

XIII.

NOTE ON THE DISCOVERY OF A BRONZE AGE CEMETERY CONTAINING BURIALS WITH URNS AT NEWLANDS, LANGSIDE, GLASGOW.
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In the autumn of 1904 there were discovered at Newlands, Glasgow, two groups of burials after cremation, comprising eight deposits of bones and charcoal, four with urns.

The following note on what may be styled Group No. I. had been prepared before the disclosure of Group No. II. Group No. II. is described in a second and separate section.

GROUP NO. I.

On 4th August, on the suggestion of Dr David Murray, I received a message from Mr J. Campbell Murray, factor to Sir John Stirling Maxwell, Bart. of Pollok, that in digging at Newlands, Langside, Glasgow, on Pollok estate, urns with bones had been discovered. That evening a meeting on the ground took place, and notes were taken of the circumstances of the discovery. Mr George Anderson, builder, who was carrying on the digging work and the erection of houses, and Mr James Auchterlonie, the foreman, both realised, on the disclosure of the first urn, the significance of the discovery; and having paid particular attention to the features revealed from stage to stage, they were able to furnish such full details that it would seem no facts of importance have escaped registration. It is largely owing to the enthusiasm of Mr Anderson that the relics were so carefully handled and preserved.

The Nature of the Ground and Locality.—The place where the burials were found is in Renfrewshire, a short distance beyond the Glasgow municipal boundary (see the plan, fig. 1), and a few yards to the east of Newlands railway station, about 20 feet from the north edge of the railway line, which at that point runs in a cutting about 5 feet deep through a slight natural elevation about 30 yards by 20 yards. Parallel

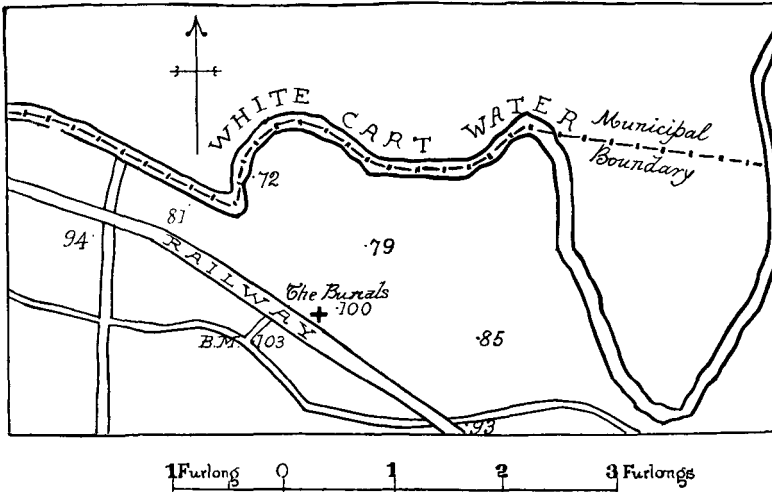


Fig. 1. General Plan showing the site of the Burials.

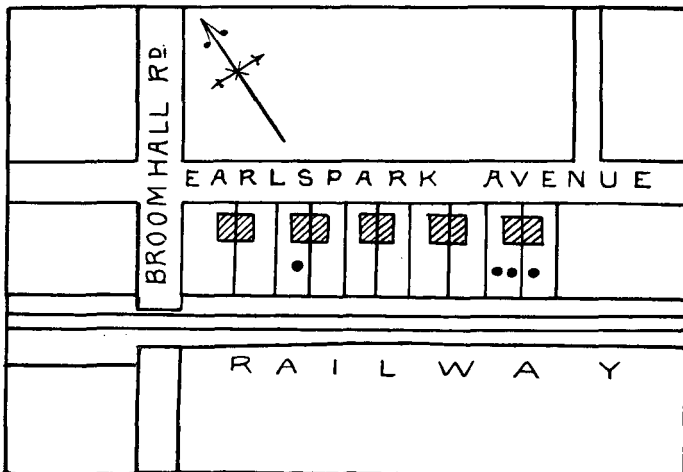


Fig. 2. Plan showing positions of the Urns.

to the railway, and at a short distance north of it, a road is being constructed. Between the road and the railway some detached cottages have been built. While excavating the soil to a depth of from 5 to 7 feet, between cottage No. 5 and the railway, the urns were discovered. From the permanent way the ground slopes slightly to the north and east. Well up on the face of the slope the urns had been buried in the positions shown on the plan, fig. 2. The place of deposit is 110 feet above mean sea-level, as kindly reckoned from the nearest benchmark by Mr J. Jackson Wilson, for the purpose of this note.

The soil consists of dark stratified sand and gravel. At the surface there is a layer of about 12 inches of ordinary soil, which has been disturbed for many years by farming operations. Immediately below this layer, to a depth of more than 15 feet, there are strata of sand and gravel seldom quite horizontal, and sometimes much disturbed, but all by natural agencies. The sand is sharp and fine. The gravel consists of pebbles mostly much smaller and seldom larger than the human fist.

THE POSITION AND CONDITION OF THE URNS WHEN FOUND.

For convenience, the urns may be numbered according to the order of their discovery.

Urn No. 1.—On 12th July 1904 this urn was found, base upwards, the top portion being 15 inches under the surface. Being the first to be disclosed, its discovery was not expected, and some of the cremated bones covered by the urn were scattered in the soil and not recovered. However, a fair quantity has been preserved. The urn was found in several fragments, and has been reconstructed. Portions of the urn were found in such a position as to make it certain that the urn had stood inverted upon a horizontal surface. It was noticed that it rested upon a layer of fine sand about an eighth of an inch deep, which differed from the sand in the immediate vicinity of the layer. The layer had every appearance of having been artificially placed.

