

## I.

URN BURIALS OF THE BRONZE AGE AT BRACKMONT MILL,  
LEUCHARS, FIFE. BY J. B. MEARS, L.R.C.P. EDIN.

Brackmont Mill (Mr Leslie Spence) is about a mile north of the village of Leuchars in Fife, close to the Cupar-Newport Road, where it crosses the Motray Water.

The steading stands on the edge of a broad terrace, 70 to 75 feet above sea-level, in which a sand-pit has been worked for some years past. The sand is clean, reddish in colour, with intercalated beds of fine grit. It belongs to the kame system of sand-hills which is so noticeable a feature between Leuchars and St Fort. Slight differences in the texture or composition of the beds of sand render the current bedding rather a striking feature, especially after a period of dry weather and wind ablation.

*The Terrain.*—The relation between the glacial and later deposits of this area and prehistory is a matter of great interest, but it is too intricate to be treated in detail here. It will be sufficient at present to say that within the district between St Fort, the mouth of the Tay, St Andrews, and the tidal portion of the Eden there are some thirty square miles of sands and gravels, clay and mud. When the Ice Sheet melted, the whole country, freed from the burden, was rising. The hills in East Fife show the effects of heavy glaciation. In this area the boulder clay, however, is not deep, and is only seen in thin sheets on the flanks of the hills which encircle it. The oldest definite sea coast-line is about the 100-foot contour.

When the land had risen and the high-water mark here was about the 70-foot contour, a final phase of the Ice Age occurred. A glacier was able to push its way down the Tay at least as far as the narrow part of the Firth, east of Dundee. A glacial torrent from the melted ice poured south-eastwards through the St Fort gap. It carried an immense amount of detritus, which was spread out as a wide fan of gravel and sand-banks, having a radius of about five miles, while the finer sediment went to fill up St Andrews Bay.

Hollows between the gravel-banks or eskers and sand-hills or kames were caused by the melting of masses of stranded ice.

The land continued to rise. On a shore-line of such loose material the series of Raised Beaches, which indicate pauses of the upward move-

ment, are not well defined. In some parts tides and currents removed much material, while in others sand-banks diverted streams and broke the force of the waves.

The eventual result was to fill up St Andrews Bay with sand-beds, and, the elevation continuing, wider and wider strips were converted into dry land. At the period of maximum elevation the coast-line was farther out than at present. The period of earth movements closed with

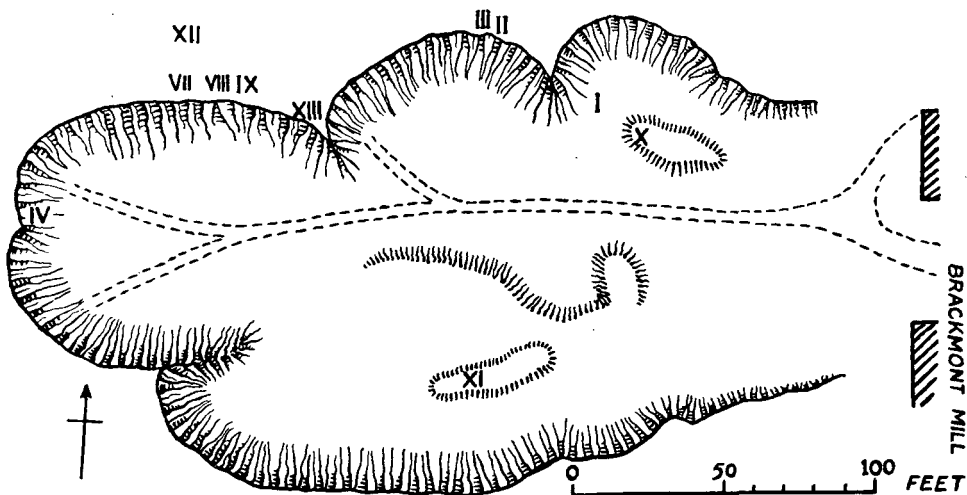


Fig. 1. Brackmont Mill Sand-pit.

an oscillation, submergence to the 25- or 30-foot contour, and a recovery to the present level, which has remained fairly stable.

*The Burial Urns.*—On comparing the Brackmont Hill urns with others from the district, vessels of precisely similar types are to be found, in a fragmentary state of course, on the sand-dunes which formed on the flats exposed by the final period of elevation. Brackmont Mill is about two miles west from these sites of the Bronze Age on Tents Muir. The environmental conditions during the Bronze Age here are to be considered in more detail, along with the Tents Muir area, by members of the St Andrews Prehistorians. (See note B at end.)

*The Site.*—The sand-pit at Brackmont Mill is (1936) about 100 yards in length and half of that in breadth, with a depth of 20 to 30 feet. On the parts most exposed to the wind the soil is not more than 9 inches deep, while nearer the farm-steading it is  $2\frac{1}{2}$  feet deep (fig. 1).

The Bronze Age burials to be described were in irregular groups of three or four, more or less in a line. There were no surface features to

indicate their presence. They were spread over an area of about 30 yards long by 10 wide. The group at the east end was 65 yards northwest of the house at Brackmont Mill.

On these dry and sandy hillocks and mounds wind is the most important factor in causing the accumulation or removal of soil, so that one does not find a regular sequence of growth in thickness except in favourable situations.

The top of the kame sand has in most parts a layer of pebbles, the



Fig. 2. Urn No. XII. *in situ*.

residue of a few feet of sand blown away. Such a skin of small stones, once it is formed, protects the sand from further wind erosion.

This is the oldest land surface, immediately post-glacial. It is contemporary with the earliest explorers in Scotland, presumably mesolithic, but no flints or artifacts have been found here on this horizon.

In the vicinity of the pit burials one could detect three layers separated by pebble bands, indicating periods of local deposition and ablation. The pits penetrated the lower two only.

Most of the urns were exposed when the top soil was removed. They had been placed, inverted, in shallow pits which scarcely penetrated the kame sand. One was in a deeper pit (fig. 2).

From time to time other pits have been exposed, penetrating the sand to a total depth of 3 or 4 feet, with steep sides. They were filled with soft sand, but nothing of note was found in six or seven examined.

It is not easy to account for these pits, empty of relics. They are not sections of wind channels, but are more or less circular with no special floor. They are rounded below and have no carbonaceous layers.

The urns here described are, like all others of the period, hand-made. There is no evidence of the use of the potter's wheel. For all that, in

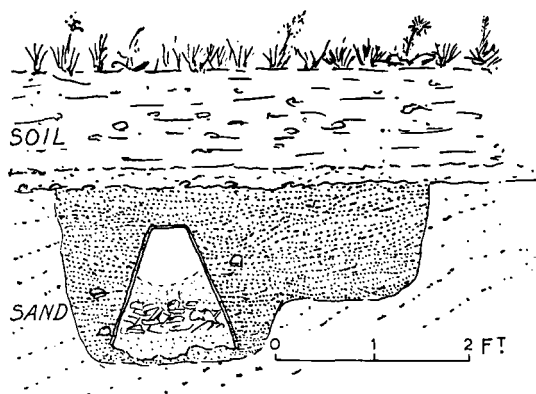


Fig. 3. Section E.-W. of pit with Urn XII.

the better class of vessels great skill and care have been used, while in others the workmanship is much rougher.

