some five years ago, there was still a considerable mound to be seen; but at the beginning of December 1880, when I first visited the locality, there was hardly any elevation to distinguish it from the surrounding field. Notwithstanding Mr. Hay's knowledge of the structure of the "Knowe," which he supposed to have been erected by one of the old Earls for the purpose of facilitating the shooting of wild ducks—a purpose for which it had frequently served himself,—the merit of detecting here the ruins of an ancient lake-dwelling is due to Mr. D. M'Naught, schoolmaster of Kilmaurs. The history of the discovery is most interesting, and reflects much credit on the discoverer; but the story is best told by himself. Having a faint recollection that Mr. M'Naught was one of a group of critical sceptics who visited Lochlee while the investigations there were in progress, and maintained that the crannog was merely the site of an old "whisky still," I was curious to know the circumstances and exact process of ratiocination which had now actually culminated in placing him in the position of being a discoverer in this

same line of research; so, after the importance of the crannog had been established by some valuable "finds," I wrote a note asking if he would kindly oblige me by a written statement of whatever information he could supply on the subject. The following is his reply:—

KILMAURS, *January 15th, 1881.*

DEAR SIR—I have much pleasure in replying to yours received this morning.

About five years ago, when engaged in levelling the large drain that passes Buiston Crannog, I passed over the very spot, but being utterly ignorant on the subject I noticed nothing peculiar. When passing through the stackyard on my way home I noticed the old beams, but on being told that they were from some old house I thought no more of the matter. The subject had so completely escaped my memory that even when I had seen the Lochlee beams they failed to recall what had formerly arrested my attention at Buiston. My scepticism at Lochlee arose from the fact that I failed to trace the shape and construction of the crannog as detailed in Chambers' Encyclopedia, which was the only authority then at my disposal.

I never heard anything more of the Buiston Crannog till the week of the discovery. Talking with one of the farmers in my own house, the conversation turned on furniture, when bog-oak was mentioned. He remarked that there was as much lying in Buiston stackyard as would stock the parish. At once I remembered what I had formerly seen, and though the recollection was hazy, on afterthought I felt almost sure that I had noticed mortised holes, and that *the beams were identical with those I had seen at Lochlee.* Next day, as soon as I had closed the school I went up to the farm. Mr. Hay was inclined to pooh-pooh the matter, and said that the place was "juist a timmer house ane o' the auld Earls had put up to shoot deuks." Going out to the stackyard I found that the ricks had been built on the old timber, which made excellent "bottoms." I looked about for an odd bit, and did eventually get a splinter, but not sufficient for identification. After getting rid of the old man, his youngest son and I set to work at the bottom of one of the ricks, and pulled one of the beams so far out as enabled me to saw off the mortised joint. This I sent to the *Standard* office, where you saw it on the Saturday morning following. I then went down to the site of the crannog, but it had become so dark that I had to feel my way. I eventually kicked against something which seemed to be an upright sticking through the soil. I went up next morning early, and when I had seen the three uprights afterwards pointed out to you, and the mortised beams stuck in the side of the drain, I no longer had any doubts. I therefore at once wrote to Mr. Cochran-Patrick, and penned a cautious intimation for the *Standard*, which the editor accepted on trust from me. You know the rest.—Yours truly,

Dr. Munro.

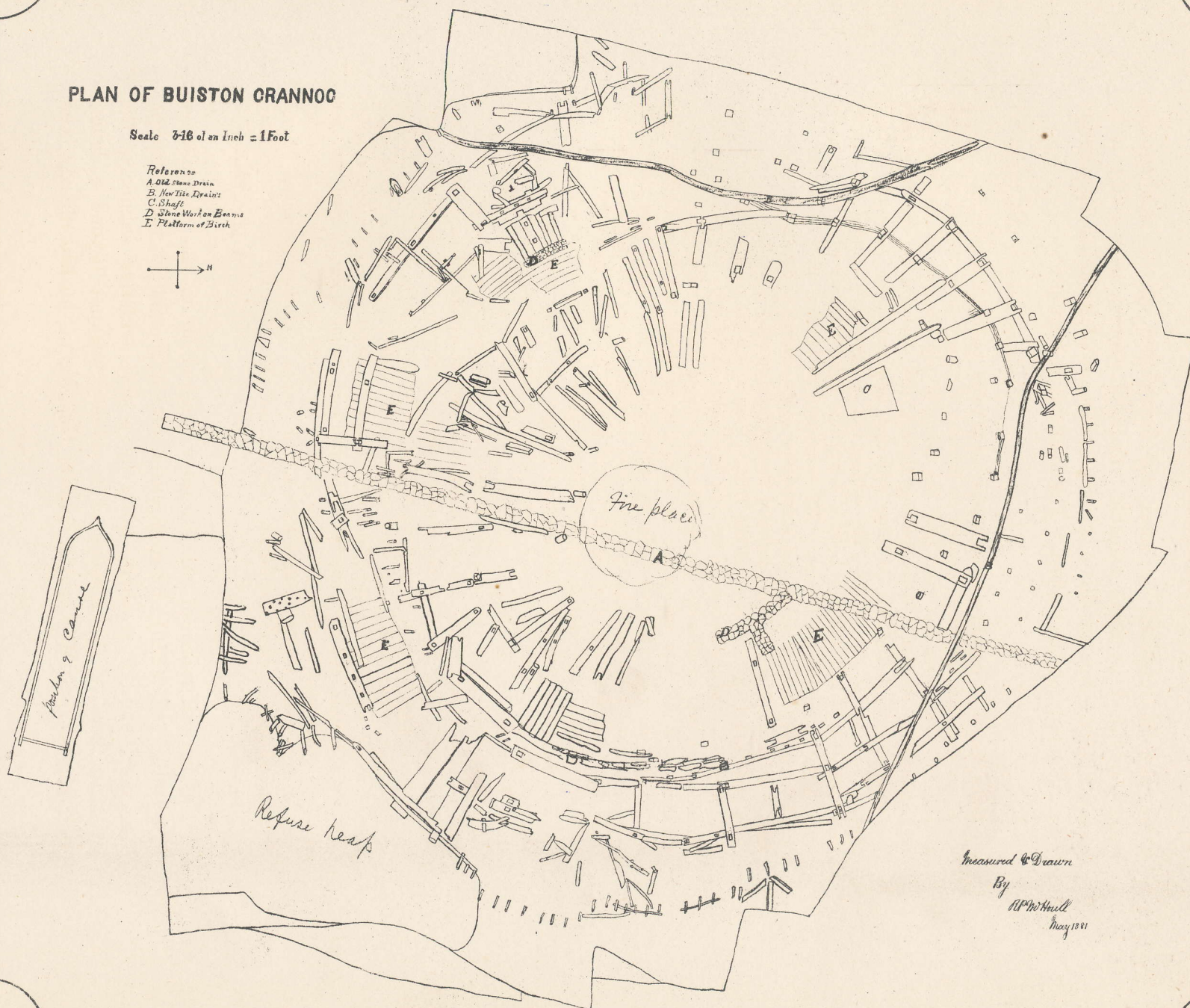
D. M'NAUGHT.

On the afternoon of the Saturday referred to in the above letter (December 4th, 1880), I accompanied Mr. M'Naught to the *quondam* "Knowe," and in a short time, by a few tentative diggings, the existence here of the remains of a crannog was put beyond a doubt. Our Secretary, R. W. Cochran-Patrick, Esq., M.P., who had already been

PLAN OF BUISTON CRANNOG

Scale 1/16 of an Inch = 1 Foot

Reference
 A. Old Stone Drain
 B. New Tilt Drain
 C. Shaft
 D. Stone Work on Beam
 E. Platform of Birch



Measured & Drawn
 By
 R. P. M. Hull
 May 1891

communicated with, then brought the matter under the notice of the Honourable G. R. Vernon, Auchans, as Commissioner for the Earl of Eglinton; and after due deliberation it was agreed to make an immediate investigation of the crannog on behalf of the proprietor. Accordingly, on the 10th December 1880, six men were started to work in presence of Mr. Vernon, Mr. Cochran-Patrick, and several ladies and gentlemen interested in the discovery. It is needless to describe the subsequent management of the excavations. The peculiar and absorbing interest excited by the variety of the finds during the first few days soon developed the true spirit of inquiry among all concerned, and even the old and highly-respected farmer gave up his long-cherished theory of the "duck-shooting," and ultimately rendered valuable aid by protecting the trenches from the prying curiosity of the general public, and picking up relics from the stuff wheeled out, which became visible by long exposure to weather and heavy rains. By general consent, at least *nem. con.*, I was appointed custodier of the relics; and now, acting on the old saying that possession is nine points of the law, I have assumed the role of historian.

Method of Excavating.—The excavations were commenced by making an explorative trench through what appeared to be the centre of the crannog, following as a guide the long diameter of the lake basin. This trench was from 2 to 3 feet deep, and about 5 feet wide, and its general direction lay in a line running from N.W. to S.E. The debris was wheeled sufficiently far not to cover the probable area of the island, and carefully examined, but nothing of importance was found, except a small spindle whorl (Fig. 5), and a fragment of a quern stone, till the trench reached the southern margin of the crannog. Here, after the tops of a few upright piles were exposed, a large beam was encountered, lying right across the trench, beyond which the stuff turned up from the bottom consisted almost entirely of broken bones and ashes. This was at once recognised as the wished-for midden, and its discovery at this early stage was fortunate, inasmuch as its examination would soon decide, with a trifling outlay, the quality of the crannog as a relic depôt. To this, therefore, attention was exclusively devoted, till the severity of the weather compelled us to abandon working altogether. The depth of clay and soil above the midden was about $2\frac{1}{2}$ feet, and after removing this, its remaining contents were wheeled to a separate place, so as to facilitate a more careful inspection after

exposure to winter weather. The large number of rare and valuable relics discovered during the ten days the men were thus employed induced the Earl of Eglinton to sanction a further outlay in the prosecution of these researches; and it was then agreed that nothing less than the removal of the debris over the whole area of the crannog would satisfy archæological demands. The tenant also very kindly consented to leave this portion of his field untilled, so that there was no necessity to resume work till the weather became really suitable for such an undertaking.