Urn No. 2.—Later, on the same day, urn No. 2 was found. It also was sunk in a pit of a similar depth, and was inverted and covered cremated bones. All the bones in this case are preserved. The urn was deposited 4 feet 6 inches to the south-west of urn No. 1. The urn was noticed to have been placed, like its companion, inverted perpendicularly on fine sand deposited in a layer about an eighth of an inch deep. This urn was also found broken, but has been reconstructed. Looking to the small depth at which these urns were placed from the surface, it is possible, as suggested by Mr Auchterlonie, that a severe frost may have been the cause of their becoming fractured.

Urn No. 3.—On 1st August, on the resumption of the digging work after the local holidays, a third urn was discovered, also inverted, at a depth of 18 inches under the surface, at a point 12 feet 6 inches from urn No. 2, and in the same relative position to urn No. 2 as that urn was placed to urn No. 1. Thus a straight line drawn through the places where urn No. 1 and urn No. 3 had been deposited, also passed through the place where urn No. 2 was found.¹ The compass indicated the direction to be about 20° west of north (mag.), or nearly north-north-west and south-south-east (mag.). The quantity of bones covered by urn No. 3 much exceeded the quantity associated with urn No. 2. No comparison in this connection can be made with the osseous remains found with urn No. 1, as only a portion of the quantity covered by that vessel has been preserved.

The bed upon which No. 3 rested did not appear in any way to have

¹ *The arrangement of urns in a line.* In describing the discoveries of cinerary urns deposited in groups in shallow pits, and without protecting structures of stones, most writers have omitted, among many other things, to mention the manner of arrangement of the urns. The vessels in one group found in the Parish of Creich, Fifeshire, are mentioned as having been found "crowded together" and irregularly placed (*P.S.A.S.*, vol. vii. p. 406). In one instance the vessels were disposed in a circular manner (*P.S.A.S.*, vol. vi. p. 338). As mentioned, the three Newlands urns were deposited apparently in a straight line. It is interesting to note that at least two other cases (*Proceedings*, vol. vii. p. 405) have been recorded where the arrangement was somewhat similar. In more than one case the direction of the line lay east and west approximately.

been artificially prepared, further than that the soil had been excavated to receive the vessel.

The Simplicity of the Interments.—No stones whatever seem to have been built up or set in position in association with the urns. No artificially worked objects were found other than the urns, and there was apparently an absence of layers of wood ashes and of deposits of bones without urns. The bones and earthy matter have been carefully sifted and examined.

The Material of the Urns.—The urns have as usual been made without the aid of the wheel, of clay into which have been worked small fragments of pounded-up stone which are evenly distributed throughout the material. The fragments appear rarely on the surface, especially the exterior surface. The vessels have been fire-hardened after being decorated and are of a pale yellowish colour. The pounded-up stones would strengthen the walls and prevent the cracking of the vessels during the firing process.

Wood Charcoal.—One or two very small pieces of wood charcoal were detected among the bones covered by urn No. 2. The presence of only a few particles of charcoal with the bones, and the apparent absence of charcoal in the soil immediately round the urns Nos. 1 to 3, indicate that the process of cremation did not probably take place upon the spot where the urns were buried.

The Probable Presence of Bronze.—I observed a stain of a bright green colour on a vertebra associated with urn No. 2. This may indicate that a bronze implement or weapon had been deposited with the remains.

The Ancient Excavations.—The extent of the disturbance of the soil above and round the urns was not observed, and it is not therefore possible to say definitely how far horizontally the prehistoric excavators had worked in digging holes for the deposit of the vessels.

Vertically they did not go far; and assuming the level of the prehistoric surface not to have materially changed since the time of the interments, the cavities made for urns Nos. 1 and 2 could not have been more than 2 feet each in depth, and for urn No. 3 not more than 3 feet

in depth. The size of the urn seems thus to have in some measure dictated the depth of the excavation, the largest urn, No. 3, having apparently been set more deeply than its companions.

THE SHAPE AND DECORATION OF THE URNS.

The Newlands urns belong to a well-known type of cinerary urn, and are to be assigned to the Bronze Age. The contour of this pottery-type is usually that of two truncated cones (of about equal diameter at their widest) set base to base with an interpolated zone which is very often constricted. The constricted part and the upper cone are, as a rule, of nearly equal depth. In each case the lower half of the vessel is plain, with flat base and like a flower-pot, though generally having somewhat more rapidly expanding walls. The walls rise from the base sharply, without rounding off, at an angle of about 50 degrees, to a point about half-way up the height of the vessel. It is on the upper half of the vessel that the potter has displayed his capabilities as artist. The presumption that the prehistoric potter was a male is perhaps unwarranted, as there is evidence derivable from other discoveries of urns, such as the small size of the finger and nail imprints on the clay, which points to women having been the potters, as they are recorded to have been in some primitive communities.

The upper half of each vessel from group No. I. is divided into two equal and distinct zones, the demarcation between the zones being emphasised by the overhanging brim.

Urn No. 1.—Urn No. 1 (fig. 3) stands about $11\frac{1}{2}$ inches high, measures 9 inches outside across the mouth, and has a base 4 inches in diameter. In this urn the second or lower zone is destitute of ornament, and is bounded on its lower side by a plain moulding, and the outline of its surface is a harmonious continuation of the contour line of the lower half of the vessel. This is not a common feature, as the lower zone is usually pronouncedly constricted or waist-like. The higher zone, the contour line of which slopes inwards, is bounded on its upper margin by the rim of the vessel, and is divided from the lower zone by

the overhanging ridge already mentioned. The higher zone has been filled in by two series of lines incised by some sharp-pointed implement before the clay was fired, each line of one series crossing diagonally the neighbouring lines of the other. The lines of each series have an obliquity of about 40° . Each line intersects from 3 to 4 of its immediate non-parallel neighbours, these being placed two in the space of an inch, and the depth of the zone being 2 inches.