An effort was made to collect and to transfer to safe keeping at St Andrews all the prehistoric material found at Brackmont Mill.

The first question asked is invariably about the number of burials. The writer saw five *in situ*, and was able to collect the whole of the contents for examination. Major J. Edington Aitken was, fortunately, able to see two others *in situ*. Two more fine urns with much of their contents were found among the waste-heaps.

Of the nine actual burials at this site, disregarding eight or more broken vessels that are each represented by fragmentary pieces only, two had no urn and one a broken urn of small size mixed with the ashes.

The remaining six were all inverted urn burials in shallow pits without any prepared floor. Some kind of cover must have been used, otherwise the contents would have fallen out on inversion; but no indications of a cover were made out in these cases that were suitable for detailed examination.

The variations in style of these burials depend more on social factors perhaps than on time. The preparation for and ceremonial of interment varied with the wealth and respectability of the individual. The urn was specially made for the occasion. In one case, we shall see, the undertaker managed to make a mess of things, but at this funeral they had roast pork. (Urn XII.)

Two of the urns (I. and X.) are so superior in style and technique that one must consider them to be the work of an expert. There were traditional rules to be followed; and at that time social life was, without doubt, highly organised, so that it is not too speculative to suggest that there was a school or guild of urn-makers, as there was of miners, of metal-workers, and so on (figs. 4 and 6). The decoration on these vessels naturally attracts attention and interest. In the first place, no doubt, the string pattern on thin beakers was produced by the application of a cord during the course of manufacture. The string formed a very useful support for these thin-walled vessels while the clay was soft. It is reasonable to suppose that the string was used for utilitarian purposes at first, and that subsequently the impress was retained as a decorative feature. (The string which was used to tie on the cover was applied when the clay was hard, and so, of course, left no mark.)

On Urn X. (fig. 6), for instance, though there are six double-string lines round the collar, they have been made by four applications of a looped cord. (Against the utilitarian origin it has been urged that string would not be of much use—the drying cord would slacken. A cord of animal fibre, however, tightens on drying, and would still grip the drying clay.)

It is curious that the projecting collar with the narrow neck below is just the form suitable for tying on a cover, but that the external parts that would be thus covered are the only parts decorated. If one seeks a utilitarian explanation, while the string may be a survival of a supporting network or spiral employed in the earlier type, the incised lines may have been originally cut for the purpose of roughening the edge of a smooth-walled vessel to provide a grip for the cord fixing a soft cover.

It is unfortunate that the maker adhered to traditional styles alone, and left no mark that might have any personal significance—if not a coat-of-arms, at least a leaf for a badge. (Note A.)

*Urn Burials.*—The numbers attached to the burials or urns indicate the order in which they were found, but for convenience of description they are grouped here according to type.

Numbers I., III., X., and probably XII., are well-made vessels of the "overhanging rim" type, with a small base, conical body, and a

well-defined shoulder below a concave neck, while round the top is a collar with a projecting lower edge, undercut to meet the neck (figs. 4, 9, 6, and 8, respectively).

Number V. is a solitary fragment of a small urn of this type (fig. 17).

Numbers II. and II.*a* are similar, but are made of coarser material. They are large vessels and are decorated, but more roughly and round the collar alone, without a pattern round the neck as in the first group (fig. 10).

Number IV. is a degenerate type—presumably later, with plain walls, slightly conical, and with decoration reduced to a few scratches (fig. 15).

Number XI. is a basal fragment of a similar urn, interesting on account of grain impressions (fig. 14).

Numbers VIII. and IX. were burials without urns (fig. 13).

Number VII. contained the broken shards of a small urn (fig. 12).

Under Number VI. are grouped fragments of four vessels—in each case a piece of the rim (fig. 16). Ten or twelve other fragments found at various times are indeterminable.

Number XIII. is part of the side of a small plain cup (fig. 19).

This is, as far as I am aware, the total number of pieces of Bronze Age pottery found at Brackmont Mill. In all probability there are still fragments in some of the soil dumps, but they are scattered through many tons of sand and earth.

In addition, besides bits of modern crockery, one piece of a Roman mortarium turned up. There is, so far, no good evidence of any Roman occupation in these parts. A number of pieces of the ware that is so abundant on Tents Muir were noticed. It is probably mediæval. These shards are from rather large globose pots with an undulating edge and two handles. The material is whitish with a rather patchy green or brown glaze.

*Cinerary Urns.*—Number I. (fig. 4). This urn was a magnificent piece of ware. One cannot look upon its fragments without regret, for it was complete when first exposed. It was broken into small bits and the greater part was cast with sand into the contractor's lorries. Mr Spence fortunately recovered some pieces of the ornamental rim, and fragments of the base and wall were subsequently found, but not enough for anything more than a partial reconstruction. The width of the base was 5 inches externally. The mouth was about 20 inches in diameter and the height was between 20 and 21 inches (50 by 53·5 cm.). The thickness of the base was about 1 inch; the walls were very even and only  $\frac{1}{2}$  inch in thickness, and even less at the neck (12·5 and 10 mm.).

To build up so large a vessel with a heavy brim upon so small a base required no little skill. In this case the walls were constructed in tiers 2 inches high, each band being allowed to harden and stiffen before the next was applied (fig. 5). The edges were united by a tongue-and-groove joint, each portion being moulded on the thinned edge of that below.<sup>1</sup> The whole surface was covered with a layer of fine levigated clay, and a smooth finish was thus obtained. Firing was carried out as carefully

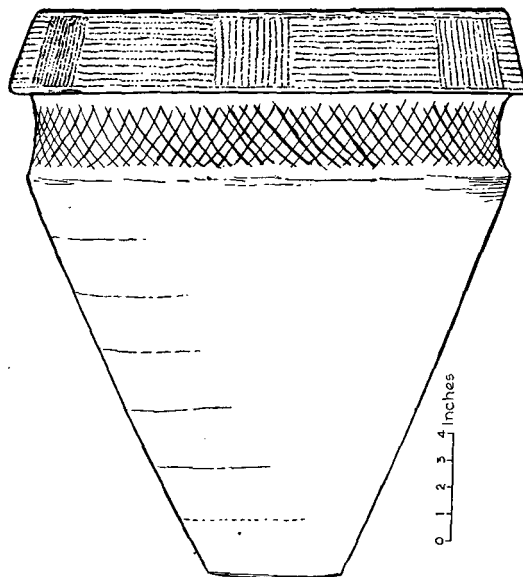


Fig. 4. Urn No. I. restored.

as manufacture. The vessel was burned evenly to a light red on the outside. The inside was also coated with a slip of fine clay which is more ochreous in colour. The clay of which the urn was constructed contains 20 to 30 per cent. of selected fragmental material, the chief constituent being a hard light-blue grit in chips of  $\frac{1}{4}$  inch diameter or thereabout.