Early in April very dry weather, though cold, set in; and, on the farmer representing that more favourable circumstances for digging could not be expected, the investigation of the crannog was resumed.

While clearing out the refuse-heap the position of the surrounding piles immediately to the left of the original trench was readily ascertained to be arranged in three or four circles. With these as guides, it was an easy matter for the workmen to clear away the soil right round the central portion of the crannog without the necessity of constant supervision. The surface soil, which consisted of fine clay, varying in depth from about 6 inches at the centre of the mound to 2 feet beyond the outer circle of stockades, was first wheeled away, and, as no relics were expected here, there was no time wasted in searching for them. Afterwards the dark heterogeneous understratum of debris was carefully removed from above the woodwork and examined, though not with the same care as the contents of the refuse-heap. Here, however, a few important relics were discovered, among which are an ornamented gold spiral finger-ring, a small earthen crucible, and some fragments of pottery. Having completed this broad annular trench, the debris remaining on the central portion was taken away, but, contrary to expectation, nothing was found in it beyond the evidence of a few fireplaces, some slag, and one or two large wooden pins.

Structure of Island.—Notwithstanding the havoc committed on the woodwork of the crannog by long exposure to atmospheric agencies before it finally sank under the protective influence of the muddy water, and subsequently by the ruthless hands of the agriculturist, there still remained sufficient materials to give one not only a general, but particular and instructive notion of the mechanical principles on which the island was constructed. Its substance, as far as could be ascertained by digging holes here and there, was made up of layers of the stems of trees, chiefly birch;



I.—General View of Crannog, looking northwards. The water in foreground marks the position of refuse-bed.
(From a Photograph by Mr. Laverie.)

To face page 22.

intermingled with which were occasionally found various other materials, such as brushwood, heather, moss, soil, and large stones. Penetrating deeply this heterogeneous mass, towards its margin, were numerous piles, forming a series of concentric and nearly circular stockades, which were separated from each other by an interval of 4 or 5 feet. On the south side there were four distinct circles to be seen, but on the north only three could be detected, as the third outermost appeared to have merged into the external one; and, in accordance with this diminished number of circles, the breadth of the stockaded zone also diminished. The piles in the inner circle, which were strongly made, and showed evidence of having been shaped and squared by sharp cutting instruments, were uniformly arranged at a distance of from 4 to 5 feet, and enclosed an area more of the form of an ellipse than a circle (measuring 61 feet by 56), while those in the second and third circles were more irregularly, but generally more closely, set. All these uprights (except a few on the north side of the inner circle) were linked together by horizontal beams having square-cut holes, through which the upper ends of the piles passed. The horizontal beams were arranged in two ways. Some lay along the circumference and bound together all the uprights in the same circle to each other, while others took the radial position and connected each circle together. Some of the latter were long enough to embrace three circles, and when this was the case I have noticed that the upright in the middle circle was sometimes firmly caught in a deep cut in the transverse, instead of passing through a mortised hole (see sketch III.) Although the uprights in the inner circle were not linked together circumferentially along the whole course of the horizontal beams, the particular construction of the log pavement on the north side rendering this unnecessary, every one of them had a radial beam, directed from within outwards, which kept it from yielding to lateral pressure. This purpose was equally well served in several ways, sometimes the inner end of the radial beams pressed tightly against the upright, at other times the former projected half-way into the log pavement, where its end was firmly fixed by a thick pin passing through it into the under structures of the island, and its middle contained either a notch or mortised hole for holding the latter in position. The external ends of these radial beams were occasionally observed to be continuous with additional strengthening materials, such as wooden props and large stones.

The main object of the whole of this elaborate structural system was to

give stability to the island, afford fixed points on its surface, and prevent the superincumbent pressure of whatever buildings may have been erected over it from causing the general mass to bulge outwards—objects which appeared to have been most effectually attained.

The piles in the outer circle were merely round posts, smaller and more closely placed than those in the inner circles, being sometimes only a few inches apart, and appeared to have been bound together by a transverse rail, into which their tops were inserted after the manner of a hurdle. Portions of these rails, pierced with holes, were found at the south-east side, though none actually in position; so that the inference that the outer stockade was intended as a fence or bulwark seems quite legitimate. In support of this view I may state that nowhere along its course were the piles connected together by horizontal beams, either circumferentially or radially, nor did they penetrate deeply, so that for giving stability to the island the outer circle would be of little use.

Log Pavement.—Like the other crannogs examined by me, this one also had its central portion roughly paved with wooden beams like railway sleepers. On looking at these beams carefully it was observed that many of them, especially those made of oak, had also holes at their extremities, and that the plan of being linked and fixed together by stout wooden pins was by no means peculiar to the marginal portion of the crannog. Here, however, they lay mostly in a radial position, and on the south side; some were distinctly seen to be joined with the uprights in the inner circle with one end, while the outer, which pointed to the centre, was firmly pinned to the wood below. In several parts this general network of large beams was covered over by a pavement made of small round logs, mostly of birch, and placed close together, but, being soft and easily removed, I could not be certain whether or not it extended over the whole area. If so, it must have been a secondary pavement formed after the crannog was inhabited, as marks of fire, with slag and ashes, were found in two or three places lying immediately on the large oak beams below it.

On the north side of the crannog the uprights in the inner circle were not linked together circumferentially by horizontal beams, because (as I have already remarked) the different structure of the log pavement here rendered this plan unnecessary. The reason of this was, that on this side a considerable segment of the log pavement was built up, for a depth of 2 feet or so, of several layers of those round logs of soft wood, laid transversely

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to each other, and carefully arranged flush with the outer edge of the uprights, so that the only direction in which the latter were free was counteracted by the radial transverses alone (see sketch III.)

The space between this portion of the log pavement and the next circle of stockades was filled up with layers of turf and moss, the depth of which corresponded with that of the built-up edge of the log pavement. After



II.—Eastern Portion of Crannog, showing surrounding Stockades and portion of Log Pavement. The signboard marks the position of Canoe. (From Photograph by Mr. Laurie.)

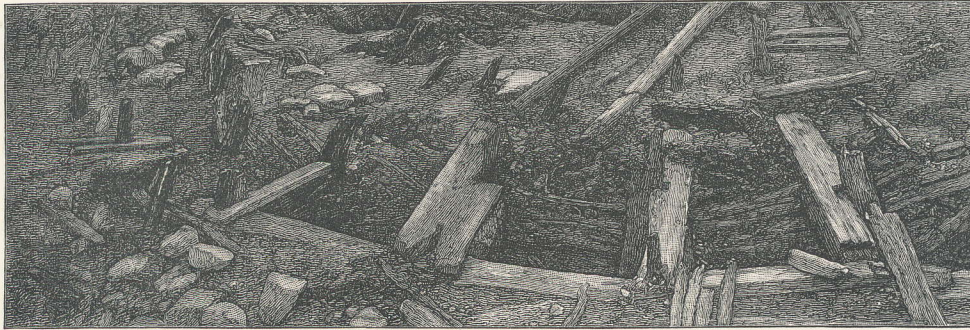
removing the turf and moss from this space in one or two places, we came on the wood of the island, which here consisted entirely of birch trees with the bark on, and looking as fresh as if they had been recently cut. The heather and moss also looked quite fresh, but soon, after exposure to the air, everything turned black.

Remains of Dwelling-house.—Over the area of the log pavement there were here and there the remains of large uprights, which appeared

to have been used as supports for some sort of dwelling-house. On the north side, a few feet from the margin of the log pavement, there were three or four of these, as if forming another circle, one of which I extracted with difficulty and found it to be 8 feet long, 7 of which were imbedded in the structure of the island. It was neatly formed, of a rectangular shape (10 inches by 6), and its downward end was cut and pointed as if for insertion into a mortised hole. The centre of the log pavement was occupied by a mass of ashes, charcoal, and stones, forming a bed about $2\frac{1}{2}$ feet thick, being nearly the entire depth of the mound above the woodwork, and a little to the west of this, and situated between two large square-shaped uprights, there was a thin bed of charcoal and burnt straw, together with some flat stones covered with a quantity of slag. On the east side, near the circle of piles, conclusive evidence of another fireplace was observed, but no well-formed hearths were anywhere met with.

On tracing the inner circle of stockades all round, it became evident that they formed part of some sort of enclosure. On the south-east side were two well-shaped rectangular uprights, about 2 feet 6 inches high, and 4 feet apart, firmly mortised into a well-constructed wooden flooring. These, as will appear from the sequel, formed portions of the doorposts of the entrance to the area of log pavement. Continuous with them, on the east side, and in the line of the inner circle, some of the intervals between the uprights were actually found to contain the remains of a composite wall of stone and wood. The space between the second and third piles, counting from the doorway, was thus filled up. At the base there were two layers of rectangular stones, then a flat beam of oak laid horizontally, then three layers of thin flagstones, well selected for size and shape, then another oak beam similar to the first, and, finally, other three layers of flat stones. This wall had partially fallen over, but the relative position of the respective layers was still retained, and showed that when standing it would be about 3 feet high (see sketch II.) The adjoining space, next the doorway, had two layers of stones at the base, and then a beam, but the rest was wanting. There were no further remains of a decided wall met with, though stones were abundantly encountered all over the area of the crannog. As all the uprights in the inner circle appeared to have been worn or broken, there is no evidence to show what their former height was, but as they now stand, they are not only different in shape, but considerably taller than those in the second and third circles, which are all shorter and more or less pointed.