Fig. 3. Urn No. 1, Newlands. ($\frac{1}{2}$.)



Fig. 4. Urn No. 2, Newlands. ($\frac{1}{2}$.)

The rims of all three urns are ornamented and are bevelled inwards, the angle of the inclination being about 45° . The rim of urn No. 1 is about half an inch broad, is fully occupied by a design of incised lines in two intersecting sets of zigzags, forming a series of equal-sized lozenges, centrally placed on the rim, and having their longer axes parallel with its edges.

Urn No. 2.—This urn (fig. 4) measures 12 inches in height; the outside measurement across the mouth is 10 inches, and the diameter of

the base $4\frac{1}{2}$ inches. It has a similar overhanging upper zone but a plain constricted lower zone. The upper zone has arranged upon it lines formed when the clay was still soft by the impressions of what at first sight look remarkably like a number of seed vessels attached on each side of a mid-rib, like small heads of degenerate wheat, or of some cereal grass. The impressions, of which a photograph of the actual



Fig. 5. Photograph of the markings on the upper part of Urn No. 2. (Actual size.)

size is shown in fig. 5, are made to form a pattern in zigzags, and they also occur in irregular groups.

The rim of urn No. 2, like that of urn No. 1, is about half-an-inch broad and has on its outer edge a line of impressed cord pattern like the impressions just mentioned, but the rest of the surface of the rim is occupied by a symmetrical single zigzag line made by the impression of a cord formed by two strands twisted. The line is more compactly set than the zigzag lines on the rim of urn No. 1, the component straight lines being about three-fourths of an inch long.

A question having arisen as to the nature of the object employed to impress the markings upon the upper zone of urn No. 2, the fragments of the urn were shown to Dr F. O. Bower, Regius Professor of Botany in the University of Glasgow, who kindly reports that he has found great difficulty in coming to any conclusion, and states that the suggestion he makes, viz., that the impressions are those of some gramineous ear, is of a very tentative nature, and far from being a conviction in his own mind. Of grasses, the nearest which Professor Bower suggests is one of the small spelts, e.g., *Triticum monococcum* (L.), or *Triticum Spelta* (L.), which grains were in very early cultivation.

Mr Peter Ewing, F.L.S., who kindly undertook an examination of the markings, is of opinion that they are not those of a naturally grown object, because (1) a rachis with its attached flowers or grains would give a more regular impression than these markings, in which the lobe-like hollows are not equally apart; and (2), the direction of the *striae* perceivable in some of the hollows is not coincident with, but runs obliquely to, the direction of the longer axis of the hollow. Mr Ewing conjectures the markings are the result of a gouging-out of the soft clay (before it was hardened) by means of a tool, possibly of bone.

As the question is important, and bears upon the cultivation of cereals in Britain during the Bronze Period,¹ and Dr Joseph Anderson having suggested the possibility of a four-plaited cord having been the object used, the following experiments were carried out. Cords were plaited in 3, 4, and 5 regular plaits. An impression of each of the three plaitings was made in soft clay which was afterwards hardened by fire. Casts of these impressions were then taken. Casts were also made of the markings on the urns and casts of these casts taken. Thus the markings, ancient and modern, and both sunk and in relief, could be compared.²

¹ Dr Joseph Anderson calls my attention to p. 111 in Mr Mortimer's recently published *Forty Years' Diggings*, where there is recorded the occurrence of part of a head of wheat enclosed in the clay forming the wall of a "food-vessel," and charred in the firing.

² A comparison of the decorative schemes on the rims of urns No. 1 and No. 2 reveals that the artist spread out the zigzags on rim of No. 1 where it was double, and

The comparison showed that the prehistoric potter used a four-plaited cord. The sinuosity of the markings, the forking of some of the cords where the component strands have become loosened, and the length of some of the markings, which run without a break for $2\frac{3}{4}$ inches, being out of proportion to their breadth if considered as impressions of an ear of grain, all indicate that a cord has been used.¹ The impressions, when viewed in relief

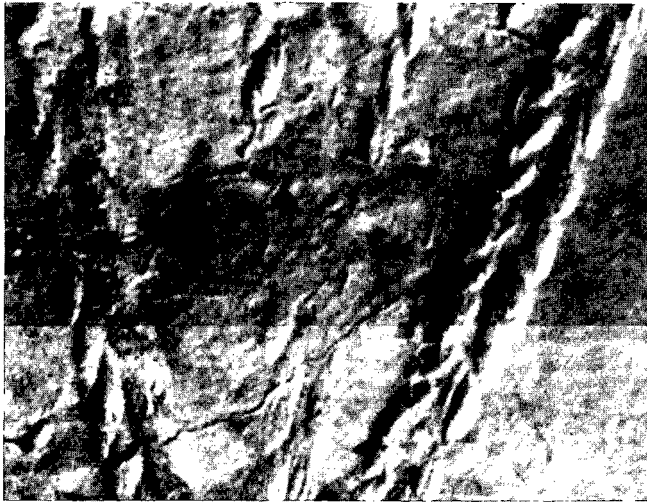


Fig. 6. Markings on Urn No. 2. (Enlarged four times.)

and under a lens, were particularly instructive, as the various strands could be traced as they ran under and over from one side to another. A photograph of some of the markings enlarged four times is shown in fig. 6.

selected a series of less obtuse angles for the single line on the rim of No. 2, supplementing the comparative meagreness of the single zigzag by a plain line on the margin. In each case practically the same degree of fulness in the decorative effect is reached, but by different means. The work in each instance finishes off at the same point—a point, by the way, at which the modern decorator has seldom the good taste to call a halt. Identical artistic impulses seem to have imbued the mind of each of the artists; or not improbably the two rims were decorated by the same hand.

