I.

NOTES OF THE DISCOVERY AND EXPLORATION OF A PILE STRUCTURE ON THE NORTH BANK OF THE RIVER CLYDE, EAST FROM DUMBARTON ROCK.

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Position and Construction.—The structure, which from its proximity to the Hill of Dumbuck has been called the Dumbuck Pile Structure, is situated about 1 mile east from Dumbarton Rock, and 4 feet above low-water mark and 5 feet below high-water mark. At high water or during spring tides there is a depth of water on the structure of 5 to 8 feet from present level, and 12 to 18 inches additional down to the wooden floor, the difference being made up of a deposit of sand and mud. This part of the river bank from Dumbarton eastwards to Dunglass is of gravel and sand and a thin top layer of mud deposited within the last thirty to forty years consequent on the polluted state of the river.

When first discovered a few of the tops of the ring of oak pile stumps were just visible protruding from the sand and abraded to a point by the action of water and age. There are twenty-seven of them, embracing a diameter of about 50 feet, and spaced from 6 to 9 feet apart. No gaps occur, all the original piles appearing to be in position. They are not placed in a perpendicular position, but have a bias or lean, which is very perceptible towards the inside. Within this circle, and at a depth of from 12 to 18 inches, is a kind of flooring of horizontal timbers in three layers crossing each other at right angles. Some of the timbers of the top layer are curved in keeping with the circumference. The ends of those which protrude all round the structure at the outer edge show signs of fire. At all the piles a larger tree than those forming the flooring proper has been used, either with the natural knee or fork, or a similar recess mortised to fit the pile; and to make the locking more secure, stone wedges or jams have been used. The floor is entirely of fir, alder, and birch, which is so permeated with water that the spade cuts through it all with the greatest ease. Underneath this timber flooring is a bed

of blue clay which extends all over the shore. In the centre there is a circular stone-walled cavity of about 6 feet diameter, inside of which were found remains of what seemed like wattle or basket work of hazel twigs and rods. From the stones lying in and about the cavity it would appear as if the wall round it had been originally of some height. Round the outside of this centre cavity were five circular paved spaces, the paving raised slightly above the top tier of the wood floor, and all were outlined by a row of soft wood piles about 2 feet apart. The flooring stones had evidently been packed in with a mixture of gravel and clay.

Midway between the centre and the outside piles of the structure what looked at first to be tree roots or snags were noticed partly imbedded in the sand. On being washed of the adhering soil, holes of 12 inches wide by 25 inches deep were found cut in them at an angle, to all appearance for the insertion of struts for the support of an upper structure. On the outside, 14 inches down on either side, holes of 2 inches diameter were found intersecting the central hole, apparently for the insertion of a wooden key or treenail to retain the strut. These were found at intervals, and were held in position by stones and smaller jammers. One of the piles is now here, having been drawn out in order to exhibit the way in which they have been dressed for driving. We have verified the fact that these piles have been driven home, the striation being visible, caused by the obstruction of pebbles, etc. From the centre of the structure due west a belt of stones, forming a pavement about 6 feet wide and just a-wash with the mud, extends for about 20 yards until it intersects a breakwater, which extended right round the structure at a distance of about 12 to 14 feet from the piles. This breakwater must have been of some height originally, as a modern ditch (there seem to be different ditches, but they are not clearly distinguished from each other) or gullet running towards the shore, a short distance to the west of the structure, has been entirely lined with stones taken from it. This wall round the structure, with an outer breakwater of wood, would go to form an important defence. The bulk of the finds were made in the refuse that had accumulated in the space between the

piles and this outside structure. Beyond the breakwater there exists a rough but systematically laid pavement with a bottoming of stone about 20 to 25 feet wide extending round the structure except in proximity to the dock and dock causeway.

Discovery of a Canoe.—A few days after the excavations were commenced, an oak canoe was discovered lying some 20 yards to the north-east, with the prow towards the river. It was at once cleared out inside by myself, and in the bottom were found a spear-shaped slate object, similar to others found about the structure, an ornamented oyster shell, which has since mouldered away, a stone pendant ornament, and an implement of bone. The canoe measured, when discovered, 35 feet 7 inches long, but between the time of discovery and removal to the Kelvingrove Museum, Glasgow, a portion of the prow, which tapered to a point, and which showed two oval hand holes, was taken away by some visitors. On removal the canoe measured 33 feet long, 4 feet beam at the stern, which appeared to have been square, and about 2 feet deep. The hull was 3 inches thick. When in use it had been repaired, as the bottom had a rent and was held together by several well fitted, soft wood clamps. There were several plugged holes, and marks where the seats were fitted. It is the largest canoe hitherto recorded as found on the Clyde. On being removed it was at once seen that it had lain within a dock-like structure. The impression at first was that some driftwood had got silted up against the canoe, but on examination we found piles driven in at stated intervals supporting the walls, which were partly formed of wood and stone. No stones were visible when the canoe was first observed, but we found them on further investigation. A causeway of timber and stone connected the dock with the pile structure.

Mortised Log.—When excavating outside the piles immediately to the west and north of the smaller causeway which intersects the refuse bed and breakwater, a squared and mortised log was found. It is of oak, and measures 15 feet 4 inches in length, 18 inches in breadth, and 4 inches thick. There are six mortised holes bevelled to the extent of 3 inches. The first hole is 18 inches from the end. It was under this piece of

timber that the large, spear-shaped object of slate was found, and later on one of the smaller ones.

Animal Remains.—The remains of animals found, so far as they have been identified, are bones of the ox, horse, sheep or goat, swine, horns of the red deer and roe deer, and bones of a few large birds. The bones are mostly the long bones of the limbs, and are broken and splintered longitudinally, and many of them made into implements more or less sharpened at the points. One large pair of antlers of the red deer with part of the skull attached was found. One branch is complete and shows six tines, the other is partly broken. From tip to tip it must, when entire, have measured 48 inches.