Directly facing the door place, but 13 feet farther out, and nearly in a line with the outer circle of stockades, there was a large rectangularly-shaped beam 11 feet long, containing two mortised holes, one at each end, and having an interval of 8 feet 6 inches between them. This beam lay close to two massive uprights which projected about 2 feet above the surface of the wooden flooring, and, both as regards distance and shape, looked as if they had been mortised into the holes in the former. When the beam was thus applied and restored into its natural position, the portion of its under side between the mortised holes was observed to have a longitudinal groove, having its inner margin bevelled off, and containing a few round holes, which, however, did not penetrate to its upper surface, and just underneath it were the external ends of two large oak planks which extended inwards



III.—Portion of north side of Crannog, with the space between inner and second circle of piles dug out, showing arrangement of Transverse Beams and structure of the Log Pavement. (*From Photograph by Mr. Lawrie.*)

to the doorway. On careful inspection these planks were also found to contain a few vertical holes, so that it became apparent that the interval between them and the large transverse was protected by a series of upright wooden spars. External to this parapet-like arrangement was the refuse-heap, which, on being entirely cleared away, showed that the two uprights, though exposed to a depth of about 6 feet below the wooden pavement, were immovably fixed. Close to one of them deeper digging was attempted, with the view of getting an idea of its length, and at a depth of 4 feet still lower a solid beam could be felt with an iron probe; but whether the upright was mortised into it I could not determine. Continuous with the east end of this ashpit railing was the external circle of stockades which curved a little outwards, and at the other end, in addition to an external line of slender stockades which took a more rapid sweep outwards, there

was a straight row of uprights thickly placed together, and protected at their base by a strong fixed beam, into which they were mortised (see sketch I.) This beam was on a lower level than the platform in front of the doorway, and the upper ends of the uprights were free, but the probability is that originally they were bound by a transverse rail. On the inner side of this line a number of short beams were observed lying flat, as if they had been intended for a pathway, and towards its external end there lay a confused heap of slender beams projecting beyond the line of the outer stockades. It was this peculiarity that suggested this spot as the probable terminus of an underwater gangway leading to the shore, the determination of which led to the making of a trench some 12 feet farther out, which resulted in the discovery of a canoe.

Though nothing in the arrangement of the wooden structures here could be construed to indicate a regular landing-stage, it was very probable, from its southern exposure, the position of the canoe, and the proximity of the doorway to the log pavement, together with the pathway leading up to it, that this really was the ordinary landing-place as well as the outer entrance to the crannog.

Refuse-heap.—As mentioned above, the refuse-heap lay outside the stockades, and immediately beyond the railing in front of the supposed doorway to the central area of the crannog. It was of an oblong shape, measuring from 25 to 30 feet long (along the margin of the island), and about 15 to 20 feet across. Its depth, near the railing, would be about 5 feet in addition to its superficial layer of clay and silt. The principal ingredients of its central portion were broken bones and ashes, but towards the margin and lower strata these were largely mixed with decayed brushwood. To clear out its deeper portions was a difficult matter, owing to the rapid accumulation of water. One of the combs (Fig. 27), and a bone pin, were found here in my presence, at a depth of not less than 6 or 7 feet below the surface of the field. The lowest stratum reached consisted of what seemed to me to be lake silt, brushwood, and some large bones. The bones, especially those from the lower strata, were abundantly impregnated with the mineral Vivianite, which, in some of the larger ones, formed groups of most beautiful green crystals, similar in all respects to those found at the Lochlee crannog. What, however, made the investigation of the midden so full of interest was the number of rare and valuable relics recovered from its contents. Some of them were picked

up *in situ*, when the men were wheeling out the stuff, but others were subsequently found by riddling the debris when it became sufficiently dry to admit of this process.

The general results of the above observations may be categorically summed up as follows :—

1. The island, as far as could be ascertained from the investigations made, was composed of a succession of layers of the trunks and branches of trees, intermingled in some places with stones, turf, etc.

2. The whole mass was kept firmly together by a peculiar arrangement of upright and horizontal beams, forming a united series of circular stockades.

3. The outer circle was intended more for protection than for giving stability to the island, and in some parts, as at the east side of refuse-heap, was neatly constructed after the manner of a stair railing, while the inner one not only gave stability to the island but was used as a fence, or in connection with the superstructural buildings.

4. The central portion was rudely paved with wooden beams, many of which were firmly fixed to the lower woodwork by stout wooden pegs as well as to the encircling stockades, thus affording here and there, as it were, *points d'appui*.

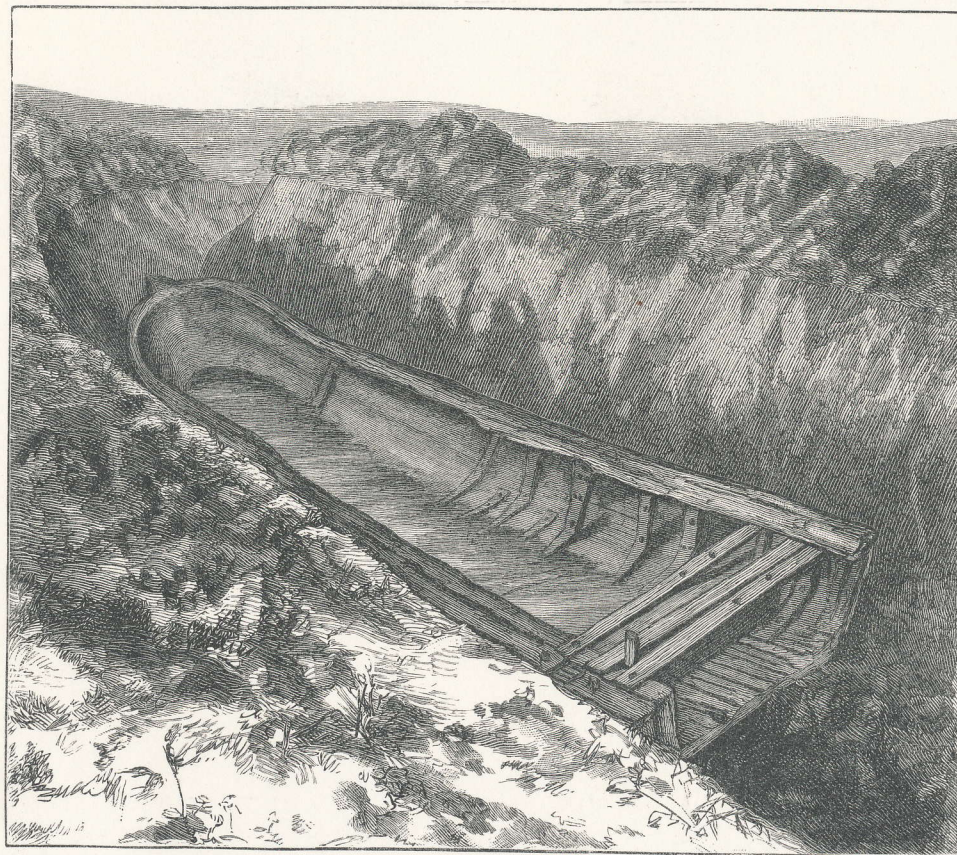
5. While there was one general fireplace situated near the centre, evidence of occasional fires elsewhere was quite conclusive, one of which appeared to have been a smelting furnace.

6. The entrance to the central area was looking S.E., and in front of it there was a well-constructed wooden platform, made of large oak planks, supported on solid layers of wood to which they were pinned down.

7. Beyond the platform, but separated from it by a massive wooden railing, was the refuse-heap; and, to the right of it, a pathway, also protected on its outer side by a railing, led downwards and westwards to the line of the outer circle, where there appeared to have been an opening towards a rude landing-stage at the water edge.

8. As to the kind of dwelling-house that no doubt once occupied this site, whether one large pagoda-like building or a series of small huts, the evidence is inconclusive, but so far as it goes it appears to me to be indicative of the former. In addition to what has already been stated, there remain to notice only a few broken pieces of wood containing round holes, together with a variety of large and small pins similar to those described and figured in my notice of the Lochlee crannog.

Discovery and description of Canoe.—The experience derived from the investigations of the crannogs at Lochlee and Lochspouts, in both of which a submerged gangway was found running to the nearest shore, was sufficiently suggestive to keep me on the *qui vive* for any indications of a similar structure here. On the north side, where the shore was nearest, though the digging was carried considerably deeper and farther out from the margin of the crannog than elsewhere, not the slightest appearance of outlying woodwork was observed; and as there was no probability of an approach from the more distant ends of the lake, the situation of a gangway, if such existed at all, was limited to the south-west side, where the shore would be about 150 yards distant. To determine this, the men were set to cut a trench about 12 yards distant from the crannog, across the most likely line, so as to intercept it, and after going down 4 feet they came upon a layer of brushwood, along with one or two beams, below which there seemed to be the usual lake mud. Upon forcing the spade downwards, however, a hard beam was encountered, which at first I took to be the discovery of part of the gangway we were in search of, and to satisfy myself on the point I took an iron rod, and, by carefully probing all over the bottom of the trench, ascertained that instead of a gangway we had come upon portion of a canoe. Guided by the direction of the supposed side of the canoe, which looked like a thin oak beam running along the edge of the trench, a suitable clearance was made, which revealed to the wondering gaze of the bystanders the front half of a large canoe. Upon being subsequently exposed in its entirety it was found to have the following dimensions and peculiarities. Its sides were supported by a series of well-shaped ribs which extended from the rim to near the mesial line, and sometimes a little beyond it. This, at first sight, gave the canoe the appearance of a boat, but after careful inspection it became apparent that these ribs were no part of the original vessel, but subsequent additions made for repairing and strengthening purposes. Nearly the whole of one side was lined with broad thin boards made of soft wood, external to which was the thin oak side of the canoe, having its cracks as well as the intermediate spaces between it and the strengthening boards actually stuffed with a species of moss. Moreover, the ribs on this side were more numerous than on the other side, no less than ten having been observed on the former, and their arrangement on both sides was totally devoid of regularity. Of the whole series of ribs



IV.—Appearance of Canoe *in situ*, after exposure.—(From a Drawing by Mrs. Anstruther, Dankeith.)