The inner side of the wall at the mouth of the urn is bevelled away for a thumb's breadth, so that the actual rim is only  $\frac{3}{8}$  inch (9 mm.) thick. On the outer side the mouth is surrounded by a flat collar  $3\frac{1}{8}$  inches (80 mm.) wide, which projects downwards and outwards (fig. 5).

The lower edge of the collar is undercut, so that the thickness is

<sup>1</sup> Dr Graham Callander has recorded instances of urn building in tiers in *Proc. Soc. Ant. Scot.*, vol. lxiv. p. 165.

here, at the concave neck, reduced to  $\frac{3}{8}$  inch, from a thickness at the lower edge of the collar of  $1\frac{1}{4}$  inch (from 32 to 10 mm.).

It is difficult to understand the reason for modification in form of the lip of the urn. The bevel is probably derived from the check on

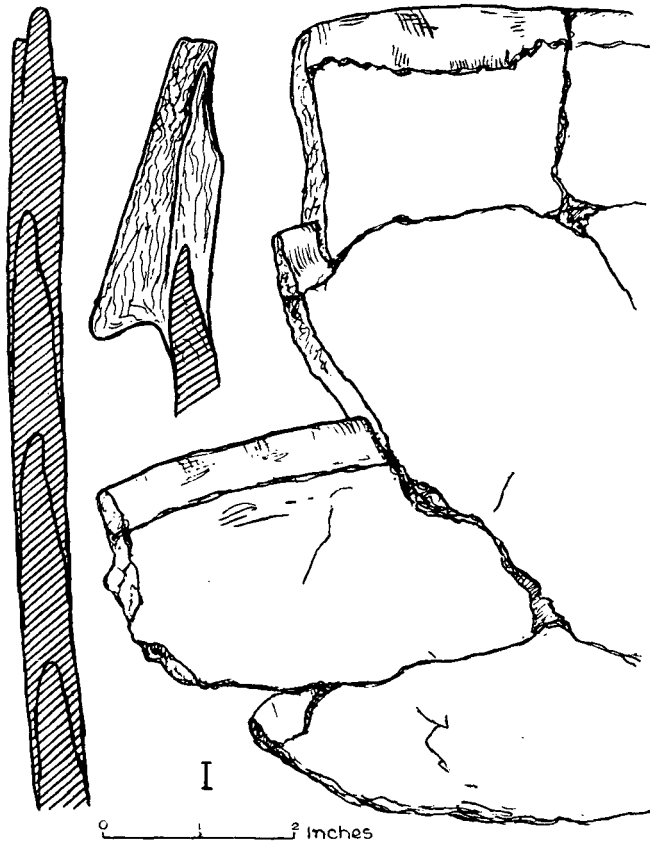


Fig. 5. Wall of Urn No. I.

the inner part of the edge of some urns, which looks as if it were intended to hold a discoid cover (fig. 10).

As a matter of fact, in Urn I. the modification of the edge seems to have been obtained as a direct result of structural methods. Some broken fragments show that the collar was composed of two layers—the inner one is the same style as the rest of the wall— $\frac{1}{2}$  inch thick with a projecting tongue on the top. The outer layer of the collar is built



against the inner one, projecting only  $\frac{1}{4}$  inch above it to form the rim, so that the inner surface of the tongue is left exposed as the bevel (fig. 5). The decoration of the upper part of this vessel is rather more elaborate than usual. On the bevelled part of the inside of the mouth is a series of obtuse triangles, incised and shaded with oblique lines. A small zig-zag pattern is traced round the top edge. The collar has a chequer

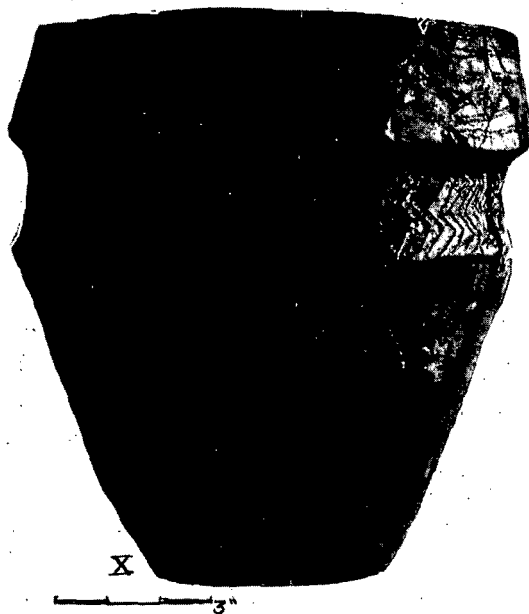


Fig. 6. Urn No. X.

pattern of impressed cord in alternating horizontal and vertical series, and round the neck two sets of incised oblique lines intersect so as to produce a diamond or lattice pattern.

The bone fragments which were scattered through the soil-heap with bits of this urn were all white and well calcined, but were fragmentary and warped. No pieces were found which were non-human. The whiteness of the bone indicates that they were separated from the ash and prepared for burial with the same care as was exercised in the undisturbed burial described below (No. XII.).

Number X.—The urn which most closely resembles I., and which belongs to the same period, is X. (fig. 6).

Several fragments were found in December 1931 in the course of a search for missing parts of Urn I. Unlike the pieces of I., which still look fresh and clean, the inner surface of X. is black and shows a greasy streak on scratching. The discoloration extends through about two-thirds of the thickness of the wall. Externally the colour is dark brown. The blackness is due to the carbonisation of some organic constituent, such as blood, used in manufacture.

Early in 1932 a small scrap on a waste-heap led to the recovery of the greater part of the urn. More than sixty pieces were found in a compact mass, along with a quantity of bone fragments, just as they had been tipped out of the barrow by the labourer. It was possible to unite all the pieces found, so that about two-thirds of the urn was rebuilt and a clay base was then added. The wall is about  $\frac{1}{2}$  inch (12.7 mm.) thick. There is no indication of segmentation except in the upper part. After completion as far as the top of the neck, the wall was thinned away to form a tongue 2 inches high, and on this the collar was built up (fig. 7). This vessel is smaller than Urn I., but the walls are about the same thickness. The height is  $11\frac{1}{2}$  inches, width  $11\frac{3}{4}$  inches (29 to 30 mm.). The top edge or rim is flat and carries a string pattern. There is

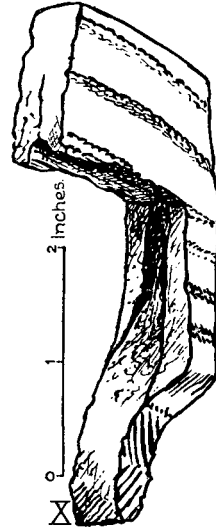


Fig. 7. Fragment of Urn No. X.

no special moulding of the lip or pattern on the internal surface. On the external surface the collar does not project so far, and is not so undercut as Urn I., but it has the same fine finish and is decorated with six horizontal impressions of a looped cord. Round the neck is an incised double herring-bone pattern. Among the incinerated fragments of human bones which the urn contained were a number of bits of ox bone which are pieces of some kind of spatulate implement, but it is incomplete.

