

I.

ON A JET NECKLACE FROM A CIST AT POLTALLOCH, ARGYLL.

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The village of Kilmartin, Argyll, stands at the apex of a triangular area of low-lying ground some three miles in length. At its base is the level stretch of Crinan Moss, and on either side rise the rugged hills of Argyll.

This delta is bisected by the Kilmartin Burn, which flows to meet the River Add, but geologists tell us that the valley was at one time traversed by a much larger river, when a lobe of ice blocked the Pass of Brander, and the waters of Loch Awe discharged into Crinan Loch.¹ The course of this river may still be seen at parts, and further evidence of early conditions exists in the form of great banks of gravel, a hundred feet above the present sea-level. These extend along either side of the valley, and speak of a time when Knapdale and Kintyre were islands and the waves of Loch Crinan rolled to where Kilmartin village now stands.

When the sea receded to its present level, the district now traversed by the Crinan Canal and the Kilmartin Burn must have become an important thoroughfare. To this is doubtless due the fact that in no part of Scotland are there to be found remains of greater interest, dating from early prehistoric down to mediæval times.

These monuments have frequently formed the subjects of papers in our *Proceedings*, and have been elsewhere described.² Dr Christison dealt with the forts of the district, and has given an account of the work done by our Society at Dunadd, when by the kindness of Colonel Malcolm, C.B., of Poltalloch, our museum was enriched by the addition of over 300 objects found during the excavations. The cairns and their excavation have been described by Canon Greenwell and Dean Mapleton, while Dr Joseph Anderson has given an account of the urns discovered. The standing-stones have received the attention of Mr Romilly Allan, Professor J. Y. Simpson, and Dr Christison.

A very remarkable alignment of cairns and standing-stones extends from Kilmartin through the whole course of the valley; several of these cairns are of more than usual interest. In the large cairn at Kilmartin Glebe, at the north end of this line, was found a jet necklace, which cannot now be traced. From the top of this cairn, which was

¹ *Memoirs of the Geological Survey*—Sheet 37, p. 3.

² For Bibliography, see Appendix A.

only partially excavated, and which originally measured 110 feet in diameter and $13\frac{1}{2}$ feet in height, one can see the next three in the series in exact alignment. The second seems to have been untouched. The third was unfortunately recently removed. The fourth, at Nether Largie, contains a megalithic segmented chamber which has been figured by Professor Bryce.¹ In this cairn Canon Greenwell found the beautiful urn (now in the British Museum) which has been so often figured as a type of neolithic pottery. The cairn is situated 1200 yards from No. 1 of the series. Continuing southwards the line passes a standing-stone, having close to the east a remarkable group of standing-stones, and to the west a circle of twelve stones in a small wood. Beyond Ri Cruin the line passes over the site of a cairn which contained three cists. In two of these the side slabs were grooved for the reception of the end slabs, and from the third was taken the unique slab bearing sculptured representations of axe-heads, of which there is a cast in our museum.² Continuing, the line passes in succession three burial sites and a standing-stone within a distance of about a mile and a half, and eventually crosses the Add at Islandadd Bridge. This remarkable line, $4\frac{1}{2}$ miles in length, probably marks the course of an early track, and is in fact closely followed to-day by a road, except where it passes through the grounds of Poltalloch House. It points N. by E. $\frac{1}{2}$ E., being parallel to the course of the Kilmartin Burn and to all the ridges and valleys in the district. It is a noticeable fact that the axes of practically all the Bronze Age graves in the district point in approximately the same direction.

Another line of standing-stones and burial sites extends from the modern cemetery north of Lochgilphead to Dunadd, a distance of about $2\frac{3}{4}$ miles.

About half a mile north-east of Poltalloch, the low-lying triangular area above referred to is bounded on the west by a gravel bank some

¹ *Proc. Soc. Ant. Scot.*, vol. xxxvii. p. 60.

² *Proc. Soc. Ant. Scot.*, vol. viii, part 2, p. 378. Opinion is divided whether these are moulds or mere representations. The latter would seem to be the correct interpretation, as similar carvings occur on the slabs of a burial chamber in Brittany. There the shafts of the axes are also shown, and they are accompanied by a curious figure resembling the head of a rake. This figure was also carved on one of the Kilmartin slabs, suggesting to Dean Mapleton "large Ogham letters." See *Proc. Roy. Irish Acad.*, vol. viii, 1861-64, p. 398. There can be no doubt, however, that the figures in question are the debased representations of boats with rowers, such as have been found carved on boulders in Denmark. See A. P. Madsen's *Alfildninger af Danske Oldsager og Mindesmaerker: Broncealderen II.* (1876), p. 49, pl. xxxvii. The same motif appears on knives of the Bronze Age in Denmark (*Ibid.*: *Broncealderen I.* (1872), pl. xxiv.). Mr George Coffey has described these "ship-figures" at New Grange, near Drogheda, and has drawn attention to their similarity to Scandinavian rock carvings. He does not seem to have known, however, of the Scottish example at Poltalloch. See *Trans. Roy. Irish Acad.*, vol. xxx. pp. 30-37 (1892), also *New Grange*, Coffey, p. 60 (1912).

50 feet high and 600 yards in length—the 100-foot beach of pre-glacial times. To the north this bank ends in a promontory above the North Lodge and the hamlet of Slockavullin. At its south end is a somewhat similar promontory, round the base of which curves a small stream. The crest of this southern promontory has been used as a gravel pit for many years. It is known as Brouch an Drummin (the brae of the

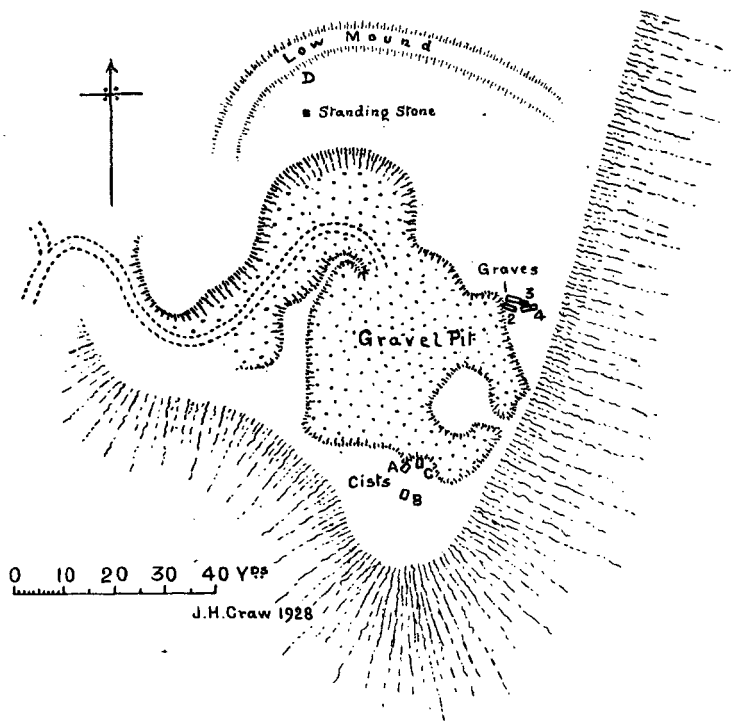


Fig. 1. Plan of Gravel Pit.

elder bushes), but the old name is said to have been Kill y Kiaran¹ (the cell or burying-ground of St Kiaran).

On the occasion of the visit of members of the Ancient Monuments Commission to this district in April 1928, their attention was directed to a short cist at the edge of the pit. This had been opened in 1910 by Professor Bryce, but was found to contain nothing save a few fragments of bones. A slight examination led to the discovery of the ends of other slabs projecting from the gravel, and Sir Ian Malcolm

¹ *Ex inf.* Mr Donald Campbell, Poltalloch. Kiaran was an Irish Saint who lived A.D. 515-548.

decided to excavate the site. In the third week of August I went to Poltalloch to help with the work.

A plan of the gravel pit is shown in fig. 1. Some 11 yards to the north stands a monolith 5 feet 6 inches above the ground and 2 feet by 1½ foot at ground-level. Its major axis points north by east (fig. 2). About 10 yards farther north can be traced the faint remains of a mound which has been raised to cut off the promontory. It is only some 6 inches in elevation by 24 feet in width, and can be traced from near the edge of the steep bank to the east. It curves with a westerly



Fig. 2. Gravel Pit from the North.

course for about 70 yards until it is lost when turning south, some 20 yards to the south-west of the monolith. The area cut off by this mound measures about 100 yards north and south by 70 yards east and west.

The work of examination was begun at the east side of the gravel pit, where flag-stones could be seen projecting from the side of the excavation, and where bones had been found some time before. Here four full-length stone-lined graves were found in an approximately east and west position. They contained human remains, but no relics.

No. 1 pointed east-south-east, the cover stones being 1 foot 7 inches below the surface. It was formed of three slabs on each side and two end slabs, being covered by three slabs. It was unpaved and measured

5 feet 6 inches in length internally by 15 inches at the east end, 18 inches at the shoulders, and 12 inches at the west end. It contained a skeleton in a much decayed condition, the remains of the skull being at the east end.

No. 2 lay parallel to it, on the south side, at a distance of 18 inches. The west end had been damaged in removing gravel from the pit. This grave was at a rather lower level, being 2 feet below the surface. There were two slabs at the north side and one at the south side, a slab at the east end, and two remaining cover stones. It measured 8 inches wide at the east end, and 11 inches wide at the middle, the head having evidently been placed at the west end.

No. 3 lay close to the east end of No. 1, and in alignment with it, but at a slightly higher level, being 1 foot 4 inches below the surface. This grave seemed to have been damaged in the making of grave 4, which had cut into it at the east end. The slabs had been displaced, but the west end slab, two slabs at each side, and one cover stone remained. Part of a skull was found at the west end.

No. 4 was at a lower level, being 1 foot 9 inches below the surface. It did not lie parallel with the other graves, its axis pointing east by north. It was formed of three slabs at each side, two end slabs, and three covers. The dimensions were: length 5 feet 8 inches, width at west end 18 inches, at shoulders 20 inches, at east end 10 inches. The skeleton was sufficiently preserved to show that the body had been placed on its back with head to the west and the arms extended at each side. This grave was placed about 5 yards from the edge of the slope to the east and about 38 yards from the enclosing mound to the north.

None of the graves was paved. The depth of each had been from 12 to 14 inches.

There were in all probability more graves at this spot, but as these evidently date from mediæval times, operations were not carried further. The older name of the place, Kill y Kiaran, is suggestive of Christian burial. The skulls were sent to Professor Bryce for examination,¹ the other bones were reburied.

Work was next begun at a spot 6 feet south-west of the cist C found in 1910 (fig. 3), at the south end of the gravel pit, and some 35 yards south-west by south of the long graves. At this spot the promontory ends in a slight knoll, sloping steeply to the east, south, and west. A horizontal slab could here be seen projecting from the gravel face. It had escaped earlier interference from the fact that a large elm tree of considerably over a century's growth grew directly

on the top of it. It was decided to open the cist A by removing the end slab, and to do this a considerable amount of roots had to be cut away. When this had been done it was found that the slab originally visible was not the cover of the cist, but a small slab placed close to it, the actual cover being directly behind it. When the end slab of the cist was removed, it was seen that the cist was formed of four slabs of schist, and a covering slab. The end slabs were placed between the ends of the side slabs, and at the north end a shallow perpendicular



Fig. 3. Cists at Gravel Pit.

groove had been chipped in the west side slab. The end slab was not placed in this groove, but a couple of inches outside it.