To face page 30.

only two were made of oak, the rest being of birch or some perishable wood, and so decayed that it was with great care they were prevented from being entirely destroyed by the workmen, as they offered no resistance to their spades. They were fastened to the canoe by wooden pins, arranged generally in couples forming two rows along the rib, and so closely were they placed that not less than sixteen were counted in one rib. In two places the canoe had been repaired by inserting a nicely fitting piece of oak planking instead of the original portion of the side. One of these patches measured 2 feet 3 inches long, and 10 inches broad, and was kept in position by two ribs, one near each end. The stem, which was symmetrically shaped and pointed, was pierced horizontally by a large hole, and about 3 feet from its tip each side had also an elongated hole near the rim, sufficiently large to admit of being easily grasped by the hand. Externally, and on both sides, there was fastened to the edge of the canoe, by means of wooden pins, a sort of gunwale, which extended from within a few feet of the stem till it projected a little beyond the stern. Close to the stern, two slender bars of wood, a few inches apart, stretched across, and after passing through the edges of the canoe terminated in being tightly mortised into the gunwale. These transverses contained two round holes similarly arranged as to position, being near the right side, and between them was inserted a movable sternpiece which was shaped to the curve of the canoe, *i.e.* approximately a semicircle, and made to fit into a shallow groove cut out of the solid wood. This sternpiece was strongly constructed, being $3\frac{1}{2}$ inches thick, 3 feet 6 inches long, and 1 foot $4\frac{1}{2}$ inches deep about the middle. About 15 inches in advance of the sternpiece there was a ridge across the bottom and sides of the canoe which looked like a rib, but was really part of the solid oak, evidently left for a special purpose. I also noticed one or two round holes in the floor, as well as others along its upper edge as if for thole pins. In two places equidistant from the ends, and about 4 feet apart, the gunwale had short pieces of wood fastened to it by vertical pins, as if intended for the use of oars. Amongst the decayed brushwood lying across the canoe was an oak beam, having one end projecting so much beyond the edge into the clay bank that the workmen in endeavouring to pull it out broke off the free end. This portion was rectangularly shaped, 5 inches by $3\frac{1}{2}$, and had its narrow side pierced with three round holes 1 foot 10 inches apart, which still contained the remains of broken pins.

The shell of the canoe was oak, made by scooping out the interior of a large trunk, but all its attachments, such as gunwale, sternpiece, cross spars at stern, and all the ribs except two, were made of a much less durable wood.

The extreme length of the canoe was 22 feet, but the inside measurements were as follows:—Length 19 feet 6 inches; breadth at stern 3 feet 6 inches; ditto, about the middle, 4 feet; and ditto, near the stem, 2 feet 10 inches; depth, about centre, 1 foot 10 inches.

Among the mud removed from the hull of the canoe were a few stones and portion of the skull of an ox. (See sketch IV.)

Oar.—Portion of what appeared to have been a large oar was found on the crannog, but, from its fragmentary state, we could only ascertain that the blade was 9 inches broad and $1\frac{1}{4}$ inch thick, and that the handle measured 5 inches in circumference.

DESCRIPTION OF RELICS.

The relics are here grouped under several heads, in accordance with the method of classification adopted in my previous monographs, and, to save repetition, I may explain, that (when not otherwise stated), they may be considered to have been found either *in situ* in the refuse-heap, or among its stuff after it was wheeled out and subsequently examined.

I. OBJECTS MADE OF STONE.

Hammer-Stones, Polishers, etc.—Only two or three typical hammer-stones have to be recorded as found on this crannog. One is an elongated flat pebble, and shows the usual markings at both ends, another only at

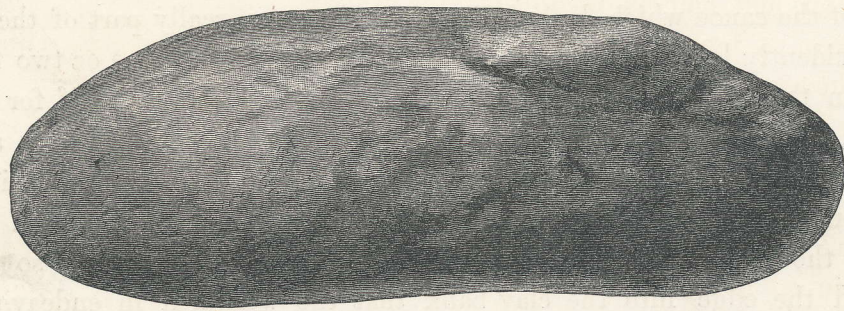


FIG. 1.—Stone Polisher. Scale $\frac{3}{4}$.

one extremity, and a third is somewhat circular, with the markings on the flat surfaces alone. Under the category of polishers are included seven or

eight highly polished water-worn pebbles, varying much in size and shape. Two, shaped like pebbles, are 7 inches long, and have slight pounding marks at both extremities (Fig. 1). Three are flat and oblong, and measure from $2\frac{1}{2}$ to 4 inches.

Sling Stones, etc.—Like the hammer-stones these objects are comparatively rare, only a few having been added to the collection.

Whetstones, Grindstones, etc.—Of these objects the following are noteworthy:—

1. A large flat implement, made of bluish claystone, with a smooth

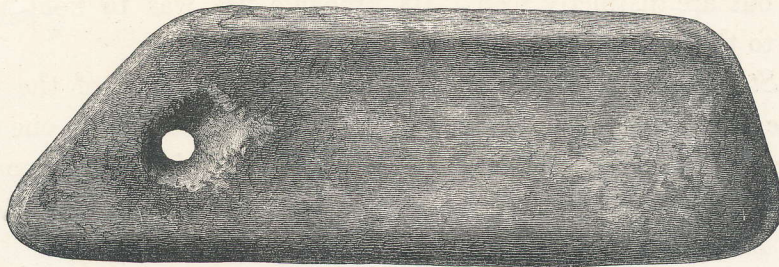


FIG. 2.—Whetstone (?). Scale $\frac{1}{4}$.

polished surface, and having a hole roughly cut out of one end. It measures 12 inches long, 4 broad, and $1\frac{1}{2}$ inch thick (Fig. 2).

2. One or two ordinary whetstones a few inches long, and from 1 to 2 inches broad.

3. An oblong block of sandstone, containing two smooth cavities, probably used for polishing small objects such as jet rings. One of the cavities is a hollowed circle $2\frac{1}{2}$ inches in diameter, and half an inch deep; the other is a groove 3 inches long, half an inch wide, and the same in depth (Fig. 3).



FIG. 3. Scale $\frac{1}{4}$.

4. Two fragments of a circular grindstone, made of fine red sandstone. One of the portions shows a few inches of the striated circumference as well as a small segment of the central hole. The diameter of the stone when whole would be about 15 inches.

5. Two large irregularly-shaped masses of whitish sandstone, each containing a smooth cavity shaped like a trowel or botanical spud, having the sides curled up. One of these curiously-shaped cavities measures 10 by 8 inches.

Its greatest depth, which is, at the base and in the line of the shortest diameter, is 3 inches. The other is precisely similar in shape, but of smaller dimensions. The latter stone has friction-marks on another of its sides.

6. Another mass of whitish sandstone, of a semi-globular shape, having a cup-shaped cavity on its flat surface, must also be included under this heading. The diameter of the cup is $5\frac{1}{2}$ inches, and its depth $2\frac{1}{2}$ inches. The rest of the flat surface all round the margin of the cup is smoothed and striated, evidently caused by the sharpening of tools. The cup itself was not used for this purpose, as the marks of the punch by which it was chiselled out are distinctly seen. Its probable use was to hold water, so essential to the sharpening of metal tools.

Cup Stone.—A small cup stone found in the interior of the crannog. The stone is smooth on its upper and under surfaces and on one side, but the other sides are irregularly shaped. The cup itself is quite smooth and circular, and looks as if it had been used as a small mortar. Its diameter is only 1 inch, and depth half an inch (Fig. 4).

Querns.—Only two upper quern stones, both of which are in a frag-



FIG. 4.—Fragment of Stone, with a cup-shaped Cavity. Scale $\frac{1}{4}$.

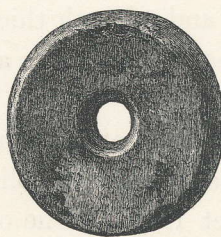


FIG. 5.
Spindle Whorl. Scale $\frac{1}{4}$.



FIG. 6.
Spindle Whorl. Scale $\frac{1}{4}$.

mentary condition. One was made of a fine quartz conglomerate, and, by putting the fragments together, it was ascertained that it measured 18 inches by 17 inches. It was flat, and more of a millstone shape, and the central hole was large (3 inches in diameter), circular, and not tapering. For the insertion of a handle there was a small square-shaped hole at its margin.

Portion of another quern made of whinstone, and of the usual type, indicates a medium size, of about 1 foot across.

Spindle Whorls.—A small spindle whorl neatly made of coarse shale. It is flat and circular, and has a diameter of 1 inch (Fig. 5). Another

perforated little object, of smaller dimensions than the former, is made of cannel coal (Fig. 6).

Flint Objects.—Two views of a portion of a curved flint knife, which has been much used, are here given (Fig. 7). Another small flint implement like a scraper is figured, because it exhibits one side which has been artificially polished (Fig. 8). Fig. 9 represents a small central core, neatly chipped all round. There is another large core of flint $3\frac{1}{4}$ inches in

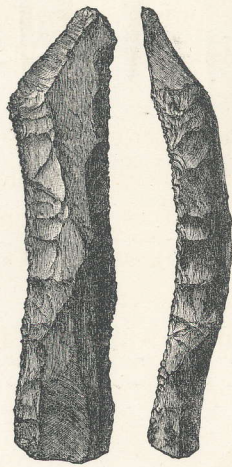


FIG. 7.—Flint Implement. Scale $\frac{1}{4}$.



FIG. 8.
Polished Flint Implement.
Scale $\frac{1}{4}$.



FIG. 9.—Flint Core. Scale $\frac{1}{4}$.

diameter, from which many flakes appear to have been struck off. Besides the above there were found a small portion of a finely chipped scraper, and a large quantity of broken flints and chips.