Number XII.—This urn was found on 2nd July 1932 (fig. 8). It was about 5 feet north of VII. The pit in which it was buried was rather deeper than the others, so that it had escaped damage during agricultural operations and was not exposed when the top soil of 18 inches was removed down to the uppermost layer of fine yellow sand.

On that day everything near the edge of the pit was covered with a uniform layer of soft blown sand, unpleasant to work amongst; but some trial scrapings revealed a patch of dark soil, oval in shape and

measuring about 4 feet by 2 feet. This was compacted, fine, blackish sand pressed firmly together, so that it could be lifted out in lumps. The only stones present were one or two broken bits of sandstone and schist, a wedge-shaped bit of andesite (apparently a working tool, as it was coated with clay), and some broken fragments that proved to be bits of the urn wall. The most interesting thing was a part of the occipital bone of a pig, showing one condyle. It was close to the urn, near the bottom of the pit.

The circular base of the urn was revealed on removing about 6 inches of black earth towards one end of the pit. It was undamaged, a very pleasant sight. When the black earth was removed from around the urn it was seen that only one-half of the pit was excavated. In fig. 2 the trowel is sticking in the dark soil not yet removed. One hoped that there was another urn, but nothing was found in that (the east) half. It seems probable that the grave was enlarged so that it might contain all the fine material, bone-dust and charcoal, from the cremation, for the bones in the urn were all white and clean, and lay between layers of clean red sand (fig. 3).

When the urn was cleared all round it was apparent that the lower edge, the mouth of the inverted vessel, was irregular, and one or two cracks ran along the side wall.

An attempt to lift the urn and its contents complete by sliding a thin board underneath was not persisted in, as it was obvious that any upward pressure on the contents would open the cracks. So the urn was enveloped in cotton bandages. As each successive turn came down to the edge it was taken underneath as a chord for about 1 foot, then applied to the surface of the wall again to make another circuit a few inches from the last. Four or five loops were tied on convenient chords, long enough to reach the top, *i.e.* the narrow base, and when the loops were gathered together the vessel was lifted with complete safety on to a wooden tray. The contents, clean sand and bones, lay in a heap, contrasting with the black packing in which the urn was buried. The cancellous bone looked remarkably fresh. All the large bones seemed purposely broken, none of the pieces being more than 3 inches or so in length.

(It is interesting to note that the Sacrum was so called on account of its supposed resistance to the forces of disintegration after cremation or burial; but its fragments are not the most easily recognised in these burials. It was the key-bone round which the others would gather at the Resurrection.)

The only "foreign body" present was a flake (M. 478) of dark unburnt

flint with a slight patina, no more than a dulling of the surface. It is the base of a flake about 1 inch in width, showing secondary chipping down one edge, and is broken across obliquely. Fig. 2 shows the urn *in situ*.

This urn (XII., fig. 8) was a great disappointment. The whole of the upper part above the shoulder had broken away before interment, and no fragment of the decorated part of this urn has, so far, been found.

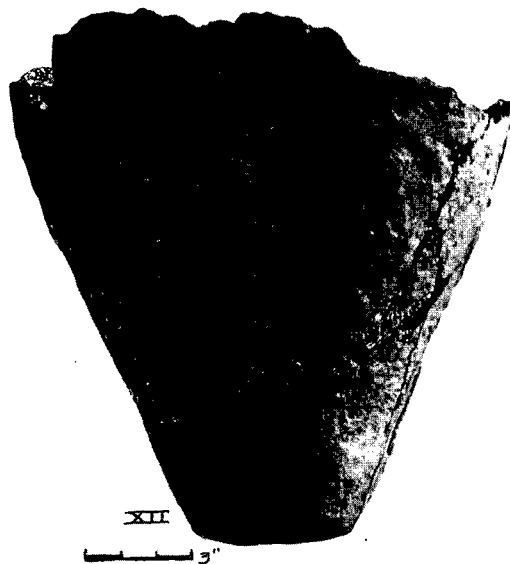


Fig. 8. Urn No. XII.

It is, or was, a large urn. The walls are well made and smoothly finished. The base is 5 inches (12·7 cm.) in diameter, and the wall 15 inches (38 cm.) high vertically. The original height would be about 23 inches (58 cm.). The width of the top is 15 inches (below the shoulder).

It seems to have been the same type as Urns I. and X. The wall is stained black internally for about half the thickness. The outer part is ochreous in colour.

Number III.—This is an interesting urn of smaller size than the others of its type (fig. 9). It was found in fragments at the same time as II. and close to that urn. Nearly the whole was recovered, so that it was easily restored. It does not appear to have been associated with any bones when found. The surface is rather rough—it has not quite the

same smooth finish—but is well made, and was burnt to a bright red, more ochreous internally.

It measures  $8\frac{1}{4}$  inches (21 cm.) in height, and is  $6\frac{3}{4}$  inches (17 cm.) across the mouth, with a maximum width at the lower edge of the collar of  $7\frac{1}{2}$  inches (19 cm.).

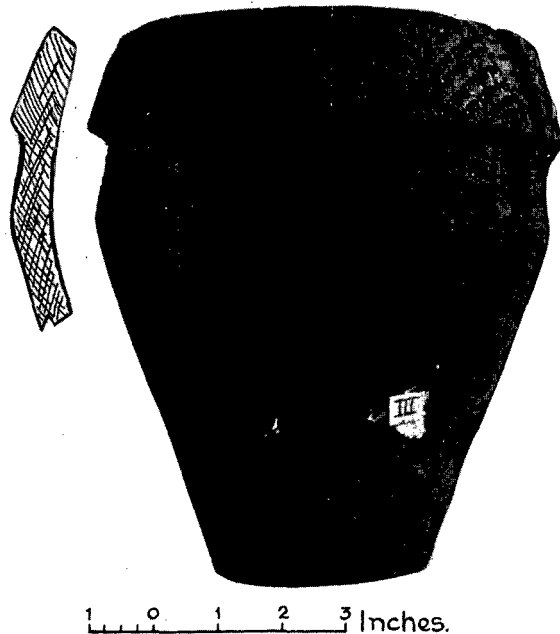


Fig. 9. Urn No. III.

The pattern is formed by comb impressions—chevron round the collar and chequer round the neck.

The Urn II. was found on 15th September 1931. Mr Spence was on the look-out for urns after the discovery of fragments of I., and immediately sent word to Major J. Edington Aitken at Guardbridge. The inverted urn was carefully uncovered, but photographs of it *in situ* were not successful on account of heavy rain.

An attempt was made to lift it, but it immediately collapsed. Its position was on the very edge of the sand-pit and it might have slipped down at any moment. The foothold was also precarious. When it collapsed a portion fell down the face of the pit, but all the fragments

were placed in boxes and it was eventually possible to rebuild the whole vessel except part of one side.

(Many, probably most, urns are broken when found. The discoloured and muddy bits do not look very promising, and too often it is assumed that the vessel is irreparable. It is not a difficult task, even for an amateur, to restore a broken vessel, provided it has not actually crumbled



Fig. 10. Urn No. II.

down. The result may not be very satisfactory perhaps, but it will show the general character and period of the vessel, which would otherwise be irrecoverably lost. Even if it is not possible to undertake immediate reconstruction, the parts should be rinsed to remove sand, but not scrubbed. While still damp the edges should be coated with mucilage, to which a little formalin has been added, to prevent crumbling.)