¹ In an Appendix (p. 551), the results of further experiments are described.

Urn No. 3 is not only the largest of the three, but is one of the largest sepulchral vessels recorded from Scotland. It bears more decoration than its two companion urns.

The contour of the lower zone is much constricted, being pronouncedly

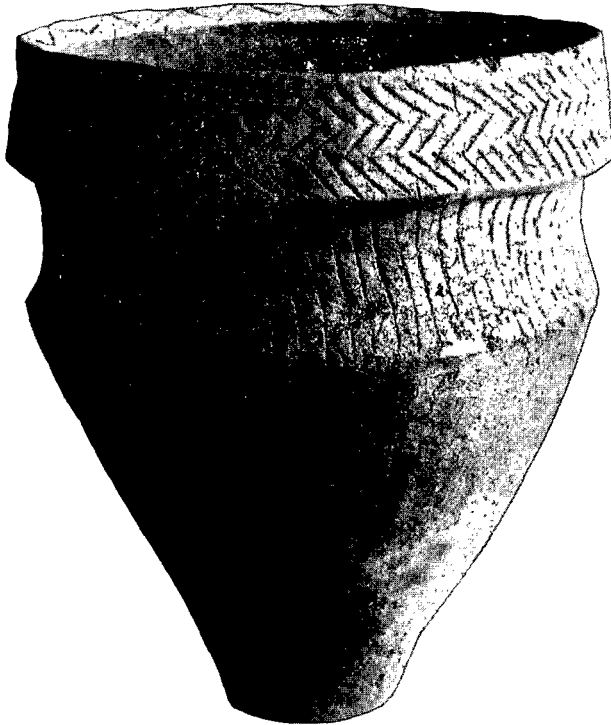


Fig. 7. Urn No. 3, Newlands. ($\frac{1}{2}$.)

concave. That of the higher zone slopes inwards till its termination at the rim, and betrays slight convexity. The outside diameter of the mouth is 15 inches. The height of the vessel (fig. 7) is 18 inches, of which 11 inches are taken up by the plain lower part, the remaining 7 inches being occupied by the upper and lower zones, which are $3\frac{1}{2}$ and 4

inches in depth respectively. Both zones are filled with straight lines of the impressed twisted cord pattern. In the lower, the lines run at a slight angle from the perpendicular, and as is usual run from left to right and are roughly parallel to each other and equi-distant about 1 inch.

In the upper zone the lines run up and down in a treble zigzag, and are placed about 1 inch apart, the change in direction of the line taking place at distances of about 1 inch. As is usual in the pottery decoration of the Scottish Bronze Age, each line seems to run first from left to right, beginning at the top of the zone.¹ The ornamentation of the rim of this urn consists of a zigzag line of the usual twisted cord pattern. The design is well spread out and the angle formed by the lines very obtuse, the surface available for decoration being just a little over half an inch in breadth, and the straight lines composing the zigzag being $\frac{3}{4}$ inch long.

Inferences from the Position and Shape of the Urns.—It cannot be stated whether, at the period of the Newlands deposit, the urn was more frequently inverted than placed in a normal position. Both fashions have been noticed to occur in the same cemetery and with what were almost certainly contemporary burials. To secure the contents, slabs of stone were not unusually placed over the urn when it stood upright, and under the urn when it was inverted. I have discovered one instance where an urn (bucket-shaped and plain), containing apparently incinerated remains, had been placed on its side, and a small flat stone set upright against the mouth, and a "kit" of flint tools placed in the soil above the vessel.

The Employment of Urns of Large Size.—Urns of a cinerary type are larger than those of any other kind. It seems certain that as the size of the vessel increased so also would the potter require to exercise

¹ By a study of the direction, overlapping and general character of the impressed and incised lines on prehistoric pottery, a fairly accurate conclusion can be drawn as to the methods of the artist—what lines he first sketched in, and what were the finishing touches, and it may be possible at times to tell whether he was right or left-handed.

greater skill and expend greater labour. The occurrence of sepulchral vessels of abnormally great dimensions is nevertheless possibly quite accidental.¹

Sepulchral clay vessels in Scotland rarely exceed 15 inches in height.² The other classes of British Bronze Age ceramic found with interments, "Food Vessels," "Drinking Cups," and "Incense Cups," to use the fanciful names which have been invented, are all much smaller. In the south-east of Spain, MM. Henri and Louis Siret discovered specimens of a type of large sepulchral urn containing unburnt human bones, which have been assigned to the Bronze Age in Spain,

¹ No theories have apparently been formulated as to why urns of exceptionally large size, such as urn No. 3, should have been employed. It may be, however, that there was some special reason for their manufacture. The most likely of the factors which may have entered into the choice of the size of an urn are perhaps worthy of examination.

(1) A very large size may have been intended to indicate the importance of the deceased ; or

(2) may have been meant to testify to the exceptional esteem or veneration in which the individual was held ; or

(3) may have been supposed necessary from the large stature or proportions of the deceased ; or

(4) may have been intended to contain the burnt bones of more than one individual ; or

(5) to contain, in addition to human bones, the skeletons, or part of the skeletons, of animals.

No case seems to have been found in the British Islands of an unburnt human skeleton having been deposited in an urn.

If it be found possible to demonstrate, after the accumulation of more data than is presently available, that there is as a rule more elaboration in the super-structures or in the grave-goods associated with cinerary urns of large size, than in those of small size, perhaps we should learn whether the suppositions 1 and 2 have any foundation in fact.

Careful examination of the osseous contents should, however, throw light on the suggested causes given under headings 3 to 5. The most unlikely supposition of all is certainly that offered under the fifth heading. Yet, such are the surprises met with in the study of prehistoric Archæology, that actual examination seems to indicate grounds for suggesting that the abnormal cubical capacity of some urns, if intentional, was arranged to allow osseous fragments belonging to the lower animals being interred in the same vessel with human remains.—(*P.S.A.S.*, vol. vii. p. 372.)