Finally, small pebbles, sometimes highly polished and variegated in colour, thin circular discs of stone about the size of a halfpenny piece, bits of dark shale as if water-worn, and a large quartz crystal having its angles worn off, may be mentioned among the nondescript articles under this heading.

II.—OBJECTS OF BONE.

Pins.—Twenty bone pins, varying in length from $1\frac{1}{2}$ inch to $3\frac{1}{2}$ inches. These articles are exceedingly well made, with round polished stems, tapering into sharp points. Some have round heads like beads, others are circular but flat on the top, while others again, especially the larger ones, are

irregularly shaped. One (Fig. 11) has its head ornamented by a circular

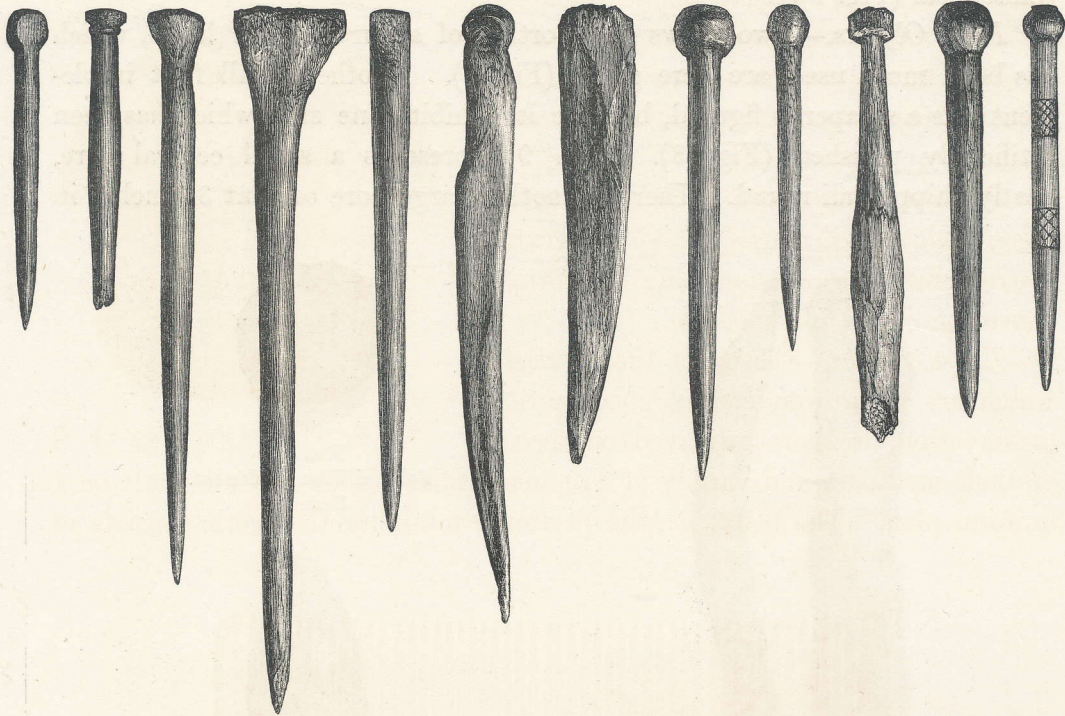


FIG. 10. FIG. 11. FIG. 12. FIG. 13. FIG. 14. FIG. 15. FIG. 16. FIG. 17. FIG. 18. FIG. 19. FIG. 20. FIG. 21.
Bone Pins. Actual Size.



Fig. 22.
Bone Needle.

ridge, surmounted by a wider rim neatly notched all round, and another has its shank surrounded by two bands of diamond-shaped spaces, formed by a series of incised lines slantingly crossing each other, as shown in Fig. 21. Fig. 19 is the representation of one only partially formed.

Needle.—A neatly formed needle, having an elongated eye at its extremity, precisely similar to a common darning-needle. It tapers gently into a sharp tip, and is smoothly polished all over. Its length is 2 inches (Fig. 22).

Knobs.—Three round objects of bone, about the size of a marble, each having a portion of a slender iron pin more or less projecting.

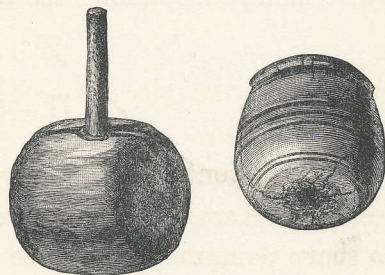


Fig. 23.—Bone Knob. Fig. 24.—Bone Knob.

Two are quite smooth, globular, and precisely similar to each other in every respect (Fig. 23); the other is ornamented by a few incised circles and ridges (Fig. 24).

Fig. 25 represents a curiously-shaped object of bone, the use of which is unknown to me.

Worked Bones.—Several portions of bone, exhibiting marks of sharp cutting instruments, but not assuming the form of any recognisable implements.

Toilet Combs.—Three of these articles, which are in a wonderfully good state of preservation, are here engraved on account of their structure and variety of ornamentation. They are all made on a uniform plan. The body, *i.e.* the portion containing the teeth, consists of



FIG. 25.—Object of Bone. Scale $\frac{1}{4}$.

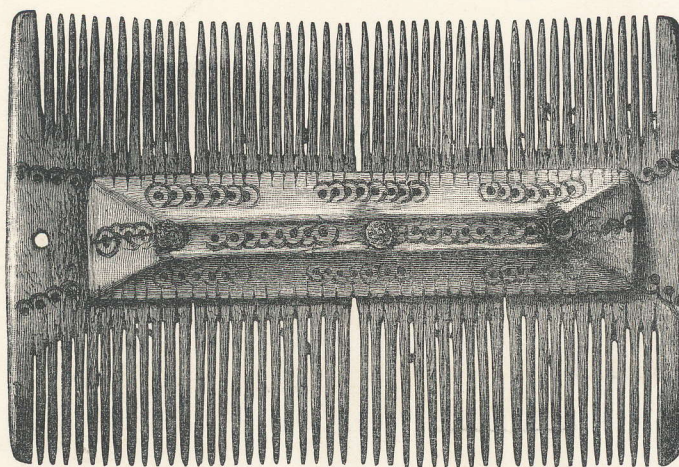


FIG. 26.—Bone Comb. Scale $\frac{1}{4}$.

three or four flat pieces kept in position by two transverse bands of bone, one on each side, and riveted together by three or four iron rivets. The comb represented by Fig. 26 has its body made of four portions, but only three rivets. The ornamentation is alike on both sides, and at one end there is a small hole, probably for attaching it to a string. It is $3\frac{1}{2}$ inches long and $2\frac{1}{4}$ inches broad. That figured next (Fig. 27) has the

same breadth as the former, but not quite the same length, being only 3 inches long. The ornamentation is similar on both sides.

From slight cuts on the cross bars, corresponding to the intervals

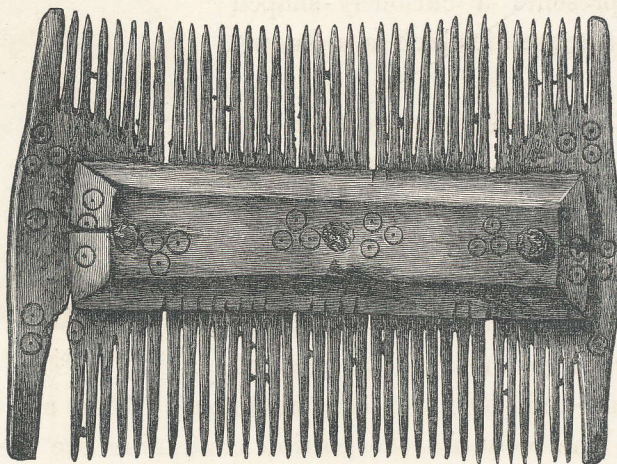


FIG. 27.—Bone Comb. Scale $\frac{1}{4}$.

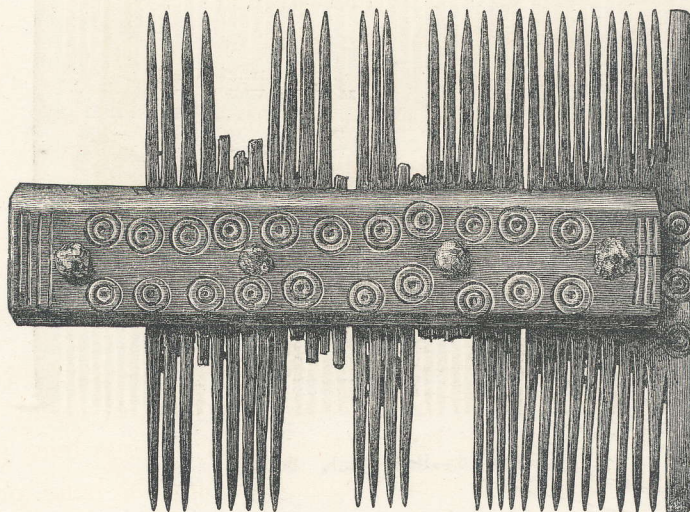


FIG. 28.—Bone Comb. Scale $\frac{1}{4}$.

between the teeth, it is manifest that the teeth in both these combs were formed by a saw, after the pieces were riveted together.

The third comb here engraved (Fig. 28) is in a somewhat fragmentary condition, but when whole it would be about 4 inches long. The

body was made up of four portions, and contained four iron rivets. Its ornamentation consists of a central dot, surrounded by two incised circles, and is alike on both sides. The similarity of these concentric circles induces me to believe that they must have been formed by a die, probably branded on with a hot iron.

Some other fragments of similar combs were found, representing at least three additional combs, with teeth rather finer than those in the illustrations.

III.—OBJECTS MADE OF HORN.