The cist pointed north by east, it measured 3 feet 1 inch in length, 1 foot 8 inches in width, and 1 foot 4 inches in depth. It was unpaved. The cover was 24 inches beneath the surface of the ground.

The interior was about one-third full of sand and gravel, which was bound into a compact mass by the closely matted roots of the elm tree. To clear this out was no easy matter, as every care had to be taken to avoid damaging any urn or other relics the cist might contain. Only one person could work at a time, and it took six and a half hours before all the contents were cleared out.

The best tool was found to be a piece of strong wire, bent at right angles, with which the roots were slowly combed out. The sand and

gravel were passed through a sieve, and the fibrous roots cut off bit by bit as they were freed.

The contents of the cist were a jet necklace, a flint knife, fragments of partially incinerated human bones and teeth,¹ a few small pieces of charcoal, and small lumps of ochre.² The bones and charcoal were all found in a circular area in the middle of the north half of the cist. The beads and the knife were found in the south half of the cist, and more to the west than to the east side. This was the part most filled with roots, which extended almost to the top at the south-west corner.

After clearing out cist A, the remaining part of the knoll between the edge of the gravel pit and the top of the steep bank was examined by cutting narrow trenches across it. During this work no sign of there having been a cairn of stones on the spot was found, but it is possible that stones may have been removed when the ground was under cultivation.

Cist B (figs. 3 and 4) was found 11 feet south of cist A. It lay 13 inches below the surface, and pointed slightly east of true north. The cover was a large slab, measuring 6 feet 9 inches by 3 feet 5 inches; it was about 5 inches thick, but tapered considerably towards the edges. It was much too long for the cist, projecting southwards as much as 2 feet 4 inches. This end of the slab was only 2 feet 3 inches wide, and a small slab lay over it at the south-west corner of the cist, where the large slab



Fig. 4. Cist B. Showing groove in side slab at north-east corner.

little more than covered the cist. A large number of markings made by a sharp-pointed tool were noticed on the under surface of the cover near the north end, apparently to reduce its thickness at this part. Slabs had been laid horizontally at the level of the top of the cist, on the north, east, and west sides. The cist measured 3 feet 9 inches in length internally by 2 feet 3 inches at the north end and 1 foot 9 inches at the south end. It was 1 foot 7 inches deep, and was paved with 69 small, flat, water-worn stones. The cist was very symmetrical in form, the end slabs being fitted between the side slabs.

¹ See Appendix B.

² Mr George Bond reports that the charcoal is that of the oak. Mr G. W. Tyrrell, A.R.C.S., Ph.O., reports that some fragments consist entirely of ochre, others are quartz pebbles with ochreous stain and impregnations. He suggests that the occurrence in the cists is fortuitous. As explained below, however, I think the ochre was purposely laid in the cist.

The latter at each end had grooves similar to that in cist A. These were from $1\frac{1}{4}$ to $1\frac{3}{4}$ inch wide by $\frac{1}{8}$ inch deep, and had been made with a tool similar to that used on the cover. In fig. 4 the groove in the north-east corner may be seen directly above the right end of the foot-rule. The groove on the south end of the east slab was not continuous, but had been made for only 3 inches at the top and the bottom; as the slab at this end was slightly concave, a continuous groove had not been thought necessary. The comparative narrowness of these grooves, and the fact that at neither end was the end slab placed in the groove, but at a distance of $\frac{1}{2}$ inch to 2 inches outside of it, suggest that the grooves may have been made for the attachment of a lining of wood.¹ Grooved slabs were recorded by Dean Mapleton in two cists adjacent to that in which the slab with engraved axe-heads was found.² In that instance the side slabs were stated to be "grooved to admit the end slabs." As the site of these cists is some 600 yards east of the gravel-pit, it is probable that they were made by the same people.³

The interior of the cist was filled with sand and gravel. This would seem to have been put there before the cover was originally placed,⁴ as the cover closely fitted the cist, leaving no aperture by which gravel could enter; neither was there any space in the pavement below by which a burrowing animal could find admittance.

On the pavement and chiefly in the south half of the cist were found fragments of unburnt human bones and teeth, a piece of flint (fig. 5), small pieces of charcoal, and some fragments of ochre. An urn (fig. 5) of the food-vessel type stood near the north-east corner, slightly tilted towards the corner. It was in a damaged and fragile state, part of the side which had broken off lay in a distinegrated state in the interior. It would seem likely that the tilting and breaking of the urn

¹ So far as I know, this is the first record of a stone cist lined with wood. Canon Greenwell records the use of wood in rare cases in Yorkshire (not accompanied by stonework) in the form of a split and hollowed tree-trunk. He also records the bottom of graves laid with slabs of wood, the sides also having been lined, in other cases planks had been laid over the body.—*British Barrows*, p. 13.

² *Proc. Soc. Ant. Scot.*, vol. viii., part ii., p. 378. Canon Greenwell records the cover stone of a cist at Eglingham, Northumberland, "exhibiting the almost unique feature of the use of a tool upon it, in the shape of a groove cut with a sharp-pointed instrument round its narrower end, no doubt with the object of facilitating its being dragged the more easily up the side of the hill, upon the summit of which the cairn is placed."—*British Barrows*, p. 418.

³ Mr O. G. S. Crawford has recently described a cist in one of the Scilly Isles where there were grooves in the side slabs "to allow the end-stones to be fitted more securely."—*Antiquity*, vol. ii. p. 419 (December 1928).

⁴ The unusual feature of a cist having been filled with soil at the time of burial was observed in two other instances in the Poltalloch district. At the Glebe Cairn, Kilmartin, a cist was found half-filled with gravel, it contained a necklace *above* the urn (*Proc. Soc. Ant. Scot.*, vol. vi. p. 340). At Duncraigaig, in a cist nearly filled with gravel, the urn was found *on the surface* of the gravel (*Ibid.*, p. 347).

occurred when the wood lining decayed and the weight of the sand and gravel forced the urn against the end slab. A minute fragment of bronze was found in cleaning out the sand in the interstices of the stones forming the paving of the cist. An examination of the gravel below the pavement showed that it had not been disturbed.

Before leaving the site a further examination was made of cist C, which was opened in 1910. The sand in the cist was riddled, but only a piece of ochre was found.¹ This cist was formed of four slabs and a cover, the end slabs being fitted between the side slabs, no sign of grooves in the slabs could be found. It measured internally about 3 feet 4 inches by 2 feet 1 inch, and was about 1 foot 10 inches deep. The cover was 12 inches below the surface, and the long axis pointed slightly to the east of true north.

A short trench was cut from the monolith at the north side of the gravel-pit, for four yards to the south. A layer of small stones 9 inches deep was found, but the soil beneath had not been disturbed. This layer forms a ring round the stone, causing a slight mound on the surface. The gravel-bed does not extend so far as the monolith, the soil being of a loamy character.²

THE RELICS.

The knife (fig. 5) is a pointed flake of light brown flint. It is $2\frac{1}{8}$ inches in length and shows signs of wear along one edge. The piece of flint (fig. 5) from cist B is roughly sectoral in form, it measures $\frac{7}{8}$ by $\frac{3}{4}$ inch, and shows chipping along the curved edge. The urn (fig. 5) is composed of light reddish-brown clay of fine texture and is somewhat rudely made. It does not stand evenly on its base, being 5 inches high at one side and half an inch more at the other. It measures $6\frac{1}{4}$ inches across the mouth and $2\frac{3}{4}$ inches across the bottom. Two mouldings, $\frac{7}{8}$ inch apart, encircle the urn, the upper being $2\frac{1}{8}$ inches below the lip.

The exterior is entirely covered with ornamentation consisting of some forty rows of impressions which encircle the urn. These impressions have been made with two tools, each impression having been made separately. One tool with a point like that of a penknife has been pressed flat into the clay to make a row of V-shaped impressions, 5 to 9 to an inch; immediately below this zigzag line is another, of inverted V's. Eight of these double lines encircle the urn, being approximately

¹ The presence of ochre in cists has been previously recorded. My own experience leads me to think that it would be much more often found if carefully looked for. A large slab of ochre, with one side much hollowed by rubbing, was found in a cist at Chesterknowes, Chapelhill, Cockburnspath in 1913 (*Hist. Ber. Nat. Club*, vol. xxiv, p. 181).

² A short account of other sites examined will be found in Appendix F.

equidistant and $\frac{3}{4}$ inch apart. The top pair is emphasised by being more deeply impressed and by having the V's wider apart. Each pair of rows is separated from the next by 2 to 5 (usually 3) rows of impressions made with a tool having a point like that of a blunt lead pencil, the dots being from 8 to 10 to an inch. Where the impressions have been made obliquely the effect resembles that made by a twisted cord. The inside of the lip is decorated by two rows of horizontal thumb-nail impressions, the impressions in the second row being reversed;¹ on each side of this are three rows of dotted impressions. The decoration of the urn must have occupied some considerable time, there being between 5000 and 6000 separate impressions on it.

The necklace (fig. 6) is of jet or some allied substance such as lignite or cannel coal. It consists of six plates, one triangular piece of the type usually called a pendant and 110 fusiform or barrel-shaped beads.

The plates are ornamented with rectilinear designs formed of rows of small cup-shaped punctulations. Some of these still retain a white chalk-like substance which must have made the design a much more striking feature of the necklace in its original state.² The two terminal plates bear a lozenge

¹ Thumb-nail impressions similarly placed on the inside of the lip were found on an urn at Greenhill, Balmerino, Fife. Another urn in the same cairn had V-shaped impressions and rows of dots as if produced by the teeth of a comb.—*Proc. Soc. Ant. Scot.*, vol. xxxvi. p. 635.

² An examination of the necklaces in the Scottish National Museum shows the same filling to exist in the punctulations of a necklace from Lunan Head, near Forfar. Similar encrustation

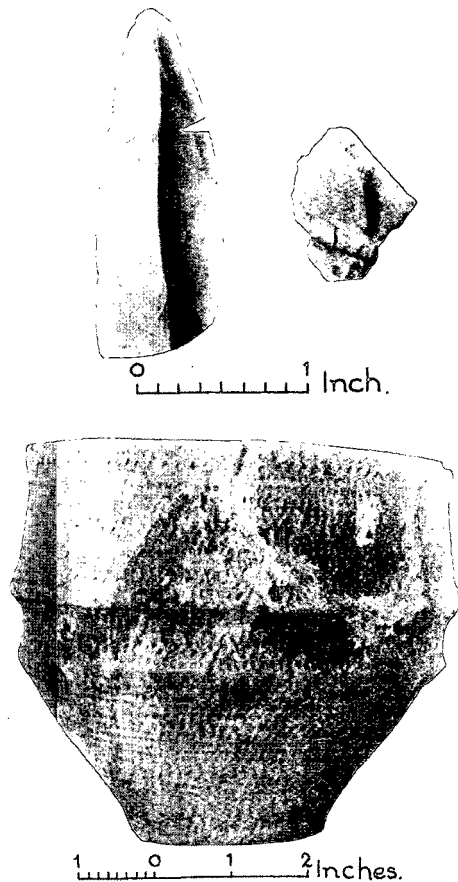


Fig. 5. Urn and Flints.

in double outline containing a saltire. At the base they are pierced with three string-holes which emerge at the back of the plates. The right terminal (*i.e.* the plate on the wearer's right side) is pierced at the point with two holes placed on the median line, passing through from back to front. The point of the left terminal is pierced with one hole which enters at the back and emerges at the point. The second