² I have been able to obtain a note of only 20 Scottish cinerary vessels, the height of which exceeds 15 inches.

if not to an earlier period. The diameter at the mouth in the case of some of these urns exceeds 26 inches. It is thought that such large urns may have been moulded in sections, which were put together when the clay was moist.

GROUP No. II.

On Friday, 16th September following, I was apprised of the discoveries of five additional deposits, these having taken place on the preceding Tuesday and Wednesday. As in the previous cases, I was unfortunately absent at the time of the discoveries, but Mr Anderson and Mr Auchterlonie were again able to furnish details, and having previously read the note on Group No. 1, they were aware of the facts which it was desirable to record.

The Disposition of the Deposits.—When excavating at about the same distance from the railway as the first discoveries, and 83 yards to the west of that place, an urn with burnt bones, and near it four pits without traces of pottery, but with wood charcoal and bones, were found. These five deposits may be numbered 4 to 8, in the order of their coming to light.

As explained by Messrs Anderson & Auchterlonie, either one or other of whom was present at the disclosure of the remains, deposits Nos. 5, 4 and 8 were placed in a straight line, as were also Nos. 6, 4 and 7, the centre of the group having been No. 4. A line through 5, 4 and 8 was at right angles to a line through 6, 4, and 7. Reckoning the measurements from the centre of each deposit, Nos. 5 and 8 were each 5 feet distant, and 6 and 7 each $2\frac{1}{2}$ feet distant from No. 4. This disposition is curiously symmetrical. A line through No. 8 and 5 lay about 2° north of north-west (mag.). The cottage in the back-garden of which Group No. II. was discovered, is the second double cottage south-east of the junction of Broomhall Road and Earlsparke Avenue. A line from deposit No. 4 drawn towards and at right angles to the back wall of the cottage meets that wall at a point 4 feet 6 inches from the west corner of the cottage, and measures 30 feet 6 inches.

Urn No. 4.—When discovered the basal portions of this urn were wanting. The greatest care was taken in noting the details of the position. The surrounding gravel was first removed and the urn exposed down to the rim, when it was seen to have been placed in the usual inverted position. It was found impossible to lift the urn in one piece as the walls were fractured. The pieces were, however, in their original position, and after they had been cautiously removed there was revealed a core consisting of an intact, fairly compacted mass of black earth, wood ashes, and bones. Some sand and gravel was also present in the core, and had probably been washed in through the imperfect basal part. Rain water had no doubt obtained access also, and may have assisted in increasing the solidity of the core. Mr Anderson sifted and washed through a sieve some of the material of the core, but noticed nothing of special note, except a number of human teeth. The urn had been set in a cavity excavated for it. As if to allow the vessel to rest upon a secure foundation, eight water-rolled stones of different sizes, shapes and material, none having a larger dimension than 5 inches, and the smallest having a maximum dimension of 2 inches, were found, in a somewhat circular manner, in the same plane, at the bottom of the cavity, so that the rim of the vessel rested on the stones. The coarseness of the gravel in which the deposits of Group No. II. were found may account for the employment of the stones. It would be less easy in gravel than in sand to obtain a flat and secure bed for an urn. Further than the placing of eight stones there was no prepared foundation. No stone was placed against the side of the urn nor in the centre of the floor of the cavity. The prehistoric diggers had evidently made a pit of a size just sufficient to contain the urn.

On the disclosure of urn No. 4, it was noticed that the mass of black earth, wood ashes, and burnt bones which was seen to have formed a core, was not spread over an area greater than that covered by the urn. This apparently indicates that the materials referred to were contained in the urn when it was deposited, and that they were not interred

prior to the urn being placed in position over them. This evidence is, however, perhaps insufficient for the belief that before its burial the urn had its contents sealed up by some perishable covering placed over its mouth.

The contents of the urn in this case seem to have filled the urn. If only a small quantity of material be found inside an inverted urn, then it is conceivable that the material to be covered was simply gathered in a small heap, and the urn, then empty and without a cover, placed over

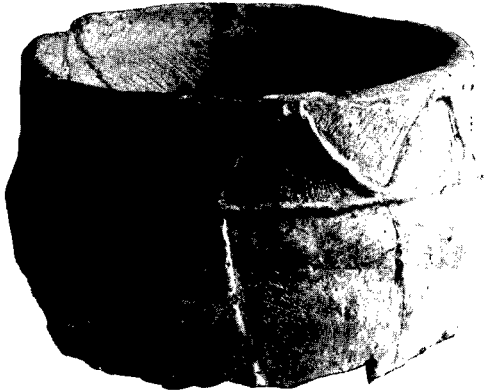


Fig. 8. Urn No. 4, Newlands. ($\frac{1}{2}$.)

the material. The rim was at a depth of 20 inches from the modern surface. The nearness of the base (which was uppermost) to the surface may account for the basal portions having disappeared.

The decoration of urn No. 4 (fig. 8) is of unusual richness. The absence of any deep overhanging rim, or of a constricted second zone, or of any sudden changes in the contour line, is compensated for by the rare feature of bold work in relief. The ornamentation is not confined to two zones or horizontal panels, as so often happens. There are indeed four zones, and one of these is again subdivided, but not pronouncedly. The decoration extends apparently very nearly to the base, an unusual

feature, but its limit downwards is unknown, as the basal portions are wanting. Sufficient fragments remain to show the contour and decoration to a point 12 inches downwards in vertical height from the rim. The inner and outer diameters at the mouth have been 13 and 14 inches respectively. The rim is plain, with a slight inward bevel. The contour line of the first or topmost zone extends slightly outwards, neither bulging outwards nor inwards, to a point $2\frac{3}{4}$ inches from the rim, whence it curves rapidly outwards for about an inch. It then proceeds convexly inwards and downwards in a full uniform curve to a point at which the lower portion of the vessel has broken off. Three horizontal mouldings occur. The first marks the boundary between the topmost zone and the lower parts of the vessel.