This is a large and heavy urn,  $17\frac{1}{2}$  inches high by  $15\frac{1}{2}$  inches wide (44.5 by 39.4 cm.). The base is 5 inches in diameter.

In general form it resembles the first described, but is thicker and coarser and is blackened internally. The lip of the urn is black, and round the inner edge a step or check is hollowed out as though to receive a

circular disc or cover. The collar is 4 inches deep and bears a pattern of triangles outlined and shaded by the impress of a comb-like implement. The collar projects outwards, and the under surface of its lower edge is nearly horizontal and about 1 inch wide. There is no other ornament on the urn beyond the band round the collar (fig. 10).

This urn contained white incinerated bone fragments mixed with dark sand. Major J. E. Aitken washed out the finer material, and the bones were seen to be in a very fragmentary condition, so that one suspects that they had been deliberately broken after burning. They

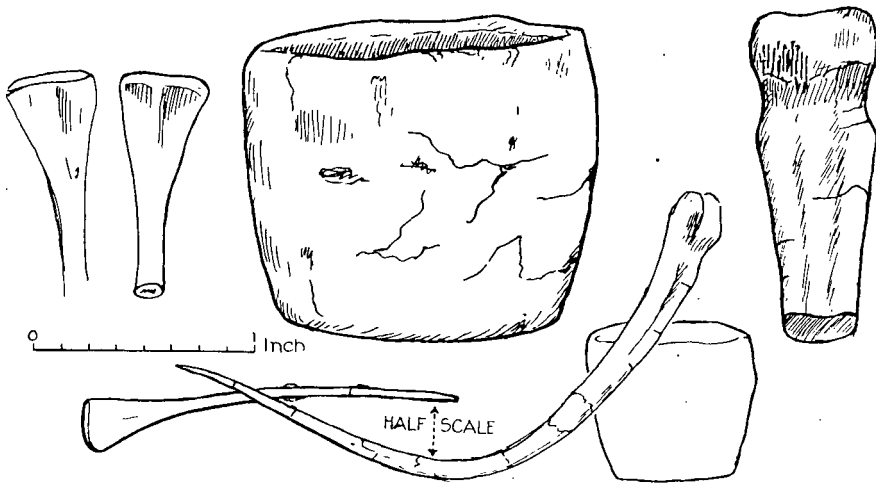


Fig. 11. Cup and pins.

are all very much twisted by heat, and any reconstruction would be useless if it were possible. Some of the bones show rheumatoid changes—for example, the vertebral bodies.

A small urn of clay, a little vessel no bigger than an egg-cup,  $1\frac{1}{2}$  inch (38 mm.) wide and  $1\frac{1}{4}$  inch (31 mm.) high with a wall  $\frac{1}{4}$  inch (6 mm.) thick, was among the bones. This little cup is of a plain rounded shape without ornament (fig. 11). Two bone pins and an incinerated flake of flint were also found. The larger pin,  $6\frac{3}{4}$  inches (171 mm.) long, was broken into a number of fragments. These looked like broken pipe-stem, and were picked out as non-human from among the bones. It was fortunately possible to find every piece. The pin is bent by heat and is made of hard bone, flattened and grooved at the head,  $\frac{5}{8}$  inch (15 mm.) wide. The other bone is apparently the fibula of a bird, at present unidentified. It is  $3\frac{1}{2}$  inches (89 mm.) long and shows droplets

of slag adhering to the surface. Though not, of course, identical, it is not unlike the small companion bone of the familiar drumstick of a fowl.

Urn IIa.—Some fragments of an urn were subsequently found which was very like this one (II.), except that the pattern had been impressed by a different implement.

Fig. 17 is part of a small urn with incised pattern (Urn V.).

Implements or other pieces of non-human bone do not seem to have been recorded very often among the contents of cinerary urns—possibly as a result of incomplete examination. Sir A. Mitchell<sup>1</sup> reported a worked bone found in an urn near Murthly as the first record of such an inclusion. Pins should occur fairly frequently, but would be very easily missed if broken up. The bits are not unlike shafts of small bones, but have no medullary cavity.

On a paper upon seventy-four urns found at Balbirnie and elsewhere in Fifeshire,<sup>2</sup> by Dr Anderson, seventy-three are said to have contained nothing but burnt bones. One feels sure that a more careful examination of the contents of urns would be worth the trouble. The solitary urn which was noted as containing implements was one from St Andrews with two bronze knives (razors).

Burials VII., VIII., IX.—On 14th June 1932 three burials were laid bare during removal of the soil. They were close together and were similar in character. The bones, burnt and broken in small pieces, had been buried in pits, and were mixed with bits of charcoal and black soil.

In Pit VII. a number of broken shards of a small urn were found. A labourer had removed the contents of this pit, but a large part was recovered from the dump. A few of the urn fragments show fresh breaks, but most of the edges are weathered and stained—old fractures that date from the time of the burial, if not earlier. The decoration is rougher than on the cinerary urns, the muddy string impression, not very distinct on the rough clay, being very different from the fine cord impressions on the prepared surface of the other urns. It is, as restored, 6 inches wide and 7 inches high. It seems to be too small to have contained the cremated bones of an adult (fig. 12). The associated bones were those of an elderly person.

Number VIII. was 6 feet east of VII. and quite close to IX.

The central burial of this group of three was in some respects the most interesting. A cup-shaped hollow 18 inches in diameter and 3 feet below the grass was filled to a depth of about 6 inches with a black mass

<sup>1</sup> *Proc. Soc. Ant. Scot.*, vol. ix. p. 269.

<sup>2</sup> *Proc. Soc. Ant. Scot.*, vol. xiii. p. 107.



of charcoal and bone fragments. There was no trace of an urn. The only "foreign bodies" present were a flake of calcined flint approximately 1 inch in diameter, and a clay disc  $1\frac{3}{8}$  inch by  $\frac{3}{8}$  inch. The latter is smooth and nicely made, like the better class of urn. One would like to regard it as a toy or a token. It is probably a core for a button, for a garment only worn once. Some other material would be more satisfactory for everyday use.

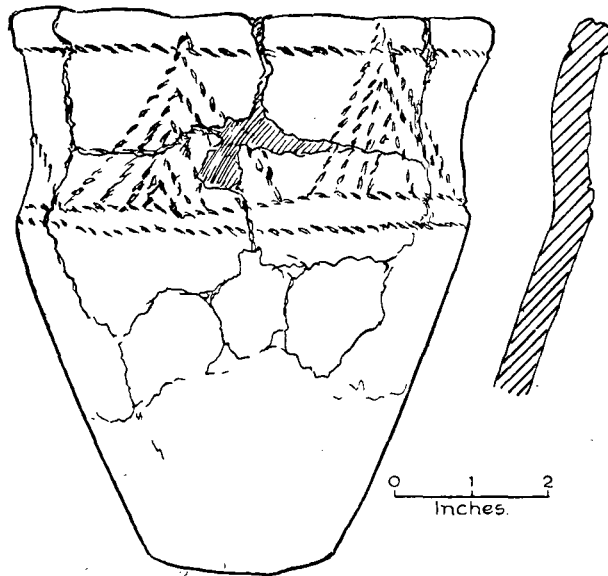


Fig. 12. Urn with Burial VII.