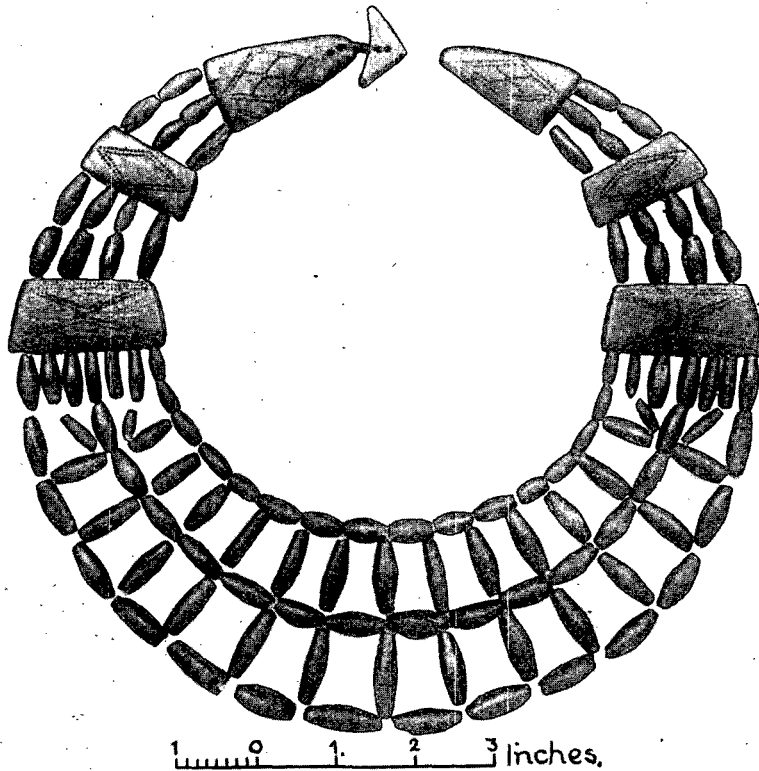


Fig. 6. The Poltalloch Necklace.

plates bear a lozenge in double outline, and are pierced from edge to edge with three holes, one of which emerges as two at the broader edge. The front plates bear two triangles in double outline, placed apex to apex; they are pierced with four holes passing out as seven.

may be seen in the impressions forming the design of several Bronze Age urns in the museum, and has been recorded on the urns of the Stone Age in Denmark. The plates of a necklace found at Assynt, Sutherland, were said to be "curiously studded with gold spots" (*Arch. Scot.*, vol. iii. p. 49). The punctulations of this necklace, however, which is in the National Museum, appear to be filled merely with earth.

The so-called "pendant" is triangular with a slightly concave base, two holes on a line at right angles to the base pass from one flat side to the other (fig. 7, *a*).

The beads vary in length from $\frac{7}{16}$ inch to $1\frac{1}{16}$ inch.

The necklace appears to be almost if not quite complete.¹

As the beads and plates were slowly extracted from the mass of roots in which they lay, a note was made of the approximate position in which the larger pieces were found. It was impossible to do this with much accuracy, the mass being so dense, and the conditions of excavation so unfavourable, the work having to be done from the farther end of the cist. Every bead and every perforation of the plates was threaded with a tiny rootlet. When the notes were examined later, the position in which the plates were found corresponded with the usual construction of jet necklaces much more closely than was expected. The relative position of two plates was reversed, this might be due to conditions of excavation or to the previous action of the roots. The terminal plates were much closer together than as usually figured, this was also at first attributed to the pressure of the roots. Seventy of the beads were found before the first plate appeared: this was thought to have been due to the action of the roots carrying the smaller beads away from the plates. The position of the "pendant," however, was more difficult to explain. It lay near the terminals, not far from the west side of the cist, not near the front part of the necklace. It could not have been carried there, as the growth of the roots was in the opposite direction. The character of the piece itself does not suggest that it has been a pendant. A pendant is naturally the most valuable constituent of a necklace, upon which most care is bestowed. This piece, like other similar pieces, is not only devoid of any ornamentation such as is found on the plates, but is disfigured by being pierced with two holes which there has been no attempt to conceal.

The necklace was at first reconstructed according to the accepted

¹ Of some 52 necklaces of the plate type on record from the British Isles (36 of these being from Scotland), more than half are mere fragments, and only about a dozen examples have been found in a condition even approximately complete. Although this must in part be due to faulty excavation, carefully examined cists have been found to contain no more than a few plates or beads. With a material of the nature of jet, it must have been seldom that a necklace survived till the death of its owner without loss by breakage. That the ornament was frequently worn is clear from the extent of wear on the beads and plates from constant friction. The finest of all the necklaces is that found at Balcalk, Tealing, in the county of Angus (*Proc. Soc. Ant. Scot.*, vol. xiv, p. 260), but the Poltalloch necklace must be given a high place in the first half-dozen. It contains 110 fusiform beads as against 140 in the Balcalk necklace, and 120 (or 128) from that found at Dam of Burgie, Rafford, Morayshire (*Proc. Soc. Ant. Scot.*, vol. xii, p. 298). Three other necklaces have over 100 beads, and six more have between 50 and 80. Five English necklaces have between 50 and 80 beads.

plan, while an investigation was made of the evidence upon which this reconstruction was based. The evidence was found to be peculiarly slight.

The facts relating to the discovery of Scottish examples have been collected by Mr Graham Callander;¹ the English records are more widely scattered. The jet plates of a necklace found at Assynt, Sutherland, were figured in 1824,² but no attempt was made at arrangement, the

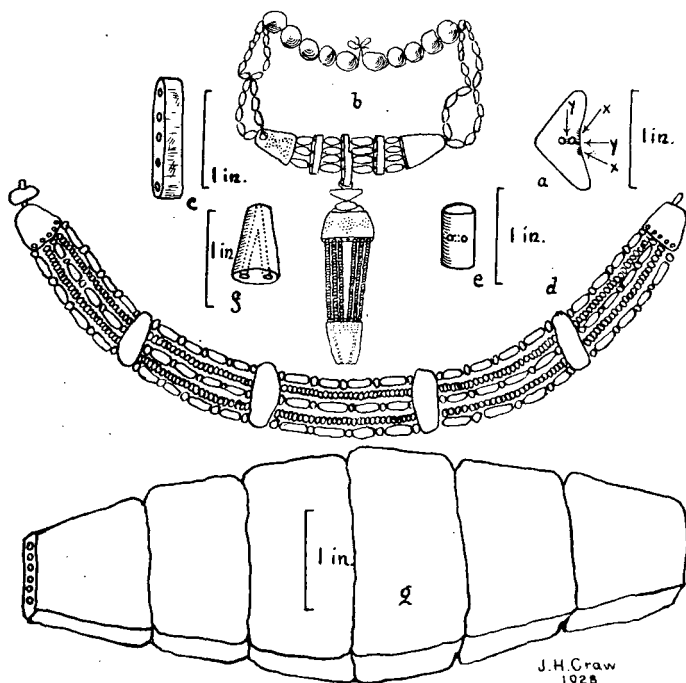


Fig. 7. Necklaces and Beads.

plates in fact being supposed by Hibbert to have been suspended from a girdle. In an account of a necklace found at Pitkenney, Aberlemno, county of Angus, in 1858,³ the small triangular piece⁴ was thought to be an "ear-ring."

Ten years earlier, however, in 1848, Thomas Bateman had published his *Vestiges of the Antiquities of Derbyshire*, showing an arrangement

¹ *Proc. Soc. Ant. Scot.*, vol. i. pp. 201-40 (1915-16).

² *Arch. Scot.*, vol. iii. p. 49.

³ *Proc. Soc. Ant. Scot.*, vol. iii. p. 78.

⁴ This type of bead has not been dealt with by Mr Beck ("The Classification and Nomenclature of Beads and Pendants"—*Archæologia*, vol. lxxvii. p. 1).

of jet necklaces that has since been accepted as correct, and employed in all our textbooks.¹ In figuring a necklace found at Cow Low, near Buxton,² he places the small triangle at the back, but strung through as a bead. In *Ten Years' Digging in the Celtic and Saxon Gravehills of Derby, Stafford, and York*, published in 1861, the same writer places the small triangle as a pendant in a restoration that is obviously fanciful (fig. 7, b).³ It has since been usually figured in this position in necklaces both of the plate and of the disc type, but in an account of a necklace found at Holyhead, Anglesea, it is described in 1867 as "a triangular object the intention of which has not been ascertained."⁴ In 1870 a triangle was figured as a pendant in a necklace from Tayfield, Newport, Fife.⁵ There is no evidence in Bateman's records to show that the beads were actually found in the position figured.

A similar absence of evidence exists in the reports of the Scottish finds, in only two of which does the finding of a necklace in an approximately complete condition appear to have been recorded with any care. The Balcalk pendant (c. 1879), referred to above, is stated to have been found *below the central part* of the necklace. The second careful record is that of a necklace found at Burgie Lodge, Rafford, Morayshire, in 1913, when out of 107 jet beads "over 40 were found in the position apparently occupied by the breast or neck, and seemingly some of these closely retained their original position, as two groups of four beads each formed a star-shaped design." Unfortunately the position of the small triangle in this find was not recorded.

In the English discoveries, the remains have been more fragmentary, and the details of the relative position of the beads are similarly meagre. Canon Greenwell records at Weaverthorpe, in the East Riding of Yorkshire, a "triangular pendant" of jet found *at the middle* of a necklace of graduated discs.⁶ He also describes a "pendant" of rather a different form *at the back of the neck* at Goodmanham, also in the East Riding.⁷ In this case there were no other beads. At Painsthorpe Wold, Yorkshire, J. R. Mortimer found the skeleton of a young person, "the head pointed to the north, and *behind it* was a small triangular pendant of

¹ "It is, of course, almost impossible to rearrange a group of beads, often more than a hundred in number, in the exact order in which they were originally worn; there are, however, frequently several peculiarly formed plates found with the beads which seem susceptible of being arranged in but one particular order, so that it appears probable that the manner in which some of these necklaces have been reconstructed . . . is not far from being correct."—*The Ancient Stone Implements, Weapons, and Ornaments of Great Britain*, p. 457, John Evans (1897). Dr Munro, however, seems to have preferred the reconstruction of the necklace from Mount Stuart, Bute, in which the terminal plates are brought together at the back.—*Prehistoric Scotland*, p. 212, fig. 133 (1899). See also *Proc. Soc. Ant. Scot.*, vol. xxxviii. p. 66, fig. 40 (1903-4).

² *Vestiges*, p. 92.

⁴ *Archæological Journal*, vol. xxiv. p. 257.

⁶ *British Barrows*, p. 198 (1877).

³ Page 25.

⁵ *Proc. Soc. Ant. Scot.*, vol. viii. p. 412 (1870).

⁷ *Ibid.*, p. 297.

jet"; no beads were found. The figure shows a triangle of the type under consideration.¹

To sum up, the evidence from actual discoveries, meagre as it is, points as strongly to the triangle having been a toggle or fastener at the back as a pendant in front. The fact of its having been accepted as a pendant might bias subsequent records. The lack of ornamentation and the fact of the holes being usually unconcealed, support the fastener theory.² Used as a fastener the piece would be attached to the point of one of the terminal plates, and would connect with a loop attached to the point of the other terminal. The holes in the Poltalloch necklace are peculiarly suited for this reconstruction. The point of the left terminal has a single hole; to this the loop would be attached. The right terminal has two perforations corresponding to those of the "fastener," as we may now call it.