Implements and Objects with artificial work or ornamentation.—The worked objects found in the course of the excavations were chiefly of bone and stone. They may be conveniently classed for description in two categories :—

(1) Objects of types which are familiarly known to archæological science from their frequent occurrence in other sites of early occupation ; and,

(2) Objects of types which are not known to have been discovered elsewhere, many of which, however, bear a close resemblance in character to some of the objects found in the fort at Dunbuie.

In the first class the most numerous are the pointed implements of bone. They are mostly made from the splintered long bones of oxen and sheep, often with the ends of the shafts left entire, while the splintered end is worn down to a chisel-shaped edge or to a tapering point. There are upwards of ninety of these.

The implements of deer-horn are portions of tines or of the beam of the antler cut or sawn across in lengths of a few inches, and prepared apparently as hafts or handles by being bored longitudinally at one end. Many portions of deer-horn exhibit marks of having been sawn partially through, and then broken off ; and one of the tines still attached to part of the beam of an antler shows marks of an attempt having been made to saw it off.

The implements of flint are three in number.

The first is a tiny scraper of yellow flint, $\frac{5}{8}$ inch in diameter, showing the bulb of percussion on the flat side.

The second is a hollow scraper formed in a flake, $1\frac{5}{8}$ inches in length by $\frac{5}{8}$ inch in greatest breadth, and $\frac{1}{4}$ inch in greatest thickness. The semicircular hollow is formed in the thick back edge of the flake. It is $\frac{5}{8}$ inch in length along the edge, and $\frac{1}{4}$ inch in depth in the width of the flake, and its contour is carefully worked from the flat side of the flake. The thin edge of the flake also shows secondary working in a kind of knife-edge.

The third implement is a slender flake of brown flint, 2 inches in length and somewhat less than $\frac{1}{2}$ inch in width at the widest part, having an indentation with a scraper-like edge in the thick part of the back, and the knife-edge having slight traces of use or of secondary working.

A flake of a black stone resembling pitch-stone, $1\frac{3}{4}$ inches in length with a triangular point, is marked by two parallel lines, $\frac{1}{2}$ inch from the butt, one of which goes round on both sides, while the other crosses one side only, giving the suggestion of the marks of a ligature. The stone is very hard but shows no secondary working.

A small water-worn pebble of yellow flint of the same quality as two of the implements was also found. It shows no trace of human workmanship.

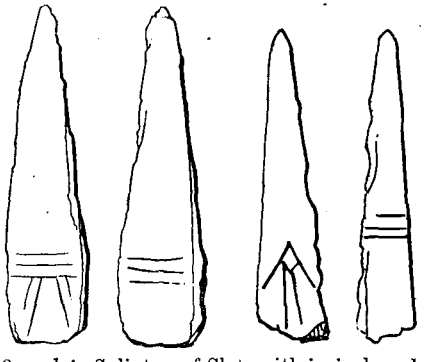
An oval water-worn pebble of quartzite with flattish upper and under surfaces, $2\frac{1}{4}$ inches in length by 2 inches in breadth and $\frac{3}{4}$ inch in thickness, having on one of its flat surfaces a shallow, oblong indentation across the centre bent obliquely to the axis of the pebble. This is a very characteristic specimen of a variety of stone implement of which there are several examples already in the National Museum, some of them being from Brochs. They are also not unfrequently found in Ireland.[1]

[1] See a notice of two found in a crannog at Clones by Dr S. A. D'Arcy, in the *Journal of the Society of Antiquaries of Ireland*, vol. xxvii., 1897, p. 213, with some speculations as to their probable use.

Of other stone implements there are several hammer-stones or pounders; whetstones; oblong water-rolled pebbles with their ends abraded by use; similar pebbles with grooves or notches in the sides and edges, probably sink-stones; the under-stone of a quern, 16 inches in diameter; and a rubbing-stone or grinding-stone, on the edge of which are some indistinct incised markings not unlike oghams.

In the second class the most numerous are the implements and ornaments of stone and shale.

In the order of discovery the first of these to come under our notice were the spear-shaped objects of slate. The first was found in the canoe.



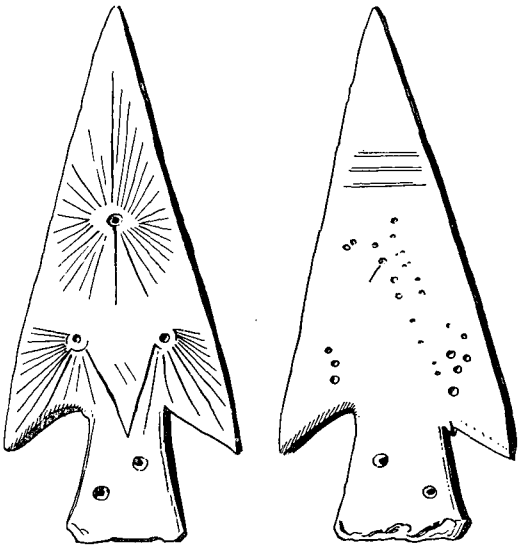
Figs. 1, 2, 3, and 4. Splinters of Slate with incised markings. (¼.)

It is a naturally-shaped splinter of bluish slate, 7 inches long, $1\frac{1}{2}$ inches wide at one end, and tapers roughly to a point. On one side (fig. 1), $1\frac{1}{4}$ inches from the thick end, there are incised three transverse lines, from the centre of the lower of which two double lines run diagonally. On the other side (fig. 2) three transverse lines can be discerned: a mark we find on other similar stones and also on a bone implement.

Another piece of slate of similar shape and character, $4\frac{3}{4}$ inches in length and $1\frac{1}{8}$ inches in breadth at the base, differs only in having the sides partially smoothed and rounded by grinding. Its markings bear a remarkable similarity to those just described. On one side (fig. 3), close to the base, is a figure composed of two lines meeting in an angle at the

top, and from between them two lines slightly diverging are joined to the other two by shorter lines meeting each other at an angle. On the other side (fig. 4), at $1\frac{1}{2}$ inches from the wider end, are incised three parallel transverse lines.