Several portions of deer horns, consisting of tynes and thick portions of the body of the horn, together with a few of the roe-deer, presenting sometimes marks of a saw and sometimes those of a sharp cutting tool, were found in the refuse-heap. The few worked objects I have to record were all made from horns of the former animal. One large antler, having portion of the skull attached to it, and the entire lateral half of the skull of a roe-deer with the horn still adherent, show that the horns were not shed ones, but those of animals actually caught and killed. The manufactured implements consist of a few pointed objects, and one or two handles, apparently for knives.



FIG. 31.
Knife-Handle.
Scale $\frac{1}{2}$.



FIG. 29.
Implement of Horn.
Scale $\frac{1}{2}$.



FIG. 30.
Horn.
Scale $\frac{1}{2}$.

Fig. 29 represents a highly polished dagger-like implement, measuring $7\frac{1}{2}$ inches long. Another, of about the same size, is coarsely cut out of the side of a large horn (Fig. 30). A small pointed object is figured among the bone pins. See Fig. 16.

Knife-Handles.—One of the handles is well made, having the rough surface removed with a sharp cutting instrument. It is 4 inches long (Fig. 31). Another is only 3 inches long, and has a notch at one end.

IV.—OBJECTS OF WOOD.

Wooden objects are extremely rare. One or two fragments of what appeared to have been a bowl, portion of the blade of an oar, a bit of board partially burnt and penetrated by four round holes, together with three pins almost identical with those figured in the article on Lochlee (see Figs. 72, 73, 74). The bowl was ornamented by two or three incised parallel lines near the rim. Another small fragment, which might have been of the same vessel, had a clasp of thin brass over it, as if it had been mended.

V.—OBJECTS OF METAL.

(a.) *Articles made of Iron.*

1. *Axe Head*.—This implement, which is represented in Fig. 32,



FIG. 32.—Iron Axe. Scale $\frac{3}{4}$.

measures 3 inches along the cutting edge, $4\frac{1}{2}$ inches from the centre of cutting edge to the back of the hole for handle, and 2 inches through the centre of this aperture. A neighbouring farmer, who had carted a load of the stuff from the midden for potting plants, found this axe head while making use of the stuff in his greenhouse, and returned it to me.

2. *Gouge*.—This instrument appears to have had a portion broken off its point. It still measures 14 inches long, and its other extremity is pointed for insertion into a handle. (Fig. 33.)

3. *Knives*.—Six well-shaped knife-blades, all with tangs for insertion into handles. The blades vary in length from 2 to 4 inches. (Figs. 34 to 39.)

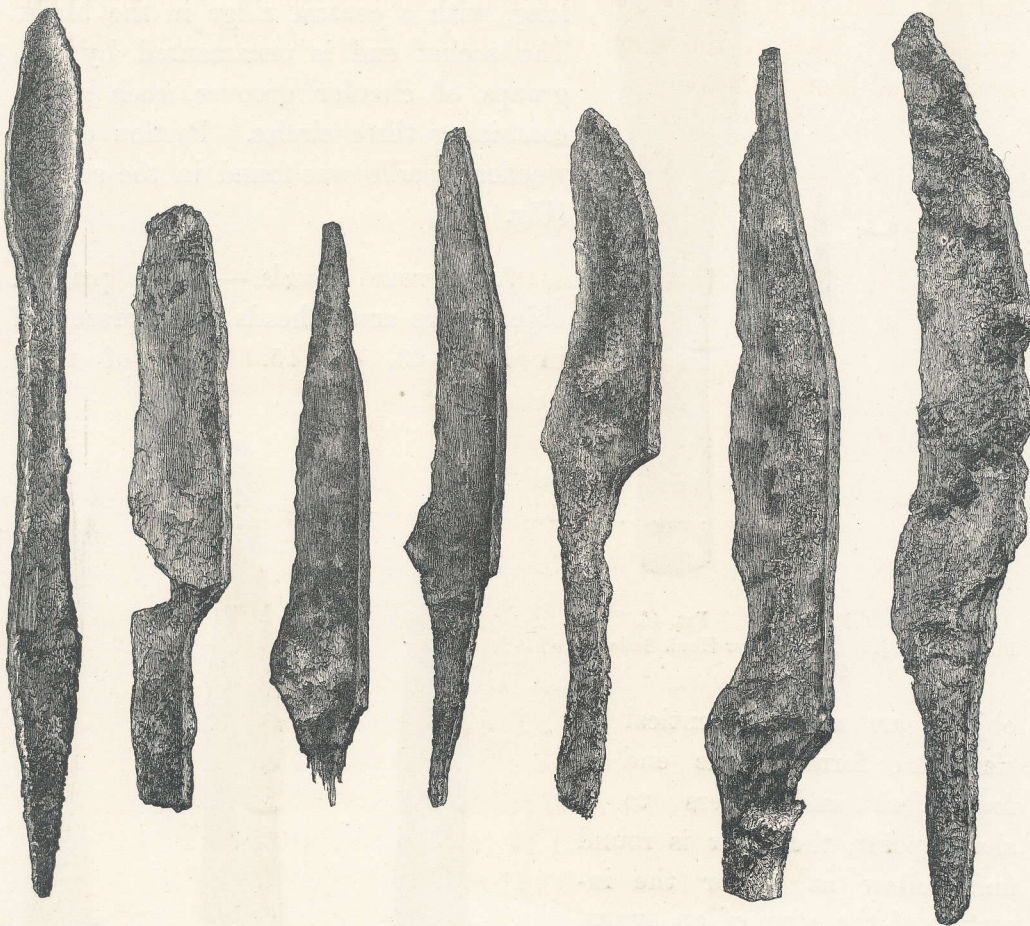


FIG. 33.
Gouge.
Scale $\frac{1}{3}$.

FIG. 34

FIG. 35.

FIG. 36.
Iron Knives

FIG. 37.
Scale $\frac{1}{4}$.

FIG. 38.

FIG. 39.

4. *Punch*.—This implement is 6 inches long, and rectangularly shaped, with its angles slightly flattened. (Fig. 40.)

5. *Awls*.—Of these objects there are three: one is very slender and sharp, but only 2 inches long (Fig. 41). Another is 4 inches long, and the third is a much larger implement, being $7\frac{1}{4}$ inches long.

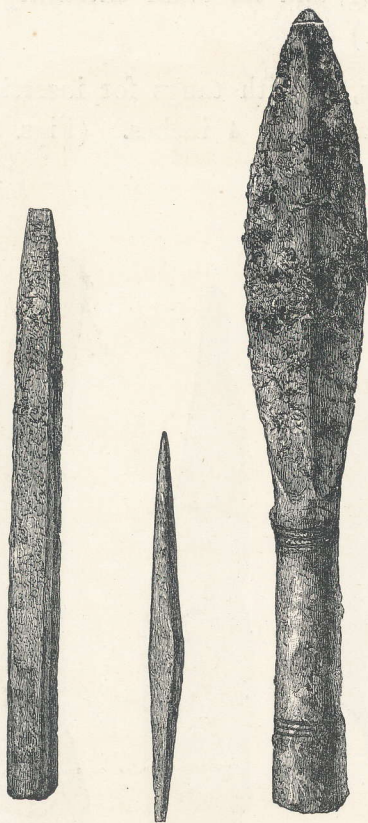


FIG. 40. FIG. 41. FIG. 42.
Punch. Scale $\frac{1}{2}$. Awl. Scale $\frac{1}{2}$.
Spear Head. Scale $\frac{1}{2}$.
Scale $\frac{1}{4}$.

objects are almost identical in size and form. One end is four-sided and tapers to a sharp point, the other is round and hollow as if for the insertion of the stem of an arrow. Length $2\frac{3}{4}$ inches. The third has the socket end very similar to the former, but the front portion is flat, and widens out a little before coming to a sharp point. (Fig. 45.)

6. *Spear Head*.—This is a well-shaped socketed spear head, $8\frac{1}{2}$ inches long, with a central ridge in the blade. The socket end is ornamented by two groups of circular grooves, each group containing three circles. Portion of the wooden handle was found in the socket. (Fig. 42.)

7. *Arrow Heads*.—Three pointed objects like arrow heads are represented in Figs. 43, 44, 45. Two of these

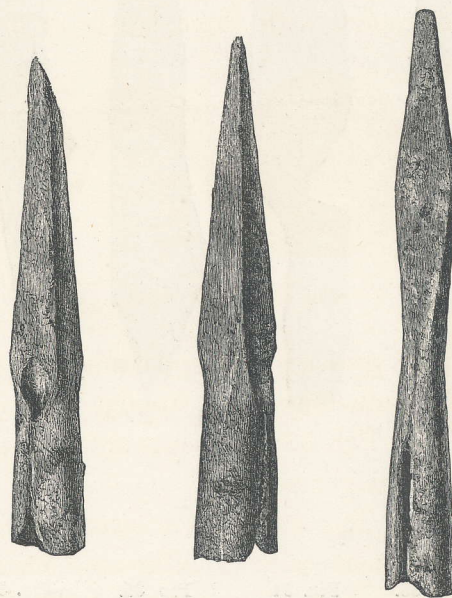


FIG. 43. FIG. 44. FIG. 45.
Arrow Points (?). Scale $\frac{1}{4}$.

8. Fig. 46 represents a curious object, having a spring attached to

each side, both of which are still compressible, and a curved portion containing a round hole. Total length is $4\frac{1}{2}$ inches, length of springs 2

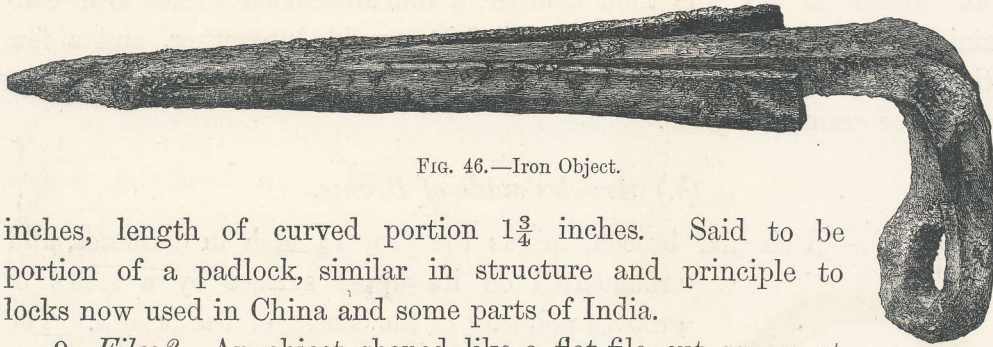


FIG. 46.—Iron Object.

inches, length of curved portion $1\frac{3}{4}$ inches. Said to be portion of a padlock, similar in structure and principle to locks now used in China and some parts of India.