Other necklaces vary somewhat in the form of the fastener and in the perforation of it and of the terminals. Usually the fastener is triangular, with one hole near the base or with two placed close together, either parallel to the base or at right angles to it. The finest example, from Balcalk, has a V-shaped hole at the base. The Poltalloch fastener seems to be the only example having a concave base. A necklace found at Kyle, Northumberland,³ in 1927 has a unique billet-shaped fastener (fig. 7, *e*), which Mr Parker Brewis designated a "toggle-shaped piece," but which he described and figured as a pendant. The "pendant" of a necklace found at Lunan Head, county of Angus,⁴ is described as being cubical in form with rounded angles; it is now lost. The method of piercing the terminal plate also varied. The hole sometimes entered at the back and emerged at the point, and sometimes one or two holes passed directly through the plate from front to back. Structurally the latter method was probably the best, the holes being in line with the point. This distributed the strain, the cord being threaded through plate and fastener in a double figure of eight. The signs of wear on the Poltalloch fastener clearly show this method of threading (fig. 7, *a* (*y*)). That the fastening was always a weak point, however, is testified

¹ *Forty Years' Researches in the British and Saxon Burial Mounds of East Yorkshire*, p. 128, fig. 323 (1905).

² Professor Macalister, however, describes a triangle, found in a cist at Oldbridge, County Meath, with a necklace of discoid and cylindrical beads, as "pierced with a hole running from one broad face to the other, so near the base of the triangle that the pendant would hang apex downwards. There can be no doubt that this object was suspended from the necklace, and that it was an amulet."—*Ireland in Pre-Celtic Times*, p. 193 (1921). This triangular type has also been found on the Continent.

³ *Archæologia Æliana*, vol. v. (4th series), p. 26 (fig.); *Proc. Soc. Ant. Newcastle*, 4th series, vol. iii. p. 94 (fig.).

⁴ *Proc. Soc. Ant. Scot.*; vol. xii. p. 294.

by the number of terminals that are broken and sometimes redrilled at the point.

What may be considered final proof of the use of the triangle as a fastener is the presence of distinct signs of wear at the edge of the base on either side of the hole (fig. 7, *a* (*x*)). This was caused by the friction of the loop. It is most clearly seen in the fastener from Tayfield, Newport, Fife,¹ but it is also present in these from Poltalloch; Blinmill, Rothie-Norman, Aberdeenshire;² and Mount Stuart, Bute,³ all in the Scottish National Museum. These cord marks are also very clearly shown on the figure of a lozenge-shaped "pendant" pierced at one end. It was found by Mr Mortimer⁴ at Painsthorpe Wold, Yorkshire. It is possible that a semicircular bead with "two grooves across the flat top," described but not figured by Canon Greenwell,⁵ owed that feature to the wear of the loop. It is described as the "central" bead in a string of 124 discs of jet.

If, then, we accept the triangle as a fastener, we must find another arrangement for the string of beads. Here the evidence from Burgie Lodge comes to our aid with 40 beads placed in front and two groups of 4 beads forming a star. This clearly points to a construction like that shown in fig. 6, and suggests that the 70 beads found together at Poltalloch had not been shifted by the roots, as was at first thought, but were actually *in situ*.

The "star" formation of the Burgie Lodge necklace needs three strings of beads. The front plates, however, are pierced for seven beads. This must have required an arrangement somewhat similar to that suggested in fig. 6, where, at either side, each of two pairs of beads is connected with a single bead, the latter being connected with the middle string. This construction is of course of no structural value to the necklace, and must be regarded as an artistic development, the fringe of seven beads below each front plate having a pleasing effect.⁶ Further evidence of the "star" formation is found in signs of oblique wear at the points of some of the beads.

The general effect of the necklace as now reconstructed is strongly

¹ *Proc. Soc. Ant. Scot.*, vol. viii. p. 411.

² *Ibid.*, vol. vi. p. 203.

³ *Ibid.*, vol. xxxviii. p. 66.

⁴ *Forty Years' Researches*, p. 126, fig. 312.

⁵ *British Barrows*, p. 330.

⁶ With some necklaces (Fordoun House, Kincardineshire, *Proc. Soc. Ant. Scot.*, vol. i. p. 212; Pitreuchie, Angus, *Ibid.*, vol. xli. p. 65; Tayfield, Balgay, Newport, Fife, *Ibid.*, vol. viii. p. 411; Kyles, Northumberland, *Arch. Æl.*, 4th series, vol. v. p. 26; and Cow Low, Buxton, Derbyshire, *Vestiges*, p. 92) there have been found from one to four triangular plates resembling terminal plates, but much smaller, and having one hole at the point and two at the base (fig. 7, *f*). These have in some cases been thought to belong to another necklace, probably that of a child. It seems likely, however, that they may have been used for connecting the extra beads of the fringe with the main strings. See Appendix C, Details of the Construction of the Necklace.

suggestive of another ornament of the Bronze Age, the gold *lunula* or crescent.¹ This striking similarity appears not only to be confirmatory of this reconstruction of the necklace, but also to provide the explanation of what has been a much-disputed question—the origin and meaning of the ornamentation of the *lunula*.

Before considering the connection between these two ornaments,

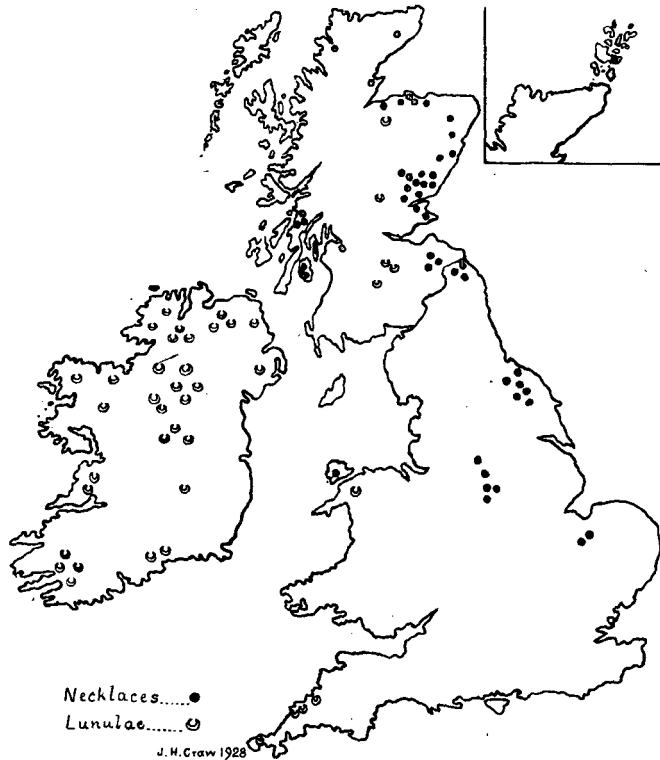


Fig. 8. Map of Distribution of Jet Necklaces and *Lunulae*.

it may be of use to examine the distribution of each. This is shown on the map (fig. 8).

The necklace of crescentic form must be of very early origin. The first development of the simple string of shells of the child or the savage is to grade the shells, with the largest in the middle: this at once forms a crescent. A long process of evolution, however, must take

¹ Although the designation "crescent" is in some respects preferable, "*lunula*" is here used, the ornament having been usually referred to and indexed under that name.

place before such an artistic ornament as the plate necklace is produced. The use of the spacing bead is a notable step in this development.¹ What may almost certainly be considered as the prototype of the plate necklace is found in Denmark, as a relic of the Stone Age. This is an amber necklace consisting of two terminals and four spacing beads all pierced for five strings of cylindrical and discoid beads (fig. 7, *d*).² The figure shows a small piece of amber attached to one of the terminals; it may have been a toggle similar in use to the small triangles of our jet necklaces; the reconstruction, however, is conjectural.

Amber necklaces with spacing beads have been found in Wiltshire, the amber, if not the finished necklace, having probably been brought from the Baltic. The plates of an amber necklace figured by Sir R. Colt Hoare³ are graduated, the terminals are not triangular, but show six holes at the smaller end (fig. 7, *g*).

It is in jet, however, that the plate necklace has attained its highest development. No plates of jet seem to have been found on the Continent, and the records from Ireland are extremely meagre.⁴ In Britain their range extends from Orkney to Cambridgeshire, but while in the north they greatly exceed in numbers a second type of necklace consisting chiefly of small discs of jet, the latter preponderates in the south. Dr Joseph Anderson states that "they are so frequently found with Bronze Age burials in Scotland and so rarely in any other part of Great Britain that they may be said to be characteristic of the Bronze Age in Scotland."⁵ A list of those found in Scotland has been given by Mr Graham Callander in his paper mentioned above.⁶ They are found associated with urns of the food-vessel type, and also with beaker urns, indicating use at the beginning of the Bronze Age.

The English examples are chiefly from Yorkshire and Derbyshire, and are remarkably few when the large number of excavations in these counties is considered. Most of these English plate necklaces have been extremely fragmentary. A feature, especially of those from Derbyshire,

¹ It is found at Ur (fig. 7, *c*), dating from 3500 B.C., when it was made of stone (*Archæologia*, vol. lxxvii. p. 14, fig. 15, A3, *b1*—"The Classification and Nomenclature of Beads and Pendants"—Horace C. Beck).

² *Afbildninger af Danske Oldsager og Mindesmaerker*, A. P. Madsen (1869), pl. xlii., No. 33.

³ *The Ancient History of South Wiltshire* (1812), pl. iii. See also *Archæologia*, vol. xliii. p. 504 (1865).

⁴ *Ireland in Pre-Celtic Times*, Macalister, p. 192 (1921).

⁵ *Proc. Soc. Ant. Scot.*, vol. xxxv. p. 270 (1900-1).

⁶ Mr Callander informs me of the following that have come to his knowledge since the publication of his list: a necklace from Angus, a plate from Orkney in 1923, several plates and beads (apparently representing three necklaces) from the Spottiswoode collection (Berwickshire) (*Proc. Soc. Ant. Scot.*, vol. lv. p. 20). A necklace found at West Morriston, Berwickshire, in 1846 (*Hist. Ber. Nat. Club*, vol. ix. p. 49), and a necklace in a cist near Pluscarden, Moray (*Proc. Soc. Ant. Scot.*, vol. lviii. p. 239).

is the frequency with which beads of an alien type, such as discoid beads, or conical studs with a V-perforation, have been found in association. This would suggest that the source of supply was far removed, and that breakages had to be replaced with whatever substitute was available.

The two records from Cambridgeshire contained respectively one and two plates.¹ Of five from Derbyshire one² has the plates made of bone, but similar in type to those of jet. The others all contain to some extent beads of an alien type. Yorkshire supplies six examples, the most complete containing seven plates but no beads.³ The Northumberland necklaces, three in number, all come from near the Scottish Border, one in fact being found north of the Tweed. The Welsh example⁴ is fairly complete, with the addition of a conical stud. These studs may of course in some cases have been dress-fasteners, and may not actually have formed part of the necklace.

The evidence from the discoveries of plate necklaces would seem to indicate that the type originated in Scotland, being developed probably from a Scandinavian prototype, that it was taken to the southern part of the island, but that very few found their way to Ireland. If there was a single source of manufacture, it was probably situated somewhere in the vicinity of Forfar. Lignite could be got from the adjacent county of Fife, if not nearer.

With regard to the distribution of the *lunula*, this has been elsewhere clearly set out⁵ (see map, fig. 8). The vast majority have been found in Ireland, from which we have more than 60 examples. England supplies 4, from Cornwall; Wales 1, from Carnarvon; and Scotland 5 or probably 6. Ten come from the Continent (Brittany 6, Belgium 1, Hanover 1, Denmark 2). They are considered to be the earliest, as well as the most numerous, of the gold ornaments found in Ireland, and are admitted by all authorities to belong to the period of the flat bronze axe. The evidence, which is entirely derived from one discovery, points to this early date, but it cannot be admitted as conclusive.⁶

¹ See Appendix D, English Jet Necklaces.