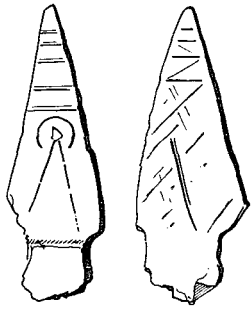
There is a similarly shaped piece of slate $9\frac{3}{4}$ inches long, showing some signs of having been ground on one edge towards the point, but with no other marking save three dots or small pit-marks on its edge.



Figs. 5 and 6. Opposite sides of a spear-shaped Implement of Slate. ($\frac{1}{4}$.)

The next object of slate has been carefully dressed to shape, and finished by grinding. It is spear-shaped and has barbs giving it all the appearance of the conventional barbed spear. It measures 11 inches long and $4\frac{3}{4}$ inches wide at the barbs, and was found beneath the mortised log. The slate is of a softer nature than the two above described. It is ornamented on one side (fig. 5) with a cup-mark $4\frac{1}{2}$ inches from the point, from which lines of nearly equal length radiate, those carried up towards the point being

longest; to the other direction a short line more like a duct from the central cup-mark has been cut. At the distance of $6\frac{3}{4}$ inches from the point two similar cups are placed equally distant from each other, from which rayed lines are traced diagonally downwards but not upwards, the line furthest to the right of the one group meeting that furthest to the left of the other group. At the end where a handle may have been fastened (and that such a thing has been there is suggested by the smoother surface observable) there are two holes; the lower one was plugged by what appeared to my late lamented colleague and myself to be either a piece of shale or thong. On Mr Miller punching it out in my presence it



Figs. 7 and 8. Opposite sides of a spear-shaped piece of Slate. ($\frac{1}{4}$.)

appeared to us under a magnifying glass to be part of an oak pin, the features of the oak wood being clearly discernible. On the reverse side (fig. 6) a somewhat indefinite figure outlined by small cups or pits is discernible; also there are the three transverse lines like those already noticed.

Two other spear-shaped pieces of slate were found, partially shaped by artificial means, one of which presented no particular features of interest. The second, 6 inches long, has on one side (fig. 7) in the centre a circle marked round a piece of sulphuret of iron, with several of which it is studded, and from which two rayed lines project diagonally downwards. Between this and the point are five parallel markings slightly hollowed.

On the reverse side (fig. 8) are several parallel lines apparently artificial, and some others which seem to be natural.

There are also two triangular stones, 5 and 6 inches long respectively, showing ligature marks. Both are natural stones apparently selected on account of their size and shape.

A thin, nearly triangular, piece of mica-slate, $4\frac{1}{2}$ inches in length by $1\frac{3}{4}$ inches in greatest breadth and scarcely $\frac{1}{4}$ inch in thickness, has the wider end ground on both sides to a curvilinear edge.

Two implements of stone are peculiar in being inserted in bone handles.

Implement of stone resembling a knife (fig. 9), but too blunt to cut.

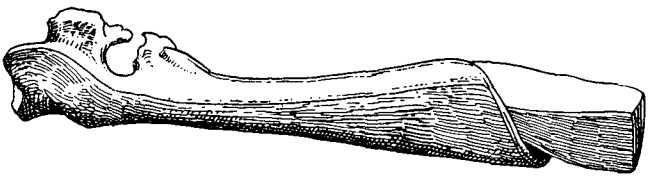


Fig. 9. Implement of Stone resembling a Knife, in a Bone Handle. ($\frac{2}{3}$.)

It is a peculiarly shaped stone, having a tapering tang-like projection at one end, which has been inserted in the hollow of the bone which serves as a handle, while the thinner edge of the blade-like part of the stone has been ground to a kind of blunt edge. The handle is part of the inferior end of one of the limb bones (*humerus*, probably) of a pig, about a fourth of the length being cut off the superior portion. The tang-like part of the stone is merely jammed into the cavity of the bone. The stone has evidently been selected on account of its peculiar form; and is (except for the grinding of the edge) of purely natural formation—the whole surface smoothly water-worn and the edges rounded. It measures 3 inches in length, the tang-like part being nearly 2 inches in length, and the blade-like part a little over 1 inch in length and $\frac{3}{4}$ inch in breadth. The back is fully $\frac{1}{4}$ inch in thickness. The bone handle is $4\frac{1}{4}$ inches in length.

Implement of stone, also resembling a knife (fig. 10), but smaller and

sharper than that just described. It is also a peculiarly shaped stone, having a tapering tang-like projection at one end, which has been firmly inserted into the wider end of a tine of the horn of a red deer, from which the stone blade projects $1\frac{3}{4}$ inches. The handle is $3\frac{1}{2}$ inches in length and terminates in the curved and pointed end of the tine. The stone blade is a splinter of hard slate, naturally formed, but having a curious resemblance to the round-edged point of a knife. The extreme upper part of the round edge has been ground, but the lower and straighter part of the edge retains its natural jagged fracture.

Several stones which cannot be clearly classified as implements were found and retained on account of their having apparently artificial markings of various kinds on their surfaces.

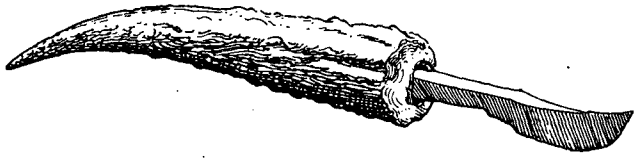


Fig. 10. Implement of Stone in Handle of Deer-horn. ($\frac{2}{3}$.)

One triangular-shaped block of sandstone has four cups, three in a group and one apart, near the margin. It measures from base to apex $14\frac{1}{2}$ inches, and in thickness 4 inches. The single cup is $2\frac{1}{2}$ inches diameter by $\frac{1}{4}$ inch in depth—the group of three are somewhat smaller.