Four inches beneath the first moulding is a second, while 5 inches still lower is a third moulding. The mouldings have been formed by laying on to the body of the wall rounded strips of clay about $\frac{1}{4}$ of an inch in diameter, while the clay of the wall and that of the strip were still soft. As can be seen at places where the strip has since been broken off, the potter drew a shallow gutter along that part of the surface of the walls to which he (or she) intended to affix the strip of clay.

The gutters, which are about one-tenth of the breadth of the moulding, may have been made to assist to secure the strips of clay in position, but it is also probable that they were merely preliminary sketchings-in to indicate where the mouldings were to be laid. So far as the exterior of the vessel is concerned they were made apparently before any of the other lines were incised, as the lines incised in the interior of the panels sometimes cut into the mouldings.

After the strip was in position it was apparently carefully worked with the fingers into the body of the wall, keeping it, however, always in high relief, though making it usually a little broader than high. The topmost or first zone is, as usual, more lavishly decorated than any other part. There, over the interior of the zone, are laid similar strips of clay, forming a zigzag line in relief which ranges over the

whole depth ($2\frac{3}{4}$ inches) of the zone and runs at angles of about 45° to the line of the rim.

The triangular spaces thus formed appear of course as if counter-sunk. Each space is filled with roughly parallel incised lines, about three in the space of an inch. The direction of the lines in each space has been skilfully chosen so as to produce the maximum amount of variety, the lines in one space not running in the same direction as those in the immediately adjoining spaces. This harmonious effect is strengthened by the direction being parallel to one or other of the sides of the triangular space.

Zone No. 2 is, as mentioned, bounded below and above by lines in relief. A contrast has been produced in it by having lines in relief placed perpendicularly at distances of about 4 inches from each other. This interior relief-work is of less extent than the work in relief in the interior of zone No. 1. This is in conformity with the artistic impulse which, during the period of the Bronze Age, almost invariably dictated that the lower the zone the less importance it should have. These vertically placed mouldings are arranged to coincide with the apex of a triangle of the topmost zone. There is thus the pleasing effect of five lines in relief meeting at the same point. The rectangular, counter-sunk panels in zone No. 2 which are thus formed by the vertical and the horizontal mouldings are filled with groups of incised lines which are placed parallel, about $\frac{1}{4}$ of an inch apart. Each group is somewhat irregularly placed, and the component lines of one run in directions different from those of its immediate neighbours.

The third zone (of which the fragments are now lost) was bounded by mouldings, and deeper than zone No. 2, but had no relief work in the interior. It was thus given less decorative value than either of the upper zones. There was a single incised line running horizontally and carefully placed medially. From this middle line were two series of incised lines filling the entire space. One series, that in the lower sub-panel, ran downwards and at an angle of 45° from right to left, while those of other series (those in the upper sub-panel) ran upwards

at the same inclination from right to left. The lines comprising each series were carefully drawn parallel to each other and about $\frac{1}{4}$ of an inch apart. The whole formed a herring-bone ornamentation.

Beneath this zone were fragments of the wall showing another zone with lines incised and running at an angle of 45° and parallel to each other, but the character of the decoration was indeterminable, owing to the destruction of the basal portions.

The mouldings are at times decorated by the impression of some blunt-pointed tool.

The inside of the rim, corresponding to the whole area of the topmost zone (which is $2\frac{3}{4}$ inches deep), is decorated by lines made by a tool with a somewhat frayed-out, broad point, possibly a reed or twig with a roughly fractured end.

The tool scraped out a passage as it was drawn quickly along the surface of the soft clay. The character of the passages is similar to the little gutters, already described, found underlying the strips of clay forming the mouldings on the exterior of the vessel. The passages are arranged in the familiar herring-bone pattern, but there is no medial line, its place being taken by a slight thickening of the wall at the centre of the panel, the areas below and above the thickening being somewhat concave. In cinerary vessels ridges such as this occasionally occur round the interior near the rim, but their use, if they were not purely decorative, is not clear. They may have been intended to support a circular plaque or cover, fitted into the neck of the vessel to protect the contents.

Deposit No. 5.—For a distance of about 15 inches immediately under the surface it was impossible to trace the ancient excavation owing to disturbances in the superficial soil. Beneath this superficial layer it was seen that the pit extended to a further depth of 9 inches and that it was oval, being 27 inches by 21 inches, the longer axis of the oval lying in a direction towards deposits Nos. 4 and 8.

The coarseness of the gravel made it somewhat difficult to make out the exact lines of demarcation of the area of the ancient disturbance.

There were no built-in stones or traces of pottery or of a prepared floor. The pit, from a depth of 15 inches downwards to its base, was filled with black earth and wood charcoal, but of osseous remains there were only faint traces.

The other Deposits in Pits.—Of the other pits, No. 6 was slightly oval and of similar dimensions to No. 5; No. 7 was circular and the smallest, being only 12 inches in diameter; and No. 8 was circular and about 24 inches in diameter. The depth in each case did not materially vary, but No. 6 had a depth of only 6 inches of filled-in material under the superficial layer of 15 inches of disturbed soil. In this pit some pieces of charcoal of unusually large size, being about 1 inch in diameter, were found. On portions of the contents of the pits being washed by Mr Anderson, osseous fragments and gravel only were noticed.

It is not unusual to find burials after cremation without urns in the same cemeteries with urn-burials. Possibly, indeed, they are more common than the records show, as doubtless such simple burials would often remain undetected. Burnt osseous remains buried without urns are naturally not so well preserved as when protected by urns.