² From Windle Nook, Hargate Wall. See *Vestiges of the Antiquities of Derbyshire* (1848), p. 89 (fig.).

³ From Middleton in the Wolds. See *Forty Years' Researches*, p. 353, fig. 1017.

⁴ From Holyhead, Anglesea. See *Archaeological Journal*, vol. xxiv, p. 257 (1867, fig.).

⁵ See "The Distribution of Early Bronze Age Settlements in Britain," by O. G. S. Crawford, in the *Geographical Journal*, vol. xl, pp. 184 and 304 (1912); *The Bronze Age in Ireland* (Coffey), pp. 47-55 (1913); Armstrong's *Catalogue of Gold Ornaments*, p. 12 (1920).

⁶ The facts are these: in 1864 a labourer came home from a day's digging near Harlyn Bay, Cornwall, with a gold *lunula* round the calf of each leg. He had also found a flat bronze axe and some other object or objects which he threw away. At the place where he had been digging were some stones, thought at the time to have formed a place of concealment and since considered to have been a cist. Although the likelihood is that the *lunula* and the axe were

Much has been written in the attempt to explain the ornamentation and use of the *lunula*. Most authorities are now agreed that they were used as collars, and not as a head-dress as was formerly supposed.¹

M. Salomon Reinach² ascribed to Ireland the origin of all *lunulae* in north-west Europe. Although M. Joseph Dechelette³ has expressed the opinion that the Danish *lunulae* were made in Denmark, being copied from Irish models, M. Reinach's view has been accepted by most authorities, including Mr Reginald Smith, who in 1920⁴ supported the religious origin as discussed by M. Camille Jullian.⁵ Mr Smith takes the view that "the most obvious interpretation" of the *lunulae* is that they are to be taken as lunar symbols, being connected with the worship of the moon. "Taken at their face value the crescents represent the moon." He suggests that the restriction of the ornament to the points of the *lunulae*, for which "no explanation seems to have been given," had its origin in the sacrifice of bulls, the horns of which are separated by the forehead. Professor Macalister says that "Mr Armstrong seems inclined to adopt this hypothesis, but I confess that to me it seems needlessly speculative."⁶ He does not, however, wholly renounce the religious explanation: after remarking that "the decoration is distributed in a remarkable and unexpected way," he concludes that "we must infer that the decoration was at least as much magical as ornamental."

Mr Armstrong in 1920⁷ suggested that "possibly the crescent-shaped form may have been influenced by the amulet composed of two boars tusks placed together."

deposited together, it is by no means certain. It is not proved that the construction was a cist, nor is it clear that the relics were all actually in it. Cases are known where urns of all periods of the Bronze Age have been found in the same burial mound; and even in the same cist have been found a food-vessel and the remains of a beaker belonging to an earlier interment. It may be added that little importance can be attached to additional evidence taken fifty-two years after the event, from one who had seen the site after the finds were made. See *Archaeological Journal*, vol. xxii. p. 275 (1865); *Antiquaries Journal*, vol. i. p. 294 (1921).

What is a much more convincing association was the discovery of a *lunula* and a gold ear ornament in the same burial mound in Moray, at Orton, near Fochabers (see Anderson's *Bronze and Stone Ages*, p. 65, and *Proc. Soc. Ant. Scot.*, vol. viii. p. 28, 1868). Gold is of such rare occurrence in Bronze Age burials in Scotland, that it is highly improbable that these objects belong to different interments. The ear ornament is of a type found in bronze associated with a perforated stone axe-hammer and a conical jet bead with V-perforation at Cowlam, Yorkshire (*British Barrows*, p. 222). At Largetreany, Donegal, what is considered to be a fragment of a *lunula* was found in 1877 with a hoard which included torcs and other gold ornaments. The details of most finds, however, are meagre: "with bones," "under a large stone," or "in a bog" being all the information available.

¹ Mr Leeds, however, considered that the gorget theory was inadmissible, and the *lunula* was a woman's head-dress. See *Ant. Jour.*, vol. i. p. 138 (1921).

² *Revue Celtique*, 1900, pp. 75 and 166.

³ *Manuel d'Archéologie*, vol. ii. p. 353-4 (1910).

⁴ *Antiquaries Journal*, vol. i. p. 131.

⁵ *Journal des Savantes*, p. 153 (Bordeaux, 1911).

⁶ *The Archaeology of Ireland*, p. 66 (1928).

⁷ *Catalogue of Gold Ornaments*, p. 12 (1920).

In describing the decorative motives of the plates of the jet necklaces, Mr Callander has pointed out that they follow "those seen on other relics of the period, axes and small oval knives of bronze, *lunulae* of gold, and drinking-cup urns."¹ Mr Coffey had carried the comparison a step farther in 1909: "The centres of the *lunulae* are plain, the exact reason of which is not quite evident; the way in which the ornament is gathered to the ends and spaced by bands reminds us of the plates of the jet necklaces ornamented with triangles and lozenge ornaments which are ascribed to the end of the Stone Age or the early Bronze Age."²

The analogy, however, has not been closely applied, nor has it been used to help either in the rearrangement of the jet necklace or in tracing the history of the *lunula*. Mr Coffey himself seems to have departed from the idea; in his subsequently published *Bronze Age in Ireland*,³ in 1913, he omits all reference to jet necklaces and merely states that "the centres of the *lunulae* are plain, the exact reason of which is not quite apparent."

Returning, then, to the examination of the *lunulae*, we find a general resemblance between their ornamentation and the design of the necklaces. A closer comparison shows that some *lunulae* (fig. 9) bear a striking resemblance which can hardly be attributed either to mere coincidence or to a general similarity of type in all the ornamentation of the Bronze Age.

The three plates which are placed at either end of the necklace are represented in the same position on the *lunulae* by three groups of ornament of similar proportions, which have as an edging a dog-tooth design resembling the points of beads. A design of oblong figures separated by narrow spaces along either edge of the front part of the *lunulae* suggests beads as closely as was possible for an artist limited to the use of straight lines. Lastly, the form of the fastening is the same. The reason for the front part of the *lunulae* being left plain, except for a bead-like edging, is probably because in the *lunulae*, to use Professor Macalister's words, "no curvilinear patterns are used."⁴ Whether any pigment was used to decorate this space, it is of course impossible

¹ *Proc. Soc. Ant. Scot.*, vol. 1. p. 215.

² *Proc. Roy. Irish Acad.*, vol. xxvii., Section C, No. 10. p. 252 (1909). The idea quoted by Professor Macalister seems to be somewhat different: "This curious distribution of the decoration has been ingeniously explained by Mr Coffey as pointing to an origin for the idea of the *lunula* in the suspension of two chains of beads round the neck, which would hang loose and open in front, but would mass together on the shoulders." See *Ireland in Pre-Celtic Times*, p. 140.

³ Page 48.

⁴ *The Archaeology of Ireland*, p. 64 (1927). What may be a representation of fusiform beads, however, is found on a bronze bracelet found with a necklace at Melfort and figured by Dr Anderson in *Scotland in Pagan Times* (p. 57).

now to tell, but the finding of ochre in the cists and of white matter in the punctulations of the necklace plates, shows that the use and effect of colour was well understood early in the Bronze Age. Similarly, if the front part of the *lunulae* had been covered by an ornament of network or lace, no trace of this would remain.

A close examination of the details of the *lunulae* shows distinct signs of decadence from the type most clearly resembling the plates of the necklace. This decadence suggests an arrangement in four classes as follows:—

CLASS I. (The Plate Type) (fig. 9), in which the groups of ornament approximate in size and form to the jet plates of the necklace.

CLASS II. (The Narrow Group Type) (fig. 10), with groups much narrower, usually four in number, sometimes five, on each side. In some examples the dog-tooth is much exaggerated (Nos. 15, 16, 17, and 18).

CLASS III. (The Lozenge Type) (fig. 11), in which the points of the dog-tooth meet, forming rows of lozenge-shaped figures. In some examples from this class the groups are broad, in others they are narrow. The former are the most elaborately decorated of all the *lunulae* (Nos. 36, 37, 38, 39, 40, and 41). No. 35 shows a transition form between this class and Class II., the points of the dog-tooth in only the front and second groups meeting.

CLASS IV. (The Vertical Design Type) (fig. 12), differs most widely from the necklace, having the ornament arranged vertically instead of horizontally. Transition forms combine the two arrangements (Nos. 50, 51, and 52). For a time the front group is retained (Nos. 53, 54, and 55), but eventually all evidence of the plate origin is lost.

Some *lunulae* are quite plain, or have merely a border of engraved lines.

The great majority of *lunulae* fall readily into one or other of these four classes.

The decadence of the beaded border, which becomes a continuous design of lines and zigzags, approximately accompanies the decadence of the ornamented groups. Thus of 5 Irish *lunulae*, with the edging most closely resembling beads (Nos. 5, 6, 7, 20, and 21), 3 are in Class I., although that class contains only 9 out of 52 Irish *lunulae* having grouped designs. Even in Class IV., however, an occasional survival of the bead-like border appears in a decadent form.

Comparing now, in the light of this classification, the Irish *lunulae* with those from other countries, we find that only 9 out of 52 decorated