9. *Files?*—An object shaped like a flat file, cut square at one end, and having a sharp-pointed tang at the other. It is of uniform thickness throughout, and measures $3\frac{1}{2}$ inches long, $\frac{5}{8}$ inch broad, and rather more than $\frac{1}{8}$ inch thick. There is another object exactly similar to the above in form, but a shade smaller. They look like small files, but no grooves now remain.

10. *Spiral Objects.*—Fig. 47 represents a slender iron rod, forming a close spiral with three twists at one end, and a slight curve at the other

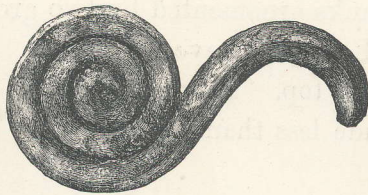


FIG. 47.—Spiral Object.

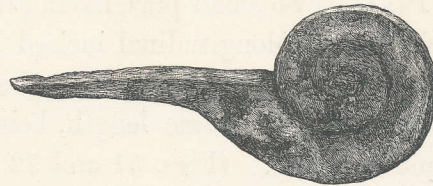
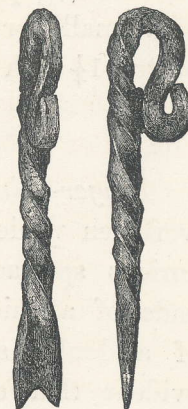


FIG. 48.—Iron Object.

which presents the appearance of having been fractured. The diameter of the circular portion is rather less than 1 inch. Fig. 48 represents another spiral object terminating in a straight point.

11. Fig. 49 represents two views of a small ornamental instrument with a bifurcated termination, which might have been used as a compass for describing small circles, such as are seen on some of the combs. Its length is 2 inches.



12. *Miscellaneous Objects.*—When the stuff wheeled from the refuse-heap had dried up and become pulverised

FIG. 49.—Iron Object.
Two Views.

during the summer months, several articles were picked up by visitors, among which may be mentioned four large nails, a small ferrule, a small iron link thicker on one side than another, a much-corroded socket still containing a bit of wood, a flat portion of iron welded together, and a few other bits of iron. These, however, cannot be positively asserted as belonging to the crannog objects.

(b.) *Articles made of Bronze.*

Brooch.—A circular brooch, minus the pin, $1\frac{1}{2}$ inch in diameter, and ornamented on its upper surface by a series of grooves pointing to the centre of the brooch. The under surface is quite plain. A small portion of the pin is still attached to the brooch, and the opposite side of the brooch is worn into a hollow by the friction of the point of the pin. The transverse grooves are also much worn, but where nearly obliterated the external and internal margins of the brooch show the hacks, corresponding with their extremities. (Fig. 50.)

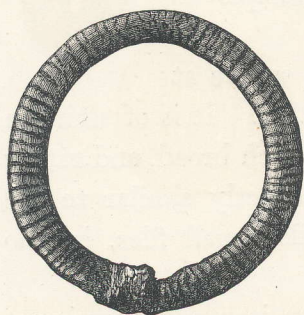


FIG. 50.—Brooch.

Pins.—Two small pins, having round shanks ornamented by two groups of circular and longitudinal incised lines. Both pins have flat heads, and one has a blue bead stuck in its top. They are nearly of the same length, being a shade less than a couple of inches. (Figs. 51 and 52.)

Several bits of brass plate, apparently used as clasps for mending purposes. One, indeed, was found attached to a small portion of a wooden bowl. Also a thin brass button $1\frac{1}{4}$ inch in diameter.

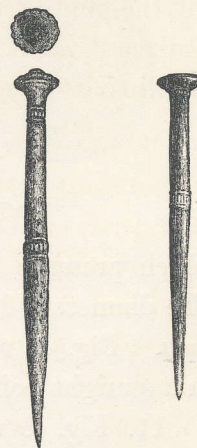


FIG. 51.

FIG. 52.

Pins.

(c.) *Articles made of Gold.*

Finger-Rings.—On the 14th December one of the workmen while clearing out the refuse-heap turned up a curious spectacle-like ornament, made by twisting the ends of a thick and somewhat square-shaped gold wire into the form of a double spiral ring (Fig. 53). Upon close inspection it became evident that originally this article was a handsome spiral finger-ring, containing $5\frac{1}{2}$ twists, but that, from some means or other, two of the

twists had been forced apart from the others. The direction of certain scratches, and a slight mark as if a blow had been struck (probably the spade of the finder), seem to me to confirm this explanation. It lay buried half-way down in the midden, close to the base of the large parapet in front of the entrance to the area of the log-pavement. It weighs 300 grains, and its internal diameter measures a shade over $\frac{5}{8}$ of an inch. On the 16th April, while clearing away the soil on the west side of the crannog, a few feet to the inner side of the inner circle of piles, another spiral ring was found (Fig. 54). It is made of round gold wire, not quite so massive as the

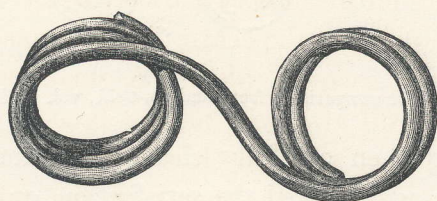


FIG. 53.—Gold Finger-Ring. Actual size.

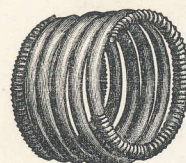


FIG. 54.—Gold Finger-Ring.

former, and contains rather more than six twists. Both ends taper slightly, and, for nearly a whole twist, are ornamented by a series of circular grooves which gives them some resemblance to the tail end of a serpent. The colour of the gold of this ring is a brighter yellow than that of the former. Its internal diameter is exactly $\frac{5}{8}$ of an inch and its weight is 245 grains. Both rings were quite clean and free from all tarnish when exposed.

Coin.—Mr. Robert Dunlop, ironmoulder, a native of Kilmarnock, but now residing at Airdrie, happened to visit his friends at the beginning of the year, and hearing of the discoveries at the Buston crannog, took the opportunity of visiting it. It was not, however, idle curiosity that prompted him, but a true spirit of inquiry which often ere now led him to wander abroad as a humble student of nature, and on one occasion even as far as the famous Kent's Cavern. Being a Science teacher in Chemistry he was desirous of securing specimens of the different forms of vivianite, and so picked up from amidst a mass of broken bones and ashes that had just been wheeled from the midden, a lump of a bluish pasty substance, thinking it to be the amorphous form of this mineral. He carried this lump home with him for the purpose of analysing it, but, owing to other duties, was unable to do so till some three months afterwards. Having then taken a portion of the bluish mass, he mixed it with water in a test tube, and on

proceeding to dissolve it, noticed a yellow speck in the blue material. Curious to know what this could be he emptied the tube of its contents, and found what seemed to be a small gold coin doubled up. The slightest effort to restore the coin to its proper shape detached the portions, and almost at the same moment each portion separated into two thin plates. Mr. Dunlop then observed that between the two plates there was a layer of a dark brittle substance which he most judiciously collected into a small glass

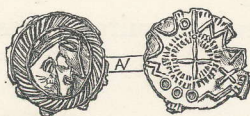


FIG. 55.
Coin found in Crannog.

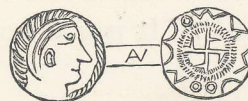


FIG. 56.
For comparison, from Smith's *Coll.*, vol. i. plate xxii. 9.

tube for further analysis. Having then carefully cleaned the four little plates with a weak solution of nitric acid, he had the satisfaction, on putting them together, of restoring the shell of an antique coin, which, as will be seen from Fig. 55, retains its impressions and characters on both sides wonderfully distinct. This valuable contribution to the collection I received at once from its discoverer, as well as the above narrative of its discovery.

Mr. Cochran-Patrick, M.P., to whom I immediately forwarded the different portions of this coin carefully arranged under a glass slide, as well as the glass tube containing remains of its core, submitted them to the consideration of J. Evans, Esq., F.R.S., F.S.A., so well known for his special knowledge of ancient British coins.

The following interesting remarks by Mr. Evans on the subject have been sent to me by Mr. Cochran-Patrick.

“The two plates of gold seem originally to have formed the shell of an early forgery of a coin, the oxidised core of which forms the contents of the small tube. I thought at first that the substance¹ might be resinous, but I think it is some salt of copper. Some chemist could readily try this. The coin itself belongs to a class of trientes which have been found almost exclusively in England, and are probably of Saxon origin. Enclosed is an impression of one found near Dover. See Smith's *Coll. Ant.*, vol. i. pl. xxii. 9. Others were in the Bagshot Heath or Crondale find. See *Num.*

¹ Mr. Dunlop, the finder of the coin, and Mr. John Borland, F.C.S., F.R.M.S., Kilmarnock, analysed this substance, and both pronounced it to be a salt of copper.

Chron., N. S., vol. x. 164, pl. xiii. 24 to 26; *Num. Chron.*, vol. vi. They probably belong to the sixth or seventh century. The find is of value as helping to assign a date to the crannog." (Figs. 55 and 56.)

VI.—MISCELLANEOUS OBJECTS.

1. *Armlets*.—Fragments of three armlets made of cannel coal, very similar to those found at Lochlee and Lochspouts.

2. *Jet Ornament*.—A small link-shaped ornament of jet, with two small holes for attachment in one side (Fig. 57). This object was found on the surface of a mound of débris long after it was wheeled out, and hence no dependence can be put on its antiquity.