The hollow containing the ashes had been excavated in the topmost layer of the sand, which was here hardened and stained bright yellow by bog-iron.

Round the central mass of charcoal and bones, and separated from it by a few inches up to 1 foot or so of clean sand, there were about twenty black patches irregularly arranged, varying in shape and size from 1 inch to 5 inches in diameter (fig. 13). These satellite patches, if one might call them so, diminished in size while retaining more or less the same shape as one followed them downwards through the sand by serial sections. They all disappeared at the level of the bottom of the pit except one or two of the larger ones, which extended to a few inches deeper. The small ones did not penetrate so far.

They appear to have been holes made by roughly sharpened stakes.

They may have been post-holes for some kind of superstructure; but that is improbable, as they were filled with a fine and very black earth mixed with small particles of bone. It is not clear how this packing got in, for stakes, even if charred, could not leave a residue of fine black soil and bone dust. They appear to have been holes dibbled by sharpened sticks into which the finer dust of the cremation was poured.

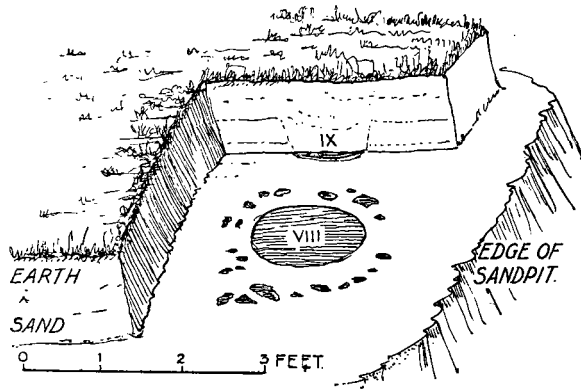


Fig. 13. Burials VIII. and IX.

The fence-like arrangement of the little pits suggests the placing of ashes of burnt-offerings round.

It seems most probable that pains were taken to sweep up and bury even the fine dust from the cremation floor—a tribute by individual mourners in either case.

A quotation from Sir Thomas Browne's *Hydriotaphia, Urn Burial* (Norwich, 1658), may not be inappropriate in this connection. "We conceive not these urns to have descended thus naked as they appear, or to have entered their graves without the old habit of flowers."

Somewhat similar marks were found round an urn burial at Gilchorn, Arbroath, under a cairn.

Number IX.—At this place the overlying soil is rather deeper than in the rest of the sand-pit. It is divided into three fairly distinct beds, each about 9 inches thick, between the grass and the iron-stained surface of the sand. In a vertical section one could observe that the light grey soil beneath the grass was undisturbed, but the deeper layers were cut through by a small pit 18 inches in diameter. In the upper part the sides had fallen in, but the bottom of the pit, in firm sand, was clean cut with smooth surfaces (fig. 13).

There were cloudy stains in the sand below the pit, the bottom of

which was covered with fine dark sand to a depth of 2 inches. Above that bones and charcoal formed a mass about 6 inches thick, which was compact and could be lifted out in lumps. The rest of the hole was filled with light sand. There was no trace of flint or pottery. It was not quite so deep as Pit VIII. and separated by not more than 1 foot; but there was no indication of stake-holes around. Nothing but human



Fig. 14. Base of Urn No. XI. showing impressions of grain. (†.)

bones and bits of charcoal up to  $1\frac{1}{2}$  inch in length was found after the repeated washings that were required to remove the soot-like packing.

One is struck by the preservation of the bones in these cremations, where so slight a protection has been given, as compared with the rapid disintegration which is the general rule. Not only is all the organic matter removed by burning, but there is a hardening and consolidation of the bony substance by some degree of fusion. The resultant shrinkage of the bone by splitting and twisting is obvious in most cases, and sometimes one can see small drops of vitrified material on the bone surface. The cracks on some of the long bones are quite regular, so disposed as to produce a repeated cone and socket arrangement. A piece of bone separated at one of these cracks has the appearance of having been artificially ground to a conical form.

One supposes that the bone has been split along the lines of growth; but that, like most other speculations in archæology, is wrong. The uniform structure of a long bone and the even application of heat has led to a uniform shrinking in certain directions, and so to a regular pattern of cracking.

Even a light summer breeze is sufficient to cast a continuous spray of fine sand up over the edge of the pit, so that a prepared surface is obliterated in a few seconds, and it was not possible to obtain photographs of these interesting burials; but the figures are from measured sketches made on the spot.

Number XI. is part of an urn base which was 8 inches in diameter. The comparatively large size of the base and the rough finish indicate that it is part of an urn similar to Number IV.

The fragment measures  $5\frac{1}{2}$  by 3 by  $\frac{3}{4}$  inch (140 by 76 by 19 mm.). The internal surface is not smooth, but shows the impression of the maker's fingers.

The under surface is flat and is particularly interesting, as it shows impressions of grains of wheat (fig. 14). Similar perimorphs of wheat seem to be not uncommon—at least not so rare as one would expect a purely accidental impression to be. No marks of grain have been noticed in the substance of the clay, such as are found in Roman (Castor) ware.

Number IV. is a wide-based rough-looking urn. In material it is similar to the basal fragment XI. It was at the west end of the pit, some distance from the others. It was very near the surface, the mouth of the inverted vessel being only 18 inches from the grass. The base was lost. It contained blackened bones and charcoal, but nothing else.

In spite of the irregular surface one can recognise the impressions of muddy fingers. The ornament, if one may call it so, consists of a circular line scratched below the rim, and U-shaped marks crossing it at intervals. (fig. 15). The walls expand upwards fairly evenly until near the top, where they tend a little inwards. There are no projecting ridges. It is probably of a later date than the cinerary urns. The height is about 9 inches, and the width  $8\frac{1}{2}$  inches across the mouth.

*The Burning.*—It is apparent from the thoroughness of the calcination of the bones that cremation in these cases was by no means a haphazard process, but was carried out in a regular and deliberate manner. The clean whiteness, the twisting and shrinkage, often with evidence of partial vitrification of the surface of the bones, along with the complete oxidation of the fuel, indicates the care with which a high temperature was maintained throughout the process. The sudden application

of heat, as in modern cremation, shatters hard bone by the generation of steam in the innumerable minute canals by which the bone is traversed.