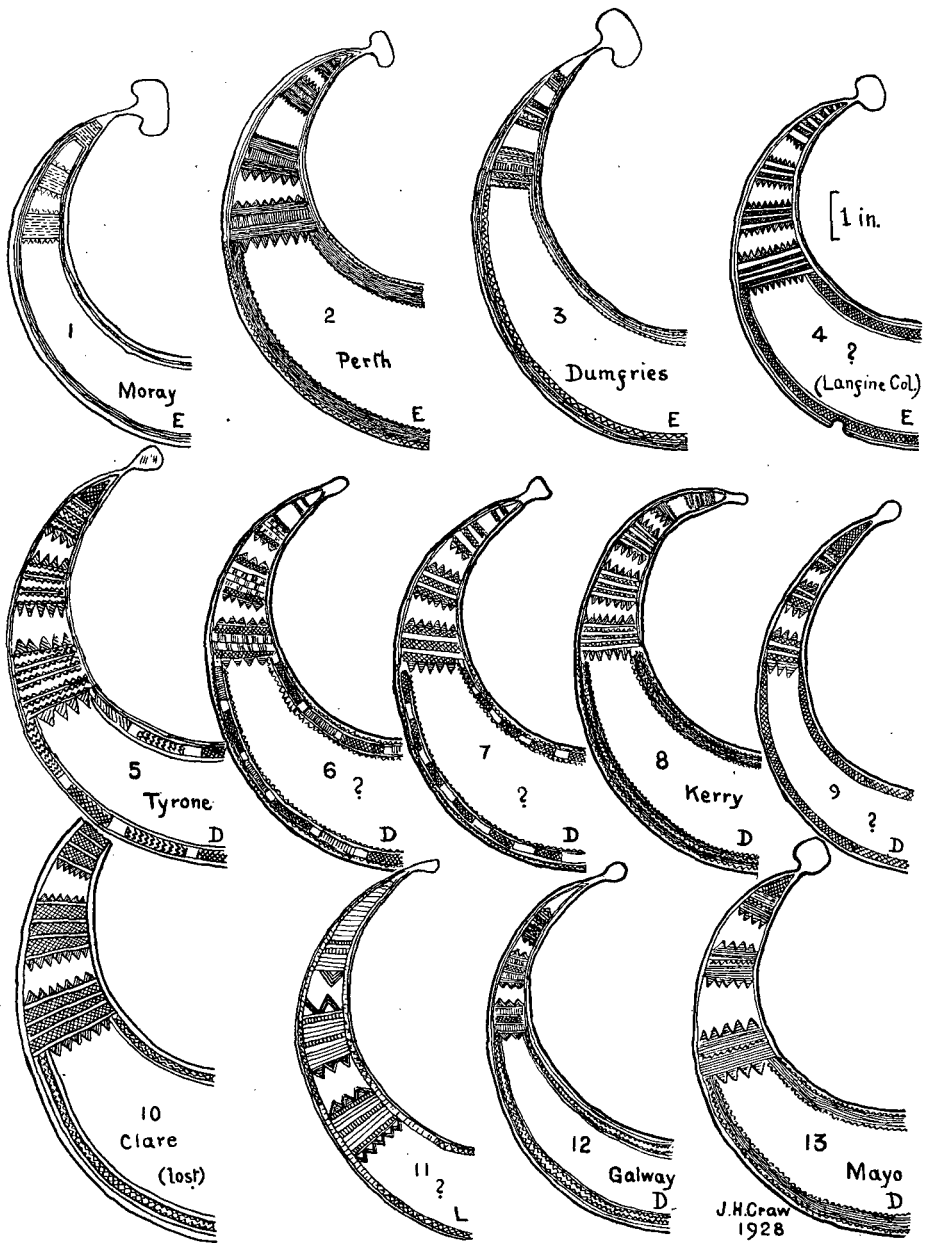


Fig. 9. Gold Lunule. Class I. (‡.)

E = National Museum of Antiquities of Scotland, Edinburgh. D = National Museum, Dublin. L = Liverpool Museum.

JET NECKLACE FROM A CIST AT POLTALLOCH, ARGYLL. 177.

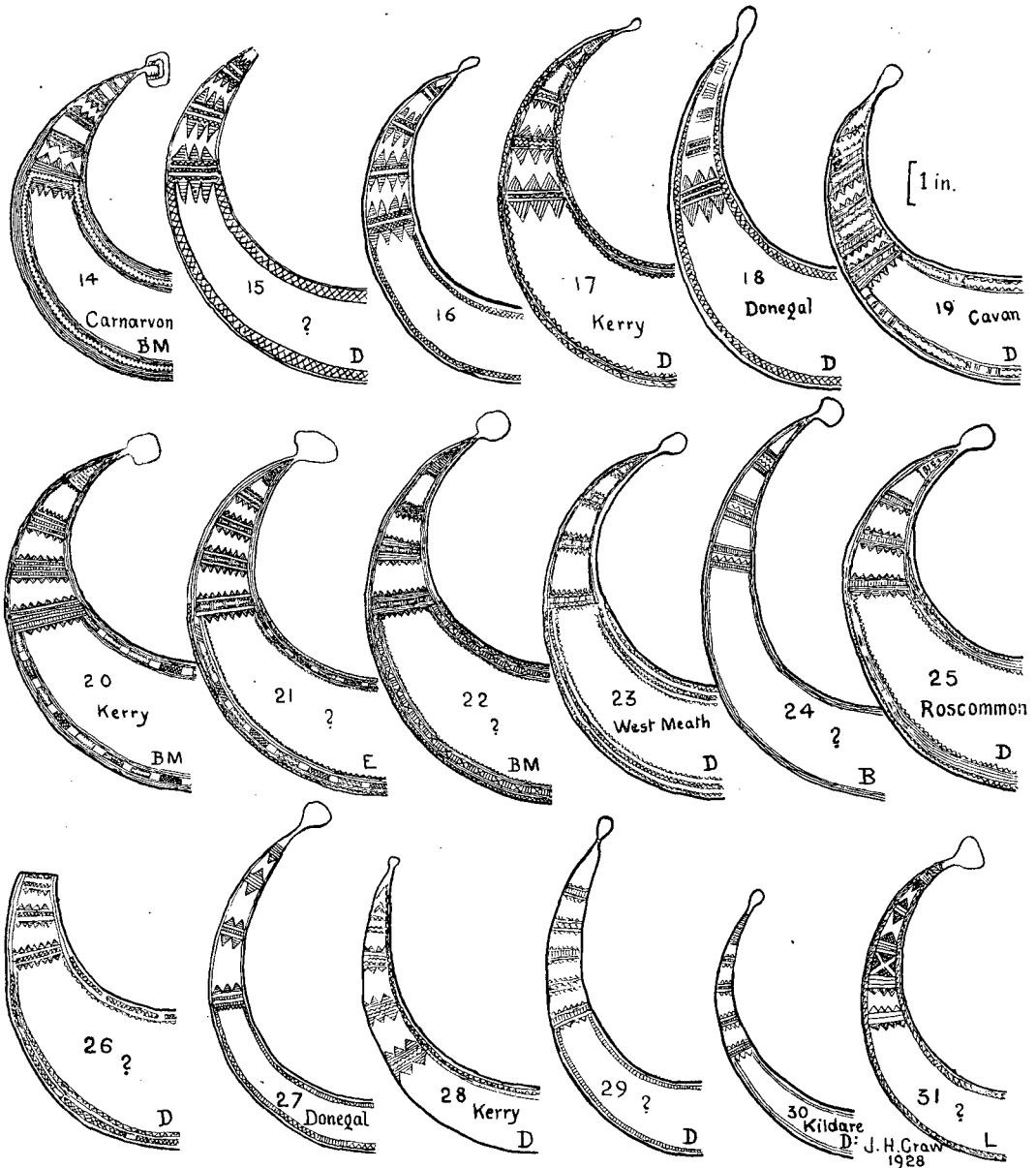


Fig. 10. Gold *Lunulae*. Class II. (4.)

E=National Museum of Antiquities of Scotland, Edinburgh. BM=British Museum. D=National Museum, Dublin. B=Belfast Museum. L=Liverpool Museum.

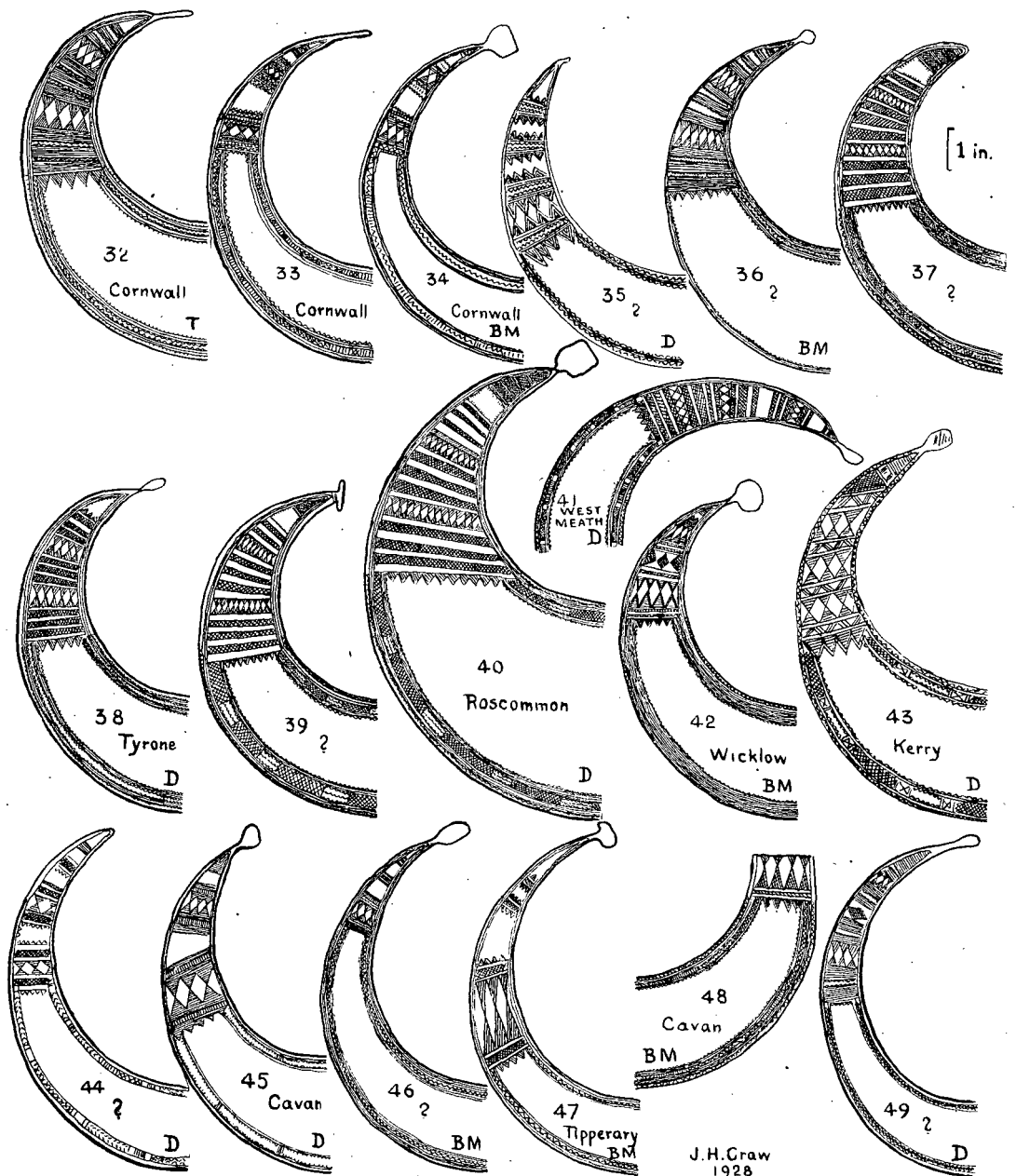


Fig. 11. Gold *Lunulae*. Class III. ($\frac{1}{2}$.)

BM = British Museum. D = National Museum, Dublin. T = Truro Museum.

