

I.

ON TWO BRONZE SPOONS FROM AN EARLY IRON AGE GRAVE NEAR BURNMOUTH, BERWICKSHIRE. BY JAMES HEWAT CRAW, F.S.A. SCOT. WITH A REPORT ON THE SKELETON FOUND THEREIN, BY ARTHUR ROBINSON, M.D., PROFESSOR OF ANATOMY IN THE UNIVERSITY OF EDINBURGH.

On 26th July 1923 there was exposed at the edge of a quarry at Catch-a-Penny, near Burnmouth, Berwickshire, an Early Iron Age burial which proved to be of more than usual interest.

The quarry lies close to the right, or south side, of the main road from Edinburgh to Berwick, and the site of the grave is about 1100 yards south-east of Burnmouth railway station and 50 yards east-north-east of Catch-a-Penny farmhouse. The elevation is almost 400 feet above sea-level, the grave being placed on ground sloping gently to the north, some 15 yards from the edge of a much steeper slope.

The grave, which lay east-north-east, was 5 feet 7 inches long; at the middle its width was 30 inches, contracted to 27 near the east end or head, and to 22 near the foot; the depth was 20 inches. It was unpaved, and had been built with small boulders in two or three irregular courses. The corners were rounded except that to the north-east, which was rectangular. Four slabs of red and grey sandstone, brought apparently from the shore—fully a quarter of a mile to the north—had been used as covers, any interspaces being filled with smaller fragments. The covers lay at a depth of 27 inches beneath the surface of the ground.

In the grave, and partially covered with infiltrated soil, was the skeleton of a man (fig. 1) of more than average stature, apparently in the prime of life. The full report on the bones by Professor Robinson is appended. The body had been placed on its right side with the head to the east-north-east; the knees were slightly flexed, and the hands were in front of the breast.<sup>1</sup>

Between the hands and the skull lay, within a small area, an iron knife, two bronze spoons, the jaws and other bones of a young pig, several fragments of coal, and a small piece of wood, probably part of