The Relationship of the five Deposits.—It seems almost certain that in Group No. II. all the deposits are separate burials. Their symmetrical disposition seems to point to their having been contemporary, but whether broadly or precisely so is a difficult question. The very fragmentary condition of the osseous fragments in the urnless burials (if burials they were) will make it probably impossible to say what class of osseous remains were placed in the pits. The smallness of the cubical capacity of pit No. 7 is worthy of note.

Wood Charcoal.—The wood charcoal from deposits Nos. 3 and 4 was submitted to Professor Percy Groom, who was good enough to undertake its examination. In the case of the charcoal from No. 3 the pieces were found to be too small to be satisfactory, but in the case of No. 4 Professor Percy Groom was able to arrive at some conclusions and reports as follows:—"First, it is wood of a broad-leaved (dicotyledonous) tree. Secondly, it is not oak, chesnut, ash, elm, hornbeam, hazel, plane or

beech. Thirdly, I think that it is alder. To determine this wood absolutely—if it be possible—would require more time than I can devote to the question. I might, however, recommend you to send the wood to Mr Stone, who is a specialist on timber structure, and if he, after a more prolonged examination and more detailed one (by cutting the specimen pieces), arrives *independently* at the conclusion that the wood is *alder*, then I think you may regard it as certain. Of course it is a difficult bit of work, as it is impossible to see the colour, know the hardness, or ascertain the fine microscopical structure of the wood.”

Following Professor Groom's suggestion, Mr Herbert Stone, F.L.S., was communicated with. He says, “I have failed entirely to obtain a section, without which I can offer no certain opinion. The resources of the Biological Laboratory at the Birmingham University have been placed at my disposal without avail. None of the demonstrators can do anything with the charcoal, which is too soft and crumbling. From a superficial examination with a lens, I conjecture that the wood is alder.”

REPORT ON BURNT BONES FROM NEWLANDS, LANGSIDE, GLASGOW.

By THOMAS H. BRYCE, M.D., F.S.A. Scot.

The material submitted to me for examination by Mr Ludovic M'L. Mann consists of four separate deposits found under cinerary urns, and three bags of gravel, osseous debris, and pieces of charcoal collected from the pits placed round one of the urns.

The osseous fragments from all the deposits have the typical appearance and fracture of human bones calcined by cremation. The fragments which were protected from contact with the soil by the urns have a chalky white surface, while those which lay under urn No. 4 and those collected from the gravel in the pits have the dark colour of burnt bone found in the soil.

The bones forming each deposit were carefully examined, and those which could be accurately identified selected. A number of these furnish data regarding the age, and in some cases even the sex, of the individual. In cremated interments the shafts of the long bones and ribs are always broken into small cracked and often twisted fragments. The articular extremities have generally resisted the fire more than the

shafts, and portions remain which enable one to determine whether ossification has been completed. Frequently—and this has always struck me as a curious circumstance—some of the phalanges, though burnt through, remain entire. The bodies of the vertebræ are often partly preserved though the processes are broken away. In the skull, as might be expected, it is generally the petrous temporal which has shown most resistance to the fire, while the other bones of the base and the vault are only represented by small pieces. Some portion of the lower jaw is generally present, and the teeth, though completely calcined, are sometimes preserved entire.

Urn No. 1.—This deposit is represented by a few fragments. Certain of them show that the individual was of adult age.

Urn No. 2.—The bones are specially white, as if they had been more completely protected than in the other cases. All the fragments are said to have been preserved, but except on the supposition that a considerable part of the skeleton had been reduced to fine ash, the existing remains can hardly be taken to represent the whole of the bones. Some whole phalanges show that their epiphyses were united, so that the individual must have passed the 20th year; but a portion of the base of the sacrum shows that the first and second segments have not been completely united, so that the age can be determined as being about five and twenty.

Several of the bones show light green stains.

Large Urn No. 3.—This deposit is specially large. The bones are greyish in colour, a few are grey-black. The fragments are of large size. There are remains of about 19 vertebræ. They are under the average size, and some of the metacarpal and metatarsal bones and phalanges which have been preserved are slender bones. The epiphyses of these bones have united so that the person cremated had reached adult age.

One of the temporal bones is represented by the petrous and mastoid portions. The mastoid process is very slightly developed, and this, taken in conjunction with the slenderness of the bones of hand and foot, and the complete union of their epiphyses, point to the individual having been a woman.

There are slight green stains on several of the bones.

As the urn containing this large deposit was of exceptional size, it might be supposed that the burnt bones represented two skeletons. There is not, however, a greater mass of fragments than would be accounted for by the cremation of a single person, provided that the greater part of the skeleton had not been reduced to fine ash. The large size of the pieces, and the number of vertebræ which have not been reduced to small particles, point to some special form of treatment,

such as a less fierce fire or one of shorter duration, which enabled the executors to gather the remains more completely together.

No single fragment which can be identified has a duplicate which cannot be referred to the opposite side of the body, so that one is forced to the conclusion that the deposit represents the cremated remains of a single individual. Again, no bone occurs which can be identified as that of an animal.

Urn No. 4.—The deposit found in association with this urn reached me in the form of a mass of small gravel with burnt bones intermingled with the stones. When collected, the osseous fragments were found to be much broken and of rather darker colour than in the cases of the deposits already described, a fact which is explained by the circumstance that they had, according to the account given, come into contact with the soil which had gained access through the broken basal portion of the urn.

Portions of the bones of hand and foot show that the epiphyses had united. The amount of osseous debris can hardly be taken to represent the remains of an entire skeleton. There are no bones which cannot be attributed to the human subject.