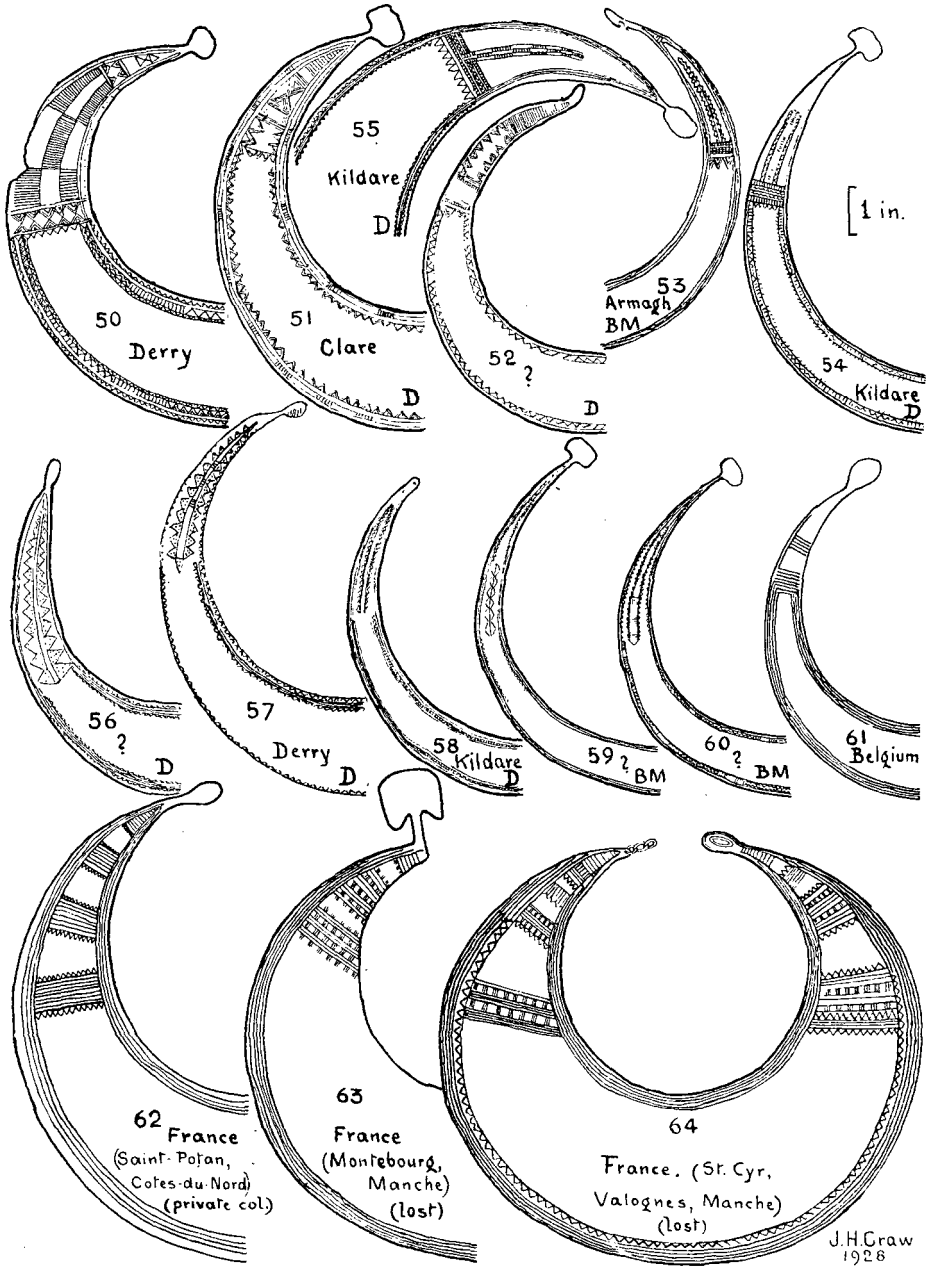


Fig. 12. Gold Lunulae. Class IV, and Continental examples. (±)

BM=British Museum. D=National Museum, Dublin.

Irish *lunulae* can be placed in Class I. In Scotland 5 *lunulae* have been found; two of these¹ have only a lined border, but a sixth of unknown locality should probably be added,² being from a Scottish collection of antiquities. These three or four Scottish *lunulae* with group ornament all belong to Class I. Even though this number be small upon which to base a theory, taken in connection with the decadent type of the great majority of Irish *lunulae*, it strongly points to the origin of the *lunula* being in Scotland and not in Ireland.

When it is considered that the plate necklace from which the *lunula* is copied is a Scottish ornament almost unknown in Ireland, the Scottish origin of the *lunula* would appear to become much more than a supposition.

The much larger number of *lunulae* found in Ireland is the natural result of the rich gold deposits of that country, the El Dorado of pre-historic times.³ It is upon this greater prevalence alone that the theory of the Irish origin of the *lunula* is based. A similar argument would place the origin of the rabbit in Australia, or might suggest to some future archæologist that golf originated in America. The significance, however, of an earlier type of ball being found in Scotland would suggest the inference to be drawn from the fact that the decorated Scottish *lunulae* belong to Class I. When more have been found the case will be clearer.

As we have seen, Class I. consists of 3 or 4 Scottish *lunulae* and 9 Irish. In Class II. are 1 Welsh and 17 Irish examples. Class III. has 3 English (Cornwall) and 15 Irish *lunulae*. Class IV. is represented only in Ireland. Nothing is to be learnt from the distribution of the different classes in Ireland. When we come to the Continental *lunulae*, the difficulty seems to increase. One of the Danish examples and that from Hanover are entirely plain, the second Danish example has merely an edging of engraved lines. There is no information available concerning 3 from Brittany, so we are left with the other 3 from Brittany and 1 from Belgium, which all have group ornaments. They are shown in fig. 12, Nos. 61, 62, 63, and 64.

The proximity of Brittany to the coast of Cornwall, and even to that of Ireland, would support the generally accepted theory of an Irish origin. On examination, however, we find no evidence of the features peculiar to Classes II., III., or IV., in these *lunulae*. They do approximate to Class I., in having broad clearly defined groups of ornament.

¹ From South Side, Coulter, Lanarkshire, *Proc. Soc. Ant. Scot.*, vol. iv. p. 291; vol. i. p. 16, fig.; vol. lvii. p. 162, fig.

² Lanfine Collection (Ayrshire), *Proc. Soc. Ant. Scot.*, vol xxxii. p. 240, fig.

³ See Appendix E, Gold in Scotland and Ireland.

As in the case of the Scottish *lunulae*, we have the disadvantage of there being so few examples for comparison. At the same time we must indicate what these examples suggest. It is unlikely that the likeness to Class I. is purely fortuitous, three possibilities seem to be indicated.

(a) An Irish connection which lasted only during the period in which Class I. was being made in Ireland.

(b) A Scottish connection.

(c) A Continental origin for the type, spreading first to Scotland, then to Ireland,¹ and from there to Wales and Cornwall.¹ This would involve the existence of a Continental amber necklace, approximating more closely to the Scottish jet necklace than any yet found on the Continent, having plates similar in type to those found in Wiltshire (fig. 7, g). This hypothetical necklace would be the prototype of the more perfect Scottish jet necklace, and of the *lunula* of all countries.

Again we can but await further discoveries to suggest a solution.

Our thanks are due to Sir Ian Malcolm for having placed the necklace and other relics on loan in the National Museum. The success of the excavations is due to his enthusiasm in the quest; no efforts were spared by him in giving every assistance that could be thought of, both in supplying the necessary labour and in personal interest and encouragement.

I have also to express my thanks to many for information and help in various ways. To the authorities of the British Museum, the Royal Irish Academy, the Belfast Municipal Museum, and the Liverpool Museum, for permission to reproduce figures of *lunulae* in their custody. To Professor Bryce for his report on the bones; to Mr G. W. Tyrrell, A.R.C.S., Ph.O., and to Mr George Bond for their reports on the ochre and on the charcoal. To Mr Graham Callander for his unfailing help in many directions, as well as for the information derived from his paper on Scottish jet necklaces. To Mr A. O. Curle for advice on several points, and to Mr A. J. H. Edwards for help in the examination of necklaces and *lunulae* in the museum. To Mr R. C. Bosanquet and Mr R. J. Edgar for much useful information. And lastly, to Mr Donald Campbell, Poltalloch, for local information, and to Mr Snelgrove for careful and enthusiastic help in the work of excavation.

¹ A Continental ornament which seems to have a common origin with the *lunula* is the bronze "diadem" found in Denmark. Several of these are figured by A. P. Madsen in his *Afbildninger af Danske Oldsager og Mindesmaerker: Bronzealderen I.* (1872), pl. xxxi. The method of fastening has been different, the points of the crescent being cut off. No. 6 of pl. xxxi. most closely resembles the *lunula*, having two groups of ornament at either end edged with dog-tooth ornament. The front part of this "diadem," instead of being plain, is ornamented with rows of design suggestive of strings of discoid beads.

APPENDIX A.

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In 1915 the County Council of Argyll compiled a *List of Ancient Monuments and Historic Buildings in the County of Argyll*.

APPENDIX B.

REPORT ON BONES FROM CISTS AT POLTALLOCH, ARGYLL.

By Professor T. H. BRYCE, M.D., F.S.A. SCOT.

GRAVES WITH BODIES EXTENDED.

The bones of the trunk and limbs are entirely absent from the deposits. A fragmentary skull with a portion of the mandible belonging to it, a small part of the frontal region of a second skull, and a number of teeth alone remain to be described.

Skull I. is represented by the right side of the face, the lower part of the frontal bone—the right half of the sphenoid and the right temporal bone. The vault, the occipital region, and the whole of the left side and the base are absent. The characters of what remains of the forehead and face, as well as the palate, the lower jaw and teeth, suggest that the individual was a woman, but the relatively large size of the mastoid process, the fairly thick upper orbital rims, are rather male than female characteristics.

The nasio-alveolar height, indicating the height of the face above the mouth, is 6.4 cm. The right orbit measures 3.8 cm. by 3.1 cm., yielding an orbital index of 81.6. This figure indicates a low broad rectangular as distinguished from a circular eye-socket.

The teeth on the right side of the upper jaw are all in place save the central incisor. The crowns are not uniformly worn. Of the molars the first, as was to be expected, shows most wear; the third, a wisdom, very little. This is explained by the fact that the corresponding tooth in the lower jaw had been impacted due to want of room. It had not risen to the general level of the bite and shows therefore an unabraded crown.

The lower jaw has its rami and angles broken away. The symphysis is shallow and the mental tubercle is not prominent. So far as the anatomical features go they point to the probability that the individual was a woman. The teeth show a considerable but not an exaggerated degree of wear. The person, if a woman, was still probably in the earlier period of middle age.

Skull II. The second cranial fragment is a small portion of the frontal bone including the root of the nose. The glabella is slightly prominent, but the fragment is too small to permit of a judgment as to the sex of the individual.

Three lots of loose teeth were included in the deposit sent for examination. A number of these fitted the alveoli in the upper and lower jaws of Skull I. Of the teeth remaining, two with worn crowns (a premolar and a molar) belong to an adult set. A third is a pathological specimen, with a single much-thickened fang and a crown like that of an eye-tooth encrusted with tartar. The rest belong to an immature set. Four with roots broken off below the neck are probably the four six-year-old molars of one individual. All the others are rootless, consisting of only the hollow crowns of unerupted teeth still contained within the secondary alveoli.

Even in the absence, therefore, of any bones belonging to a child, it must be concluded that with one of the adults a child of some seven or eight years was buried.

CIST A.

The deposit from this cist consists (1) of comminuted fragments of the skull bones and of the smaller long bones of the skeleton, all having the ordinary appearances of bones which have been burnt. None of these fragments yield any data regarding the age or sex of the individual; (2) of larger fragments of the long bones which seem to have escaped, or never to have been exposed to the action of fire. They include (*a*) a portion of one femur corresponding to about the middle third of the shaft; (*b*) a piece of the other femur consisting of the neck and about one-fourth of the length of the shaft, but without the head of the bone. The bone has been split in its long axis, opening the marrow cavity, and only one section of the wall has been preserved; (*c*) the upper half of one ulna; and (*d*) various splint-like fragments of other long bones.

The broken surfaces of the bones have a chalky appearance, but the bone is soft and crumbles when touched. The bones therefore do not have the characteristics of bones deposited after cremation. The conclusion must be either (*a*) that the deposit represents two burials, one after cremation, the other an ordinary inhumation, or (*b*) that the incineration was very partial so that the extremities escaped consumption.

Nine teeth, including five molars (four upper and one lower), have been preserved. At least one of the molars is a wisdom tooth with closed fangs, indicating that the individual had reached the twentieth or twenty-second year of life. The crowns are only slightly worn, the first molar, the earliest to be erupted, alone showing any degree of abrasion. The person to whom they belonged must therefore have died in early life. The enamel of the teeth is rather chalky-looking, but the fangs are intact and do not seem to have been exposed to fire. As the small fragments of the skull bones present in the deposit have been burned, the condition of the teeth described tends to support the idea that the cist contents represent two separate interments. The presence of the necklace suggests that one of these was that of a woman, but the anatomical evidence as to sex is not determinative. All

that it is possible to say is that the fragments of long bones present may quite well have been those of a female.