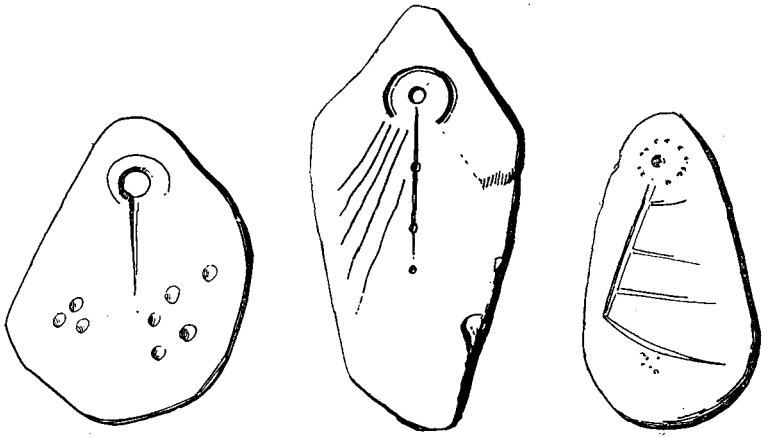
Another sandstone block, irregularly shaped but somewhat circular, $21\frac{1}{2}$ inches by $16\frac{1}{2}$ inches, is intersected with a natural line of cleavage, on which some five cup-shaped marks have been incised. On the reverse we find on the same cleavage line that there are other small cup-like marks. The outstanding feature is an incision 2 inches wide at the edge tapering to $2\frac{1}{2}$ inches, apparently formed by rubbing.

A stone, semicircular, and polished by rubbing or grinding on the concave surface. The curve from point to point is $1\frac{1}{4}$ inches. It measures $14\frac{1}{2}$ inches in length by $9\frac{1}{4}$ inches wide, and tapers $3\frac{1}{2}$ inches to an edge of $\frac{1}{4}$ inch.

One slab of limestone, in length 28½ inches by 10½ inches, height and depth 5 inches. On one side there are pitted marks which may have been caused by its use as an anvil.

A piece of sandstone, 7½ inches by 4½ inches by 3 inches, with a cup in the centre, 1¾ inches by ⅝ inch deep, was also dug up.

One small stone of metamorphic sandstone, somewhat pear-shaped (fig. 11), is pierced for suspension towards the apex. Round this hole is a ring-mark, and from the hole a line or duct runs downwards. There are two groups of three and five pit-marks respectively on the surface.



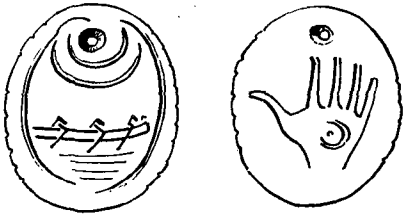
Figs. 11, 12, and 13. Perforated Stones with incised markings. (⅓.)

Another, measuring 4 inches by 2½ inches, of red sandstone, shows a cup, ring, and duct. It is not pierced.

There is another stone of similar material (fig. 12), but much larger, measuring 7 inches long and 3½ inches greatest width, and weighing 22 ounces. It is likewise pierced near the apex, and round the whole a circle runs which is incomplete on the under side, and through the interrupted circle issues a line or stem of 3½ inches in length, which runs from the hole downwards. This line intersects at equal distances two small cup-like marks, and terminates in a third and similar hole. From

between the lower edge of the ring and from the first cup-mark proceed five rayed diagonal lines, the centre one terminating in a small cup on the extreme edge. Towards the lower right edge on the side of the stone are four small pit-marks, the lower two of which are larger than any of the others, being $\frac{5}{8}$ inch diameter. There are also two pit-marks on the lower edge of the hole. This stone is, perhaps, one of the most characteristic the excavations have produced. It was found imbedded in the dock on the removal of the canoe.

An oval, water-worn pebble of hard, purplish sandstone, $6\frac{1}{2}$ inches in length by $3\frac{1}{2}$ inches in greatest breadth, has at its narrow end on its flatter face (fig. 13) a pit or commencement of a perforation which has



Figs. 14 and 15. Obverse and Reverse of perforated Pebble. ($\frac{2}{3}$.)

not been carried through, with a circle round it of small indentations, from which proceeds a line downwards inclined to the left, with four offshoots nearly at right angles, the lower being curved to the line of a natural scaling off in the surface of the stone.

A small, oval, water-rolled pebble, pierced for suspension, which was found in the canoe, presents an elaborate piece of workmanship. Round the hole on one side (fig. 14) are two concentric, partial rings, and a third and almost complete ring forms a border right round the stone, inside of which there is what appears to be a canoe or boat, in which three men are engaged paddling or rowing,[1] the water being shown by several

[1] In the *Proceedings*, vol. xxi. p. 193, there is an engraving of a pendant of jet or cannel coal, found in excavating on the farm of Broughton Knowe, Skirling, Peeblesshire, on which is incised a similar figure of a boat with two persons in it. Boat-figures are well known in connection with rock-sculptures in Scandinavia.

straight, parallel lines. On the other side (fig. 15) is the representation of a left hand with a tiny cup and ring mark in the palm. The edge of the stone has been ornamented with numerous small notches. The nature of the stone I have been unable to determine.

There is also a thin slate ornament, pierced for suspension, measuring nearly $1\frac{1}{2}$ inches in length by $1\frac{1}{4}$ inches wide. Round the hole is a ring from which two lines diverge, terminating in two pierced holes near the bottom edge.

The presence of carved figures of shale representing the human face

Figs. 16 and 17. Rude Figures of Shale. ($\frac{2}{3}$.)

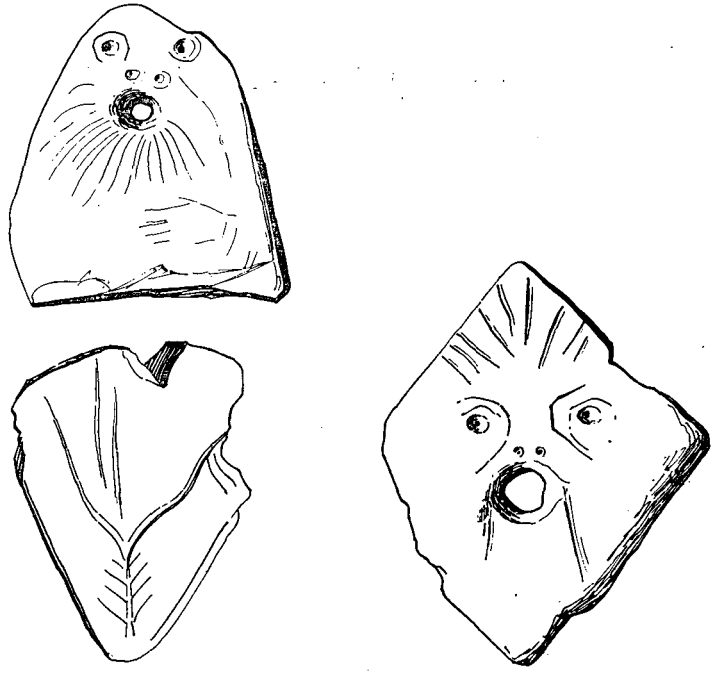
and figure,[1] and also of what are evidently ornaments, has given rise to a great deal of discussion.

The first figure (fig. 16) was found in the refuse heap, and got broken with the shovel, but is now repaired. It represents the head and breasts of a female, and is grotesque in character. It is fully 3 inches long.

The second figure (fig. 17), $1\frac{3}{4}$ inches long, found in the circular cavity in the centre of the structure, is broken, and appears to be that of a man. It is plain, and no attempt at ornamentation has been made.

[1] Many very crudely expressed representations of human figures carved on stones are given by Solomon Reinach in his articles on "Sculpture in Europe" in *L'Anthropologie*, vol. v., 1894.

The third, which is, unfortunately, broken across the middle (fig. 18), is rather grotesque and striking, having a voluminous beard, and the lower part of the body compressed into the wedge-shape of the stone. The hands are crossed and the toes meet at the apex. It is lightly engraved, and measures 6 inches long.



Figs. 18 and 19. Rude Figures of Shale. ($\frac{2}{3}$.)

The fourth (fig. 19) is the face of a man cut on a diamond-shaped piece of shale, 3 inches by $2\frac{1}{4}$ inches. As in the case of the two previously mentioned the mouth is perforated, and in this instance evidently for suspension. It was dug out by myself in the month of January. Previous to this a similar shaped piece of shale was found, and on

examination it fitted exactly to this last figure, the one having been split off the other.

The ornaments are eleven in number, and from their form, and being mostly perforated, are obviously suitable for suspension.

No. 1 is $4\frac{1}{2}$ inches long, $2\frac{3}{4}$ inches in width at broadest part, and fully $\frac{1}{2}$ inch in thickness (fig. 20). The hole for suspension is $\frac{3}{4}$ inch from the top, and lines from the hole radiate upwards. An incised line about $\frac{1}{4}$ inch from the edge, which is rounded towards the bottom, where it meets and loops up towards the centre, terminating in a large hole nearly an inch in diameter. There is a cup-mark near the bottom in line with the duct, and there is one on each side of it close to the curve of the line already referred to.

No. 2, which is about $3\frac{1}{2}$ inches long and $3\frac{1}{2}$ inches wide, has rayed lines running downwards from a ring, which encircles the hole at the distance of $\frac{1}{8}$ inch.

No. 3, measuring $2\frac{3}{4}$ inches by $1\frac{3}{4}$ inches, is similar in ornamentation, only the rayed lines terminate in little dots or cups (fig. 21).

No. 4 measures $2\frac{1}{2}$ inches by $2\frac{1}{2}$ inches, and has three incised lines radiating downwards from the suspending hole.

No. 5, 3 inches by 2 inches, has no small hole for suspension, but in the centre there is a hole measuring nearly an inch in diameter. From this hole there is a short duct or channel and one concentric ring; on the other side, in this case differing from the others, there are three semi-circular lines on one side above the hole, and several rayed lines running from the bottom edge.

No. 6, measuring $2\frac{1}{2}$ inches by 2 inches, is somewhat elliptic in form (fig. 22). There are two holes for suspension $1\frac{1}{2}$ inches apart. Round the topmost hole is a semi-circular ring. From this run seven rayed lines of unequal length, one of which terminates at the second hole, and the others in cupped marks. A curved line, partly forming a border, runs between the cupped marks and the edge.

No. 7, irregularly triangular piece, naturally shaped (fig. 23), measuring $4\frac{1}{4}$ inches in length by 2 inches in breadth at the wide end. Within an

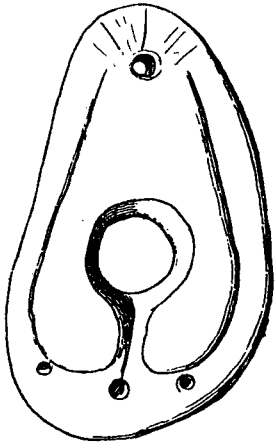


Fig. 20.

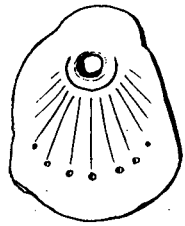


Fig. 21.

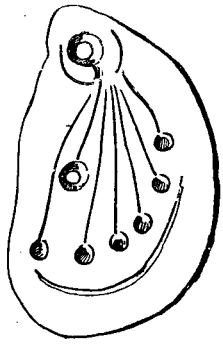


Fig. 22.

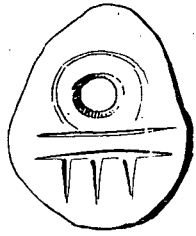


Fig. 24.

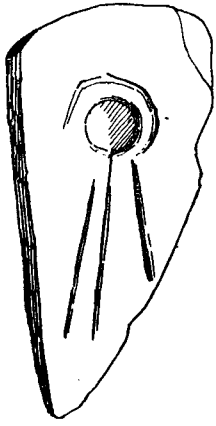


Fig. 23.

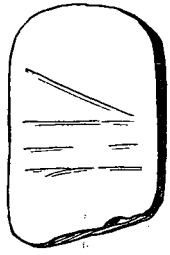


Fig. 25.

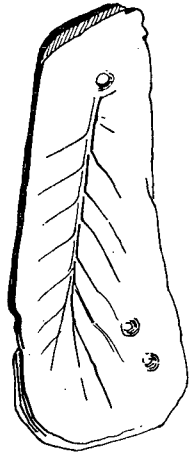


Fig. 26.

Figs. 20–26. Pieces of Shale or Cannel Coal with incised ornament.

inch of the broad end is a pit or partial perforation nearly half-an-inch in diameter, with an incomplete circle round it on the upper side, and three radiating lines proceeding downwards from the lower side.

No. 8, oval piece, water-rolled and naturally shaped (fig. 24), measuring $2\frac{1}{4}$ inches in length and $1\frac{3}{4}$ inches in breadth and about $\frac{1}{4}$ inch in thickness, pierced towards the narrower end by a round hole $\frac{1}{2}$ inch in diameter, surrounded by an incised circle with a tangential line about an inch in length at the lower side, with a parallel line of the same length below it from which three shorter lines go off downwards at right angles.

No. 9, flat, oblong piece with two straight sides almost parallel (fig. 25), one end rounded, and one obliquely fractured, the whole surface smoothed, striated, and water-worn, having on one face three parallel incised lines, and a fourth making an acute angle with the third.

No. 10, irregularly shaped oblong piece (fig. 26), 9 inches in length by $3\frac{1}{2}$ inches in greatest breadth and about $\frac{1}{2}$ inch in thickness, one face rough, the other rubbed smooth and strongly striated lengthways, having near the narrow end a perforation about $\frac{1}{4}$ inch in diameter from which proceeds downwards a strongly incised line, with shorter lines branching from it alternately at an acute angle, and at nearly equal distances apart. Near the other end on one side are two roughly scooped hollows. The perforation at the smaller end is roughly scooped out on both sides, but the intervening central part is bored quite regularly, with straight sides.

No. 11, oval-shaped, $4\frac{1}{2}$ inches by 3 inches and about $\frac{1}{8}$ of an inch thick, has a hole near the centre close on one inch diameter, from which a line or duct runs for nearly 2 inches. There are two different cupped marks about $\frac{1}{4}$ inch from the hole, and a line running from each towards the outer edge.

No. 12, irregularly shaped, 4 inches by $2\frac{3}{4}$ inches, has two holes. There is a semi-circular line partly round the top hole from which two rayed lines diagonally diverge.

No. 13, oval-shaped, $2\frac{1}{4}$ inches by $1\frac{1}{2}$ inches, very thin, pierced with hole for suspension. No other marks. Evidently flaked off.

No. 14, an irregularly triangular piece, water-rolled and naturally

shaped, 2 inches by 2 inches and barely half an inch in thickness, shows an arrangement of dots, T-shaped, there being three across, and two downwards. One of the stones from Dunbuie shows a similar arrangement of dots.

No. 15, a pointed piece of shale, 6 inches long by $1\frac{1}{2}$ inches broad, has on one side a line $\frac{3}{4}$ inch long, incised from the point downwards, thereafter two double lines crossing each other at right angles. These markings are indistinct.

Three slabs of cannel coal, one measuring 12 inches long by $4\frac{1}{2}$ inches in breadth and 1 inch in thickness, another, $19\frac{1}{2}$ inches long by 7 inches, tapering to $3\frac{1}{2}$ inches in breadth and $1\frac{1}{2}$ inches thick. This one shows

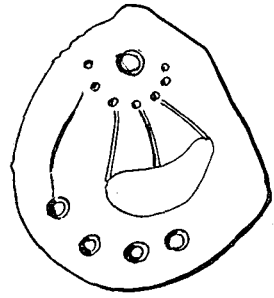


Fig. 27. Oyster Shell with incised lines and perforations. ($\frac{2}{3}$.)

marks of labouring on the sides, the edges being rounded off, evidently by attrition. The third is $20\frac{1}{4}$ inches long by $7\frac{1}{4}$ inches, tapering to $3\frac{1}{2}$ inches in breadth and $1\frac{1}{2}$ inches thick. One of the sides at the lesser end has been whittled or cut away to a depth of $1\frac{1}{2}$ inches, positive signs of cutting being visible.

Small pieces of shale or cannel coal can be picked up along the banks of the river, but no pieces at all approaching to the size of those above described have hitherto been met with.

Several oyster shells, ornamented and pierced for suspension, were found, but only two could be preserved, the others having crumbled away on being exposed to the air, or broken by coming in contact with

the shovel. The ornamentation of one of the two shells (fig. 27) resembles that on some of the shale ornaments. There is a hole for suspension at the narrow end, and round this, in the inside surface, eight or nine small pitted marks are grouped in a semi-circle, and from these four lines radiate towards the natural depression for the insertion of the muscle in the shell. Underneath are four holes perforated in a curved line parallel to the edge. There are no artificial marks on the outside surface. It was found in the circular cavity already described. The other shell has two holes of unequal diameter for suspension at the narrow end, and there are indistinct rayed lines visible on the under surface.

Quantities of the common periwinkle or *Littorina littorea* and mussel shells were found in the refuse heap mixed with the other debris. The oyster shells found are of the *Ostrea edulis* variety.

Summary and Conclusions.—The situation of the pile dwelling being within high water mark made the work of excavation both tedious and difficult and rather unsatisfactory in its way. The trenches got silted up with the recurring tide, and about 50 per cent. of our time was lost in baling out water and shovelling away the sand which had been washed in. The wash on the shore from the large powerful vessels, which pass and repass every tide, did great damage to our work, and the climax was reached when an unlucky steamer got stranded badly on a foggy day on the opposite side of the bank, and during the week she lay there the wash of some half dozen tugs employed in getting her off undid all our work. Digging so much in water led to many of the articles exhumed being injured by the spade in spite of every precaution. Our excavators deserve great credit for the careful and intelligent manner in which they did their work. To Mr W. A. Donnelly, artist, Milton of Colquhoun, is entirely due the credit of this discovery, which was made in July 1898. For two years the north bank of the Clyde between Dumbarton and Kilpatrick, which is almost all of a marshy nature, was searched by Mr Donnelly with the above result.

The similarity of the finds from this pile structure and those from the adjacent hill fort of Dunbuie is obvious. The two erections, however,

are not in sight of each other, a shoulder of Dumbuck Hill intervening, and they may not have been occupied contemporaneously. In common with Dunbuie, there is here an entire absence of metals and pottery. Iron we could scarcely look for unless in the form of oxide, but bronze would doubtless have stood the water.

The quantity of bones found was small, and the number of implements made of bone seems large in proportion. The number of ornaments also seems to be large.

The presence of so much cannel coal is a curious feature. Small pieces are found on the river bank all down the Clyde, but the large pieces described must have reached the position where they were found by the agency of man.

The discovery of this pile structure has raised many questions, and there are divided opinions as to its age and character. Probably at the moment its true position in archæology cannot be determined; but time will show.

In the discussion which followed, Dr JOSEPH ANDERSON said:—The Society is greatly indebted to Mr Bruce for the excellent account he has given of the investigation of this pile structure, which presents a number of unusual features both in its construction and contents. But in its essential characteristics it does not appear to me to differ more from the generality of other pile structures known to us in Scotland, than they differ among themselves. Hence I have no difficulty in classing it along with them. All the pile structures hitherto known in Scotland belong to a comparatively late period, and the character of the relics obtained from this one agrees so far with the general character of the relics from them. The canoe, the quern, the rubbing-stone, the hammer-stones, whetstones, sinkstones, the oval pebble with an oblique hollow, the flint flakes and scraper, and the bone implements are things that have been frequently found in Scottish and Irish crannogs, and things which taken together may quite well be attributed to the same period as the generality of the Scottish crannogs. But at this point the correspondence of the contents

of the Dumbuck structure with those of other pile structures ceases, and we have to consider the significance of a series of objects from it bearing incised markings in stone, shale, cannel coal, and oyster shell, which not only have no resemblance to anything heretofore found in pile structures, but no recognisable affinity of character with any objects found anywhere else, excepting those found in the hill fort of Dunbuie, not far distant. Comparing these two sets of things, from Dunbuie and Dumbuck, it is obvious that there is a certain affinity of character, with occasional similarities both in the forms of the objects and the style of the carving. Comparing both sets of things with the groups of relics obtained from other pile structures and hill forts, it is obvious that they do not fit into the sequence of either series. Taking a wider area of comparison: although in certain points there may be some faint resemblances to objects from other countries, and of different periods, as, for instance, to the cup-markings on rocks and boulders, or to the incised carvings of American Indians or Australian savages, I do not think that such crude resemblances can be relied upon for definite conclusions of age or origin. Remaining thus apart from all classifiable objects of cognate character, they give us no warrant to attribute them to any prehistoric period, or to place them in any particular section of the archæological series. Such objects of unclassifiable affinities are specially liable to have their genuineness called in question. This, of course, is, and must remain, a matter of individual opinion, and doubtless conflicting opinions will be held and expressed; as in matters scientific or even in courts of justice it is by no means unusual for expert testimony to be given on both sides. It is probable also that there will not be complete agreement as to the number of the objects in the collection which are to be regarded as genuine or otherwise. For my own part I do not consider it possible or necessary, in the meantime, that there should be a final pronouncement on these questions. In the absence of decisive evidence, which time may supply, I prefer to suspend my judgment—merely placing the suspected objects (as they place themselves) in the list of things that must wait for further evidence because they contradict present experience.

It has often happened that new varieties of things have been regarded with suspicion on account of their lack of correspondence with things previously known, and that the lapse of time has brought corroboration of their genuineness through fresh discoveries. If time brings no such corroboration, they still remain in their proper classification as things whose special character has not been confirmed by archæological experience.

Dr Christison, Secretary, said:—In considering the scientific value of the objects of a startling novelty found at Dumbuck it is important to take along with them those previously found at Dunbuie; and on a careful examination of the whole, it appears to me that they are divisible into several groups, which, apart from a vague, general resemblance, are not closely allied to each other, and are not clearly derivable from each other. Thus we have not one but several sets of objects, such as I believe have not previously been met with; and while recognising the scientific spirit and good faith with which this paper has been brought before us, it appears to me that the difficulty in freely accepting the objects found at Dunbuie has been increased rather than diminished by the additional discoveries made at Dumbuck.

Dr Robert Munro, in a letter to the Secretary, said that it was unnecessary for him to do more than to refer to the opinions he had already expressed in his recently published work on *Prehistoric Scotland*, and elsewhere:—

"The most mysterious outcome of the Dumbuck investigations is that relics, entirely new to Scottish Archæology, but almost identical with those recorded as having been found on the adjoining hill fort of Dunbuie, have also been found among the debris of this marine site—some in the refuse heap, some in the canoe, and others in the empty central space. . . . I have elsewhere given expression to the opinion that these strange-looking objects, both from Dumbuck and Dunbuie, do not belong to any known phase of Scottish civilisation, and most certainly not to the Neolithic period.

"Among the genuine relics found at Dumbuck may be mentioned portions of deer-horn sawn across, a quern, some pointed implements of bone, like those found in the Lochlee crannog, and a few polishers of stone—all of which unmistakably indicate the mediæval character of this curious structure. The quern or handmill was not known in Europe either in the Stone or Bronze Age, and none prior to Roman times has been found in North Britain. The shale

and slate images and weapons, the perforated stone pendants, oyster-shells, and other objects ornamented with cup-marks, concentric circles, etc., would be as much out of place as surviving remnants of the prehistoric civilisation of Scotland in Romano-British times as they are now."—*Prehistoric Scotland*, pp. 440, 441.

Mr Andrew Lang, in a letter to the Secretary, said:—I do not know whether it is lawful for an absent member to offer any remarks on the topic under discussion. But, as I have taken some part in newspaper controversy, I should like to say that, as regards the stage of culture, and relative antiquity of the structure and remains at Dumbuck, I have no grounds for an opinion, and no special knowledge of the subject. What interested me was the appearance on small portable stones at Dumbuck of certain decorative markings, such as cups and rings, already familiar to us in rock surfaces in most parts of the world. That such marks occur both in rock surfaces and on a kind of portable ritual objects in stone, among the Arunta and other tribes of Central Australia, is a recent discovery. In Australia the markings have a definite ritual and magical significance. I therefore infer:—

(1) That probably the same marks once had an analogous significance in this country;

(2) That a forger, presumably ignorant of the recently ascertained Australian facts, was unlikely to counterfeit objects of which he could scarcely have heard. He would have forged *familiar*, not *unknown* objects.

The level of Australian material culture, in any case, is infinitely below that indicated by the structure at Dumbuck.

If genuine, the marked stones of Dumbuck and Dunbuie indicate the survival, into a relatively cultured age, of a singularly archaic set of ritual and magical ideas.

Dr David Murray, in a letter to the Secretary, said:—The site is at the edge of what was formerly a shoal known as Dumbreck Ford, and was long the western limit of the Clyde Trustees' improvements. That limit was marked by a cairn which existed in 1758, and I think considerably earlier, and may have served as a beacon as well as a boundary.

River cairns are commonly built on piled platforms, and my doubt is whether this is not the nature of the structure in question. It is difficult to suggest why a pile-dwelling should be placed on a spot dry for several hours every day. The so-called causeway would be under water at high and of no use at low tide. The supposed dock in which the canoe was found would be equally useless, being at one time on dry land and at another 12 feet under water. The canoe does not seem to have been associated with the structure. It is similar to other Clyde canoes, one of which was found a short distance to the east. The other finds are puzzling, but we need not condemn them because we do not understand them.

The CHAIRMAN (Sir ARTHUR MITCHELL) said:—The comments which have been made on Mr Bruce's paper will, I think, serve a useful purpose. The fact that they have by no means been all in agreement does not, in my opinion, lessen their value. It seems to me that the position of the Society as a corporate body has already been on the whole satisfactorily disclosed in regard to the question, or rather the doubts which have largely led to these comments. But a little more may perhaps with advantage be said. The Society as a whole—that is in its corporate capacity—has no function or duty to give a deliverance on such a matter; but, of course, the individual Fellows composing the Society may hold opinions which differ, and differ greatly. The Society, indeed, cannot put an end to such differences by any deliverance. It could not do so even if it wished. It is clearly desirable that this should be remembered. The doubts I have referred to relate to some, but not to all of the objects presented to us as having been found during the Dumbuck exploration. And it must be kept in mind that these objects are presented to us as finds upon such evidence as we are accustomed to accept as sufficient in regard to alleged finds made during other similar explorations. It is manifestly important that this be understood and kept in mind. The evidence of authenticity, in short, in regard to these doubted objects from Dumbuck is the usual evidence in such circumstances; and

it is desirable to remember, further, that it is precisely the same evidence of authenticity which is furnished in regard to all the classes of objects found in the Dumbuck exploration—that is, in regard to the canoe, the quern, the bones, etc., about the authenticity of which no doubts have been expressed—as in regard to those objects about which doubts have been entertained. These doubted objects are new to us. They are not only new in connection with a pile structure, if Dumbuck really is a pile structure, and can be truly regarded as a sort of crannog, but they are also new in a wider sense, not having been found in connection with any other sort of structure, always excepting the fort at Dunbuie, which is in close proximity to Dumbuck. When quite new objects present themselves with claims to antiquity, it is certainly proper to examine those claims with care. This would be proper if there was nothing peculiar about them beyond their newness, that is, their not having been seen before; but a careful examination of them becomes still more clearly proper, if there is anything about their character, in addition to newness, raising doubts as to their genuineness. There may be little or no hesitation in accepting objects as genuine objects of antiquity, and yet some uncertainty as to their authenticity. It is, of course, a deeper doubt, which extends to genuineness as well as to authenticity.

So far as concerns the action of the Society as a whole, objects brought before it, as these are, cannot properly be discarded as unworthy of consideration, simply because they are new. That seems to me quite clear. And it is nearly as clear that such treatment would not be proper, when to newness are added characters that give rise to doubts as to genuineness. Even in such circumstances the proper course, I think, is to do nothing more than shelve them, which with us would mean placing the objects in a case for preservation. We come to no other conclusion, in short, than that a record of the find shall be kept, and the objects preserved, and that we must wait till further experience enables the Fellows to accept or reject either the authenticity or the genuineness, or both the authenticity and genuineness of the objects. This experience may be reached in various ways. It may be derived from fresh explorations

in other localities, or from further explorations at Dumbuck itself, or from a fuller knowledge of the circumstances in which the doubted objects were found. It seems to me that this is the right course for the Society to follow. Thanks to Mr Bruce, we have a full record, and our function is to preserve both the record and the objects.

I have only one other remark to make, and I am not sure that it will be considered of much value. It seems to me that we should, in the meantime, speak hesitatingly of the Dumbuck structure as a crannog. No doubt crannogs differ widely from each other, but Dumbuck has some peculiarities which present themselves, so far as I am aware, in no other structure which has been generally accepted as a crannog.

In connection with this point, the position of the Dumbuck structure seems of some importance. It is situated on the Clyde, at a place which was at one time a ford—not a ferry. There are indeed many references to the Dumbuck Ford. When the Clyde was deepened, great changes, we know, occurred in the region of Dumbuck, the result of dredging on a great scale, and also of river buildings, not far from the structure. There is still, I think, a guiding light at Dumbuck. It is now, if I mistake not, a gas light, but I think it was at one time a light from an open fire of flaming coal. On these matters, however, I have no certain information. But the history of Dumbuck as a ford seems to me to deserve looking into.

In conclusion, I have much pleasure in asking you to accord Mr Bruce a vote of thanks for his paper, which is a carefully drawn up account of the Dumbuck exploration, and in which there is no pleading for the adoption of any views or opinions. He has given us what he regards as a record of facts, and there he leaves the matter. In this he has set an excellent example, for which he deserves our thanks. He is a busy man, but I hope he may some day find time for further work at Dumbuck. It has proved a difficult and costly exploration, and what remains to be done will not be less difficult and costly; but we have evidence that Mr Bruce has the enthusiasm, and I hope he will yet find the time to do more work either at Dumbuck or elsewhere.