Deposits from the Pits round Urn No. 4.—These were submitted to me in two lots mixed with the gravel which filled the pits. The deposits consist largely of fine osseous debris and the smaller sort of fragments which occur in the urn deposits. They have the dark colour of burnt bones deposited in the soil, but in every other respect are identical with the osseous remains found under the urns. They are, however, very much broken up, and it is noticeable that a relatively large number of the small bones of the hand and foot seem to be present.

Collected together, all the fragments from the four pits do not equal in amount the mass of bones in the urn deposits. I have examined certain burnt interments, and that in urn No. 3 of this series is a case in point, where most of the skeleton appears to have been collected into the urn. In cases where only a portion of the debris of the bones appears to represent the result of the cremation, it may readily be supposed that much of the bone had been reduced to fine ash; but, on the other hand, it may also be supposed that it would be a matter of difficulty to gather the finer debris from the ashes of the funeral pyre, and that the fragments of burnt bone deposited in, or under the urn represent only those readily collected. In this connection I may say that the fragments from urn No. 4 and the four pits do not much, if they at all exceed in amount, those recovered under urn No. 3, and I would suggest as a possibility, from my examination of the remains, that the deposits in the pits may not represent separate interments, but only the finer debris of the cremation.

APPENDIX.

Experiments were carried out to throw light on the nature of the material of the four-plaited cord which had been applied to the wall of Urn No. 1.

Impressions on soft clay of various similarly plaited vegetable and animal fibres were compared with the ancient markings, and some conclusions arrived at.

Tendons and Fibres of Animal Origin.—The presence of *striae* on the ancient markings indicates that the ancient cord consisted of either four solid strands with corrugated surfaces, or of four strands each made up of a number of filaments twisted upon one another. Four solid strands, possessing a corrugated surface such as characterises a thickish animal tendon, would, however, give more continuous, certainly more pronounced, *striae* than those to be seen on the ancient markings. The prehistoric strand would therefore seem to have been not solid, but composed of a number of filaments.

A cord with strands of horse hairs twisted did not give impressions like the urn markings, the individual hairs producing *striae* far too clear and harsh. For similar reasons human hair was rejected, as not among the materials probably used by the prehistoric potter.

Wool presented a little difficulty, owing to the number of its varieties and the various methods of its preparation. Woollen yarns, oiled and not oiled, "long" and "short," in plies of three and four, were four-plaited as nearly as possible to the degree of compactness of the original cord. The different yarns, while in each case giving a cord of the required thickness, betrayed too great an elasticity and an insufficient power of resistance when pressed against the clay, and gave impressions much less definite than those on the urn.

But a more noteworthy difference was brought out between the character of the material of the ancient cord and that of the woollen yarns experimented with. The wool left always upon the clay the impression of a felted surface, caused by the *laminae* or feathery offshoots of the wool getting pressed together and interlacing themselves irregularly at the moment the wool was pressed into the clay. Such felted surface is not observable on the ancient markings.

Vegetable Fibres.—A plaiting of four piths of the common rush (which was found difficult to make, owing to the brittleness of the material) gave impressions too large.

As there were found at Lochee Crannog (*P.S.A.S.*, vol. xiii. pp. 198, 237, and 246) articles like fringes or girdles, and a four-plaited

object like a cue or pigtail, all made by plaiting the stems of the moss *Polytrichum Commune* (L.), this moss was experimented with.

Mr John Renwick kindly supplied specimens of the moss. The stems were easily freed from the short, hairy leaves, but, in spite of the most careful preparation, small irregularly-placed scales persisted in adhering to the stems, and produced on the clay cross lines and irregularities. Further, the stems were too stiff. It seems clear this moss was not the material used upon the surface of the urn. Flax tow, however, gave impressions similar to the ancient markings, especially when in the plaiting the fibres were slightly moistened. The tow had a solidity, and yet a pliability, a thickening here and there of the fibres, and a surface fairly free from feathery and straggling filaments—features all apparently characteristic of the material which was called into service by the decorator of the urn. Flax tow (and linen) were not improbably known in Britain during the early phase of the Bronze Age.

A body swathed in linen was found in a cist with relics characteristic of the Early Bronze Age at Driffield, Yorkshire (*Archæologia*, xxxiv. p. 255). An urn of overhanging rim type, discovered at Durrington, Wiltshire, contained burnt bones which had been wrapped in coarse linen cloth woven with a double thread both of warp and woof. The form of the fibres has survived, owing to a deposit upon the fabric of carbonate of lime derived from the bones. These relics are in Devizes Museum. (*Anc. Wilts*, p. 168; *Wilts. Arch. Mag.*, xxi. p. 261; *Devizes Mus. Cat.*, p. 56.) In Bush Barrow, Normanton, Wiltshire, was found a flat axe of bronze, with almost imperceptible flanges, bearing on its surface traces of coarse cloth, as if burnt into the metal. I was informed at Devizes Museum, where this axe is preserved, that the cloth was probably of linen. (*Anc. Wilts*, p. 203, pl. xxvi. *Devizes Mus. Cat.*, p. 38.)

Mr B. Howard Cunnington, F.S.A. Scot., Devizes, to whom the above references to linen were submitted, kindly calls my attention to the following four other instances of linen cloth found in England with burnt interments in barrows of the Bronze Age. Very fine linen was found by Canon Jackson in a barrow at Winterslow, near Stonehenge (*Wilts. Arch. Mag.*, xxi. p. 346). Sir Richard Colt Hoare refers to an interment of burnt bones, secured by a linen cloth, under a rude urn (*Anc. Wilts*, p. 169); to a large sepulchral urn associated with "several pieces of decayed linen, of a reddish brown colour, lying like cobwebs on the calcined bones" (*Anc. Wilts*, p. 242); and on the same page to a broken urn associated with "an interment of burnt bones, over which was a considerable quantity of decayed linen cloth."