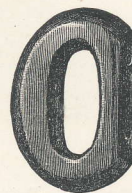


FIG. 57.—Jet Ornament.



FIG. 58.—Bead.

3. *Beads, Vitreous Paste, etc.*—A cylindrically-shaped bead, variegated with three different colours, red and yellow predominating over patches of transparent glass (Fig. 58).

Half of a tiny yellow bead, of a vitreous substance, only $\frac{3}{16}$ of an inch in diameter.

A round object, of the size of a small marble, made of vitreous paste, variegated with blue and white, but without any aperture.

Another small flattened object, about the size of a shilling, made of a white compact vitreous substance. It is very smooth, rounded on one side, but flattened on the other. Looks like a drop of a semi-liquid that had fallen on a smooth floor.

One or two little round bits of a dark slag.

4. *Glass*.—Three fragments of thick, bright-green glass, all irregularly shaped.

5. *Leather*.—Several strips and chippings of very thin leather.

6. *Pottery*.—A small fragment of Samian ware, only about a square inch, with the glaze nearly worn off, but quite unmistakable in its character.

Fig. 59 represents a fragment of a small dish with its outline. This vessel was made of a hard tinkling ware, black externally, and of a dull white inside, and measured $3\frac{1}{2}$ inches across its mouth and 3 inches in depth.

Portion of a large vessel made of coarse materials, having a short spout

just below its everted rim (Fig. 60). The outside is very black and the

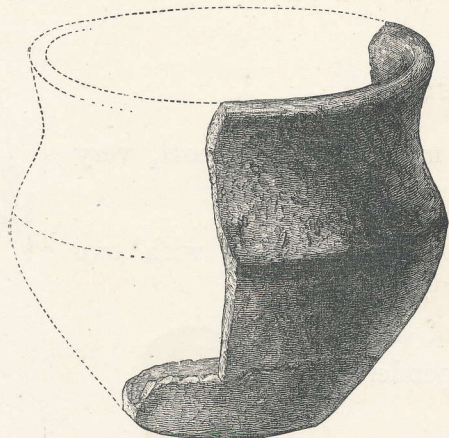


FIG. 59.—Pottery

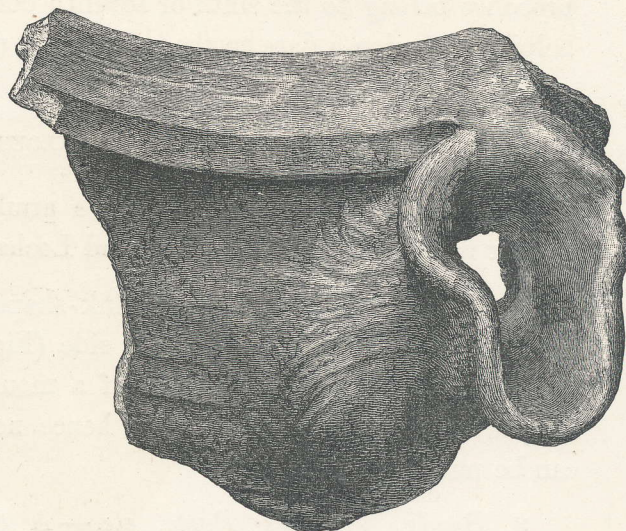


FIG. 60.—Pottery.

inside has a reddish tinge. Another portion, apparently of the same vessel, shows the striation of the potter's wheel.

Fig. 61 represents a curious little knob of pottery. None of the pottery found here had any appearance of a glaze.

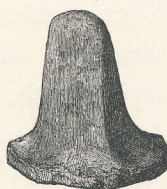


FIG. 61.—Pottery Knob



FIG. 62.—Portion of Button (?).

7. Portion of a small object like a button, made of a soft chalky substance, is represented in Fig. 62. It shows some lines as an ornament on its upper surface.

8. *Crucibles*.—A small conical crucible, made of hardened clay arranged in two thin layers, the external of which looks coarser than the other. It has a triangularly-shaped mouth, and at one of its apices there is a slight indentation for facilitating the pouring out of the smelted material. Its depth is $1\frac{1}{2}$ inch, and circumference of mouth 7 inches. It is cracked all over with heat, and a little dark slag forming a horizontal rim on its inner

surface still remains to attest its purpose. This relic was found on the west side of the crannog, not far from the site of the second spiral ring, but outside the inner circle of piles (Fig. 63).

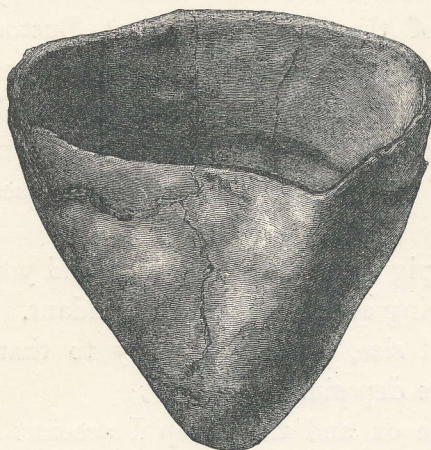


FIG. 63.—Clay Crucible. Actual size.

A second crucible, neatly formed and quite whole, was found in the débris wheeled out from the lowest stratum of the refuse-heap. It is of the usual conical form, with a three-cornered mouth about 3 inches in circumference, and measures 1 inch in depth. Particles of a yellowish metal, like brass or bronze, are seen, mixed with a kind of slag, near one of the corners. The outside has a glazed appearance, as if it had been subjected to great heat, and to the apex of the cone there is a small bit of cinder still adherent.

Portion of a third crucible, very similar to the last described, was also found at the crannog by a visitor, and publicly exhibited at a bazaar in Kilmarnock.¹ This crucible is interesting as furnishing undoubted evidence that it had been used for melting gold, there being several globules of this metal adhering to its sides, both inside and outside.

R. MUNRO.

¹ Along with a few other relics here exhibited (most of which, I believe, were taken from the Buston Crannog) were—the bone pin represented by Fig. 21, a small bronze ring, an

iron knife-blade, and a fragment of pottery which was found to fit exactly into that represented by Fig. 60.

REPORT OF OSSEOUS REMAINS FOUND AT BUSTON.

The osteological specimens obtained from what appears to have been the kitchen-midden of the lake-dwelling at Buston consist in greater part of bones of the ox; while next in frequency are bones of the sheep and the pig. A calcaneum and astragali of the red-deer have been found, as also portions of large red-deer horns, and two portions of roe-deer skull with horns attached. In addition a radius and metacarpal of a goose were found.

The bones of the pig were both full grown and young; the full grown, with the teeth worn, being apparently most abundant. They have belonged to an animal of small size, similar probably to that whose remains are found in other Ayrshire deposits.

The remains of the ox and the sheep I account more interesting, on account of variety among them.

Ox.—Examining six portions of ox skull, I find one with the horn-core represented by a mere nodule; two specimens each with a portion of horn-core 2·8 inches in greatest diameter, one with a horn-core 2·2 inches diameter at base, and two others with horn-cores 1·8 inches in greatest diameter at base, and one with a horn-core 1½ inch diameter. All the horn-cores are fragmentary; but I judge that none of the last three could have exceeded 5 inches in length, while the first two must have been much longer. Only one of these specimens, that with the smallest horn, has the suture above the occipital bone open. The others must have been adult; and we may judge that we have not to deal with mere aboriginal *Bos longifrons*, but with varieties of ox. The variation seems not to have been confined to the horns. Among a number of first phalanges the majority were slender and small, but there was considerable variety; and one specimen, contrasting strongly with the others by its stoutness, might have been from a small modern specimen. All the hoof-bones which I collected, about half a dozen, were very small. Three metacarpals were picked up, all measuring about 7 inches long and 1 inch in breadth at the narrowest part of the shaft; and these are all adult specimens. Two adult metatarsals measure, the one 8 inches in length and the other only 7·3, while in breadth they both measure only ·9 of an inch. A complete adult radius measures only 9 inches in length. A lower end of a humerus is only 2·5 inches

broad. Among six calcanea the largest measured 5·5 inches, and the shortest 4·3. In one specimen the orbit is 2·4 inches diameter, and in another 2·8 inches, which is decidedly large. On the whole, the evidence is to the effect that while the prevalent variety had small horns, and was generally diminutive and slender-limbed, there was mixed with it a variety with larger horns and stouter limbs, whether of greater height or not I cannot say.

Sheep.—Only one portion of horn-core was found with portion of the skull. The portion of horn-core is between 3 and 4 inches long, and at the base its largest diameter is 1·5 inch, its smallest 1 inch. At its inner margin it starts at an angle of about 20° from the vertical plane; while I should say that in modern sheep that angle is always 45° at least. I apprehend that this is probably the so-called goat-horned sheep, scarcely now to be got in Shetland.

The following measurements of limb-bones may be interesting, as indicating considerable variety in size as well as deviation from modern proportions, when they are compared with the bones of the same sheep skeleton which I have used for comparison in previous communications.

One adult metatarsal measures 5·7 inches long and ·4 broad, and another 5·2 long and ·4 broad at the narrowest part of the shaft. In the modern specimen this bone is 4·8 long and ·5 broad.

Three specimens of adult radius have been gathered, measuring in length respectively 6·6, 6·, and 5·9; while in the modern specimen the corresponding bone is only 5·2.

Two complete humeri are among the specimens gathered. The largest, not quite adult, is 5·7 inches in greatest length; while the other, quite adult, is only 5 inches long, and in the modern specimen the humerus is 5·2 long. Four additional specimens of the lower end of the humerus have been obtained; and one of them is decidedly larger than the largest complete specimen, and another decidedly smaller than the smallest complete bone.

The sheep was therefore long and slender legged, like those found in other Ayrshire deposits. But it is difficult to determine whether the differences in size depend on sex, or some other cause, such as cultivation.

No goat bones have been found in connection with this lake-dwelling.

J. CLELAND.