CIST B.

The deposit is very scanty. No part of the skull is present, but fourteen teeth have been preserved. They are nearly all imperfect, the roots in the majority being broken off. They are relatively small in size, suggesting the probability that the individual was a woman. Among the teeth occur two third molars or wisdom teeth, the fangs of which have fully "closed." This means that their development was complete, and that consequently the individual was over twenty-two years of age at the time of death. The crowns of the molars are only slightly worn, and from these we may conclude that the person was still young. The rest of the skeleton is represented by some eighteen small fragments only. Three of these are portions of the shaft of one of the femora. They are too much broken and weathered to permit of any estimate of the length of the bone, so that no evidence is forthcoming as to stature. The fragments show that the femur was of about average thickness.

A small fragment of burnt bone is probably a wanderer from the other cist.

APPENDIX C.

DETAILS OF THE CONSTRUCTION OF THE NECKLACE.

The beads of the necklace vary much in form, length, and thickness.¹ Some are almost cylindrical in form, others are prominently barrel-shaped. One bead is longer than any other, and must have been placed to connect the outer and middle strings at the front. As this bead is of cylindrical type, the other cylindrical beads would seem to have been used to connect the strings, leaving the barrel-shaped beads for the strings themselves.

The connecting beads become shorter as they approach the front plates at either side. The string beads become thinner towards each side, the shortest being used for the inner string, and the longest for the outer.

The signs of wear round the holes of the plates show that very thin beads have been used for the fringe, those between the plates being thicker.

¹ The particulars of the beads of the three most complete necklaces in the Scottish National Museum are as follows:—

Necklace.	No. of Beads.	$1\frac{3}{8}$ inch.	$1\frac{1}{2}$ inch.	$1\frac{1}{8}$ inch.	1 inch.	$\frac{7}{8}$ inch.	$\frac{3}{4}$ inch.	$\frac{5}{8}$ inch.	$\frac{1}{2}$ inch.	$\frac{3}{8}$ inch.	$\frac{1}{4}$ inch.	$\frac{1}{8}$ inch.	$\frac{1}{16}$ inch.	$\frac{1}{32}$ inch.
Tealing .	140	1	3	4	7	11	6	10	25	16	23	19	15	...
Poltalloch	110	...	...	1	4	10	12	10	26	15	7	12	7	6
Bute . .	99	...	...	2	4	5	6	12	26	13	17	8	5	1

APPENDIX D.
TABLE OF ENGLISH JET NECKLACES WITH PLATES

Number.	Locality.	Plates.	Fusiform Beads.	Fastener.	Small Triangular Spacing Beads.	Discoidal Beads.	Conical Studs, etc.	Associated Relics, Particulars.	Where Preserved.	References.	Date of Find.	Date of Record.
	CAMBRIDGESHIRE.											
1	Soham Fen.	2	..	..	..	..	..	With unburnt skeleton and socketed axe.	British Museum.	<i>Archæology of the Cambridge Region</i> , p. 55, Cyril Fox (1923).	..	..
2	Burwell Fen.	1	..	..	..	..	..	Remaining part of necklace also found.	Cambridge Museum.	<i>Ibid.</i> , p. 55. <i>Cam. Ant. Soc.</i> , vol. i., <i>Rep.</i> xiv. p. 13.	..	1854
	DERBYSHIRE.											
3	Windle Nook, Hargate Wall.	6	76	..	..	..	2	With female skeleton in a cist in a barrow. The plates are of bone.	Sheffield Museum.	<i>Vestiges of the Antiquities of Derbyshire</i> , p. 89 (fig.), <i>Cat. Sheffield Mus.</i> , p. 59 (fig.) 1899.	1846	1848
4	Cow Low, Buxton.	6	40	1	2	..	1	With female skeleton in a cist in a barrow, also 2 small plates and a ring.	Do.	<i>Vestiges</i> , p. 92 (fig.), <i>Cat. Sheffield Mus.</i>	1846	1848
5	Middleton Moor, Arborlow.	6	54	1	..	348	10	In cist, with skeleton of female and child, and a cow's tooth.	Do.	<i>Ten Years' Digging in the Gravehills of Derby, etc.</i> , p. 24 (fig.), <i>Sheffield Mus. Cat.</i> (fig.).	1848	1861

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6	Over Haddon, Grindlow.	8	26	Do.	<i>Ten Years' Digging</i> , p. 46 (fig.), <i>Sheffield Mus. Cat.</i> (fig.).	1849	1861
7	Hill Head, Hasling Houses, Buxton.	5	53	...	...	...	...	...	...	Do.	<i>Ten Years' Digging</i> , p. 66 (no fig.), <i>Sheffield Mus. Cat.</i> (no fig.).	1850	1861
8	YORKSHIRE. Egton.	1	28	...	...	...	...	...	...	...	Evans, <i>Ancient Stone Implements</i> , p. 459. <i>Journ. Brit. Arch. Assoc.</i> , vol. VI. p. 4 (fig.); xx. 104 (fig.).	...	1850
9	Helporthorpe.	2	...	...	...	...	...	...	...	...	<i>British Barrows</i> , p. 53 (fig.).	...	1877
10	Calais Wold.	2	35	...	...	...	...	573	10	Driffeld Museum.	Mortimer's <i>Forty Years' Researches</i> , etc., p. 166 (fig.).	1892	1905
11	Middleton in the Wolds.	7	...	...	...	...	...	...	...	Do.	<i>Ibid.</i> , p. 353 (fig.).	1901	1905
12	Pickering.	1	13?	...	...	...	...	...	9	Sheffield Museum.	Bateman, <i>Ten Years' Digging</i> , p. 228.	1851	1861
13	Loochton Pastures.	3?	4?	...	...	...	...	...	...	York Museum.	...	...	...
14	NORTHUMBERLAND. Ford	?	?	...	...	...	...	...	...	...	<i>British Barrows</i> , p. 403.	...	1877
15	Kyloe.	6	50+	1	1	...	...	...	...	Newcastle Museum.	<i>Proc. Soc. Ant. Newcastle</i> , 4th series, vol. iii. p. 94 (fig.). <i>Archaeologia Eliana</i> , vol. v. (4th series), p. 26 (fig.).	1927	1928
16	High Cocklaw, Berwick.	5	c. 80	...	...	...	...	...	...	Scot. Nat. Museum, Edinburgh.	<i>Hist. Ber. Nat. Club</i> , vol. xvii. p. 188.	1900	1900

APPENDIX E.

GOLD IN SCOTLAND AND IRELAND.

The chief source of gold in Scotland is in the Lead Hills, where it is found mainly in alluvial deposits, but also occasionally in quartz.¹ Gold has also been worked at Kildonan, in Sutherland; and occurs in small amounts in very many localities all over Scotland. It is found in Shetland, Caithness, Sutherland, Inverness, Nairn, Moray, Aberdeen, Perth, Angus, Fife, Stirling, Bute, Lanark, Peebles, Selkirk, Dumfries, and Kirkeudbright.

The Scottish prehistoric gold ornaments were in all probability made from native gold, as has been pointed out by Mr Graham Callander.²

Irish gold is found chiefly in the Wicklow Mountains. The amount mined in prehistoric times must have been very large; and Ireland has been called the El Dorado of prehistoric times. The search for gold may have been one of the chief causes of migration of people to the west.

Dr W. Fraser, M.R.I.A., in 1897, arranged Irish gold relics into three classes according to their analysis: Class I. containing 18 to 23 per cent. of alloy; Class II. with 10 to 12 per cent.; and Class III. consisting of almost pure gold.³

One Irish *lunula* analysed by Mr J. W. Mallet in 1853 was included in this arrangement and was placed in Class II. The locality is unknown, it belongs to the type with vertical design (see fig. 12, No. 56).

Mr Mallet was of the opinion that little information regarding the geographical source of the gold could be obtained by analysis, as the metal had not been used in its natural state, but had been artificially alloyed.⁴

Analysis of Scottish and Irish Gold:

	Scottish Gold, Crawford.	Irish Gold.	Irish <i>Lunula</i> .
	Per cent.	Per cent.	Per cent.
Gold	86·60	91 - 92·36	87·67
Silver	12·39	6·17- 8·85	11·05
Etc.	1·01	·14- 1·50	1·28

¹ "The Regalia of Scotland," A. J. S. Brook, *Proc. Soc. Ant. Scot.*, vol. xxiv. p. 90 (1889-90). See also *Historical Notes on the Occurrence of Gold in the South of Scotland*, P. Dudgeon, F.R.S.E., F.S.A.Scot. A map showing the goldfields of Scotland will be found in *Jour. Roy. Geolog. Soc. Ireland*, 1869.

² *Proc. Soc. Ant. Scot.*, vol. lvii. p. 157 (1922-3).

³ *Jour. Roy. Soc. Ant. Ireland*, vol. xxvii. p. 53 (1897).

⁴ See *Trans. Roy. Irish Acad.*, vol. xxii. p. 313 (1853).

APPENDIX F.

EXAMINATION OF OTHER SITES AT POLTALLOCH.

While making the above described excavations at the gravel-pit near Poltalloch, three other sites were examined, and slight excavations were made. Though nothing of importance was found, it is right that a short account should be given of the work done.

(1) It has been stated above that the gravel-bank, of which the Brouch an Drummin gravel-pit forms the south promontory, ends in a northerly direction in a somewhat similar promontory above the North Lodge. There is here distinct evidence of a curved mound having been thrown up to cut off some 50 yards of the point. This mound is about 42 yards in length and 43 feet in breadth. Externally it rises 3 feet, but internally it is only $1\frac{1}{2}$ foot in height. A few yards to the south a circular cup-like depression lies near the top of the steep bank. Within the fort, if such it can be called, a cist built of four slabs and a large cover 8 feet by 4 feet 8 inches is exposed at the edge of the steep bank overlooking the lodge. The cist measures 4 feet 4 inches by 2 feet. It is 2 feet 2 inches deep and is unpaved. The cover is 18 inches below the surface of the ground, and the major axis points north by east. That it had been previously opened was shown by the presence of a modern pocket-knife in the interior. Nothing more was found on riddling the soil.

One or two short pits were dug on the level ground above, and short flag-stones were found. It is possible that these may have been laid adjacent to cist covers, as at the gravel-pit: a further examination would settle this point.

(2) Close to the left side of the road to Nether Largie lies a stone circle in a small wood. In the centre of the circle a cist was found many years ago. A narrow trench was now cut across the north side of this circle. The surface was found to be closely covered with a layer of boulders some 6 to 9 inches in diameter, but the subsoil did not seem to have been disturbed.

(3) Examination was next made of a burial mound close to the public road at Ballymeanoch. There are two of these mounds in the park in which are the standing-stones. The mound standing farther from the road was examined and described by Canon Greenwell.¹ There is no account of any excavation at the other; it has the appearance, however, of having been broken into. An opening was now made at the centre of the mound which is some 90 feet in diameter and 3 feet in height. It consisted chiefly of earth, but a large number of boulders irregularly placed was met with. Beneath these, at a depth of 3 feet, a layer of charcoal covered the original surface of the ground. No sign of a cist or construction of any kind was found so far as the excavation went.

¹ *Proc. Soc. Ant. Scot.*, vol. vi. p. 348 (1866).