Fragments of charcoal are found scattered about through the soil over the whole area. The urn contents might be quite free from charcoal, but in three interments, two without urns and one with the small

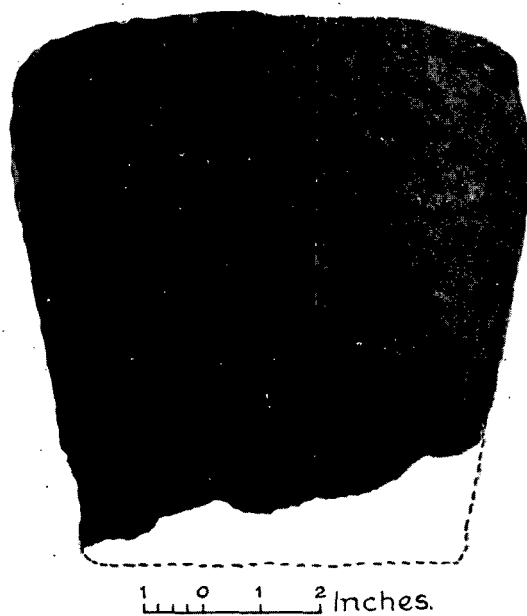


Fig. 15. Urn No. IV.

urn, the bones lay in a black carbonaceous layer with charcoal at the bottom of the pit. The actual fire covered several square yards, and after the bones and ashes were raked up a greasy black stain would mark the site.<sup>1</sup>

Here the cremation floor was made of small flat stones. There is no evidence of an artificial draught; one could scarcely hope for such. Cuts in the sand may have acted as wind channels.

Salts derived from the body, bone constituents, ash from the fuel, and sand, united at times to form a glassy slag. This ran down into the

<sup>1</sup> During the Great War the official allowance of wood-fuel for the cremation of Indian soldiers was 1 ton.

crevices of the floor and hardened as a greenish glass full of white particles of bone dust. Several flat stones were found which were vitrified at the edges and showed adherent slag. No undisturbed floor was found.

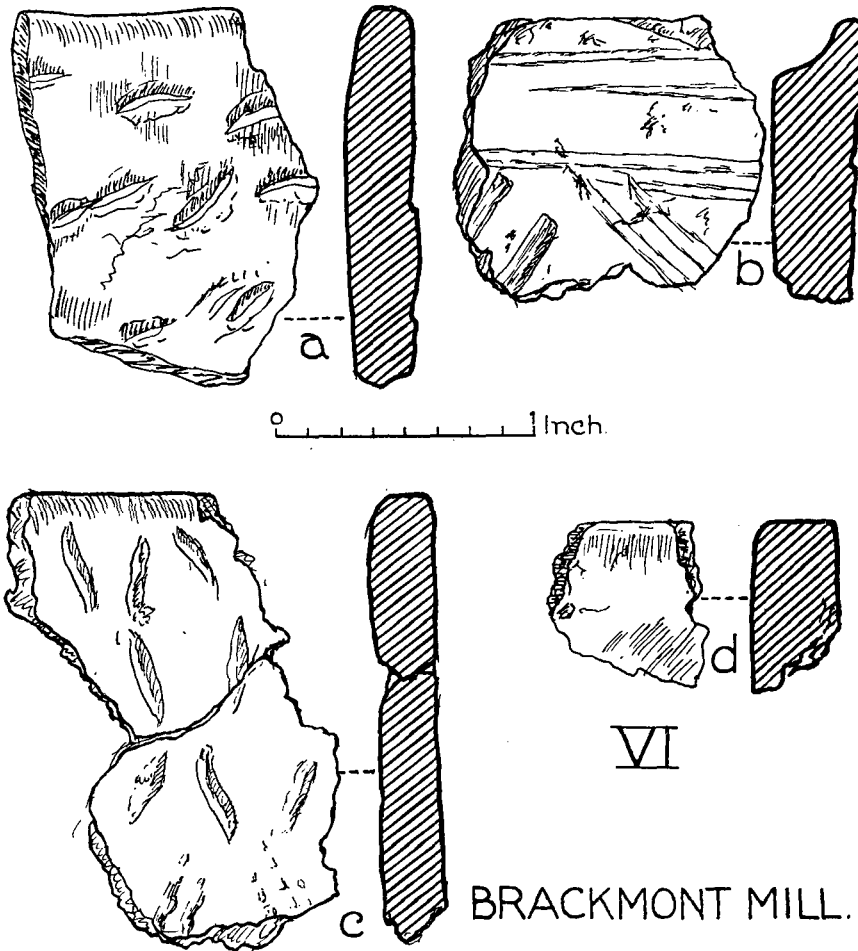


Fig. 16. Urn No. VI. and others.

In association with the bones in one burial were bits of a peculiar spongy slag. Why it remained spongy—like “petrified moss” in appearance—and did not fuse, is not clear. On the waste-heaps pieces of small vessels were found. Two of the bits show a nail pattern, and one has a part of a chevron pattern produced by the application of a straight edge. One shows no pattern, it is only a fragment of rim (fig. 16).

These are all quite little bits, and there is nothing to show whether they were associated with burials. One or two other fragments seem to be from vessels that broke in the making. Fig. 17 is part of the brim of a very small urn. The collar is only  $1\frac{1}{4}$  inch in depth (32 mm.).

Number XIII.—Some small pieces, with one larger which shows the height and size, of a small cup have been found lately. The cup, 4 inches by  $2\frac{1}{2}$  inches (102 by 63 mm.), is thin-walled and quite plain, with no decoration. The base is broad and flat, and the walls, nearly

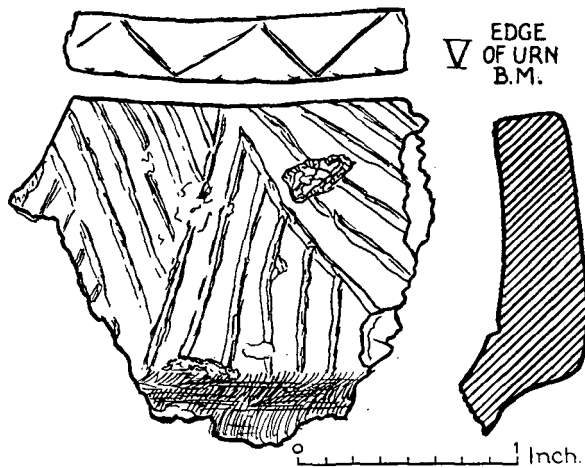


Fig. 17. Urn No. V.

vertical, incline inwards towards the top, where they are thinned away to a narrow lip.

This probably belongs to the "incense cup" group of vessels which are usually found with the bones inside a larger urn. In the sand adhering to the concavity of the largest bit were some carbonised seeds.

Fig. 18 shows the cup partly restored. It is of a simple shape. (Starting from a ball of tempered clay, with the thumb inside and the fingers outside, it took a complete amateur only half an hour to produce a tolerably accurate copy.)

Only one bit of bronze has turned up—a small square portion of flat plate that has been broken up for the crucible. It has a thick patina with impressions of straws. A clear portion on one side shows a finished surface, with some very small sigmoid cuts in rows. The edges have been cut by a chisel and then broken. They vary in length, a little over and under  $\frac{7}{10}$  inch.

A number of rough stone implements have been noticed. The commonest, which show most obviously their character as artifacts, are scrapers of felsite. These have been struck from small boulders of felsite which are common in glacial gravels. They are generally 3 or 4 inches (75 to 100 mm.) in diameter. The fractured surface is stained and weathered. The edge is naturally rough; but one sector, often a straight part, will be found blunted and smooth to the touch as the result of use.

Besides the burnt and broken flints found in the burials, about a

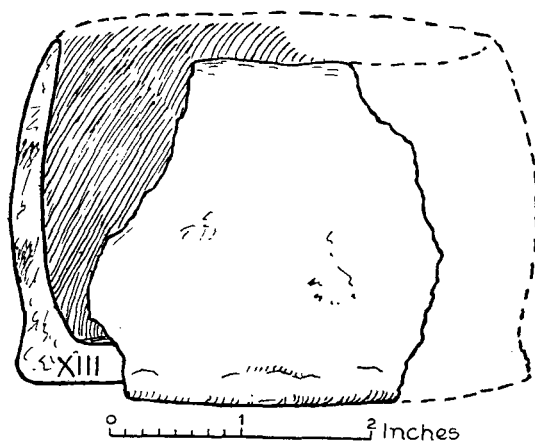


Fig. 18. Incense-cup Urn.

score of flakes and scrapers of flint or agate have been picked up on the site.

Agate, including chalcedony and carnelian, is tolerably abundant in the eastern part of the Ochils, and one finds that quite a large proportion of the smaller implements in this neighbourhood and Tents Muir is made of these forms of silica.

Agates up to 6 inches or more in diameter and weighing several pounds are to be found *in situ* on Lucklaw Hill close by.

The largest nodule of (imported) flint found here (Brackmont Mill) is a piece of tabular grey-yellow flint about 3 inches in diameter.

Discarded splinters and flakes are, of course, much more numerous than residual cores. Indeed, with much valuable material there might be no "core".

The commonest worked flake is a scraper. A small implement of this nature of bright carnelian is included in fig. 19.



A well-finished scraper of brown flint with an arrow point and a knife of grey flint are figured (fig. 19). They all show the same technique of skilful pressure-flaking, by means of which thin chips like shavings are removed.

One cannot but regret that the burial vessels, even under such favourable conditions, are so frequently, almost invariably, broken; but there is so little to indicate the position of urns, and they are so near the surface, cracked and penetrated by root-growth, that they are apt to fall to pieces on exposure, even without the assistance of a shovel.

In these urns the clay contains a definite proportion of broken stone,

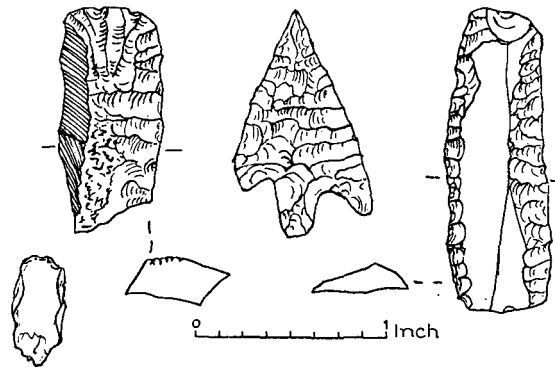


Fig. 19. Flint Implements.

as already mentioned, and firing was neither so intense nor prolonged as is the present practice.

The presence of unoxidised carbon in the walls of the larger urns indicates that they were fired either in closed pits or in covered furnaces such as charcoal-burners use. As already suggested, the distribution of the staining is such as one could only find if some organic material had been incorporated in the clay during manufacture.

Ice is the great enemy of such urns. Exposure of a vessel to a winter's frost would only leave a crumbling heap. This may account for the disappearance of the greater part of the walls of vessels of which only a few scraps are found. It also seems to be the case that winters, since the Bronze Age, have not been very much more "old-fashioned" than at present—that is to say, that frost may have been severe enough to destroy all bits of urns broken or brought near the surface by one agency or another, but that it has never penetrated more than 9 inches, below which urn walls were found intact. The light soil would carry, naturally, grass and a thin scrub of bushes, broom or whin.

The difficulty of recognising stratification at many parts of the pit may be partly accounted for by the fact that the site was planted with trees some time in the eighteenth century. An Itinerary of 1821 describes Brackmont Mill as "an old residence situated in a well-wooded park."

All the urns and relics found have been placed under the care of St Andrews Prehistorians, and are at present exhibited, by the courtesy of Professor D'Arcy Thomson, in the museum of the Bute Medical Buildings.

I have received much assistance and valuable help from Professor Childe.

I am also much indebted to Professor Waterston, St Andrews, for his assistance and advice; to Major J. E. Aitken, Guardbridge, for his help in many ways; and to Mr Leslie Spence for the privilege of digging where and when one liked, and for his free consent to the removal of all the material found to St Andrews.

NOTE A.—Whatever the origin—whether the pattern represents the necklace on a conventional, stylised, human figure, or whether the agreeable effect produced by the impression of the binding cords or investing basket-work was reproduced for adornment only—it is not without interest that the olive oil of Lucca is to-day marketed in bottles with a protecting sheath very like that suggested by the urn pattern—used and discarded so long ago. The lower half of the bottle is contained in a little basket, round the base of which the fibre is twisted into knots that form a ring of support. The basket is kept in place by an open network of twisted string, in two chevron bands above the shoulder of the flask. To the topmost circular cord is attached a loop for suspension. This neat and simple arrangement for protection and support has, no doubt, a long pedigree; but one may not trace it back to the Bronze Age with any more confidence than one would track the "soda-water bottle" to its unstable analogues in the Neolithic.

It may be assumed from the invariable lack of personal record, and burial of all the dust, as we have seen in the case of Urn XII., that the desire of these people was to tidy up and put away the dead, leaving nothing for the horrible feasting of the dog or maggot. They can have had little idea, as indeed Sir Thomas Browne remarked long ago, of the permanence of these humble monuments. Thus the upturned vessel becomes a little house to protect the bones from prowling exhumers. The broken flint is a survival of a more ancient ritual.

NOTE B.—If it had not been for Professor Gordon Childe one might have fallen into most grievous errors. He has recently (February 1936) pointed out that a number of specimens, in one of the Tents Muir collections acquired by St Andrews Prehistorians, are of undoubted Tardenoisian character. This is rather upsetting. Changes of level must have coincided with, or followed closely on the final stages of, glaciation, and the 25-foot Raised Beach must be much older than one imagined; or, on the other hand, Tardenoisian man must have survived in some areas up till, or almost up till, the invasion of the “Beaker Folk.”

NOTE C.—In April 1937 Mr Spence noticed some irregularities on the surface of the sand, as the soil was removed. These are at the most westerly extension of the pit, now 150 yards from the house. The soil is thin here, 12 to 15 inches, and the surface is sloping down to a little dry hollow which probably had a spring and a small tributary to the burn before drainage.

The best-defined depression is circular, 10 feet in diameter, with steep edges. It is 15 inches deep. On the floor, west of the centre, is a hearth of large stones set in clay and covered with black ash. This black stuff was washed and sifted and has yielded carbonised grains of wheat. A core of flint was also found, and it is hoped that more material may turn up which will enable one to fix a date for these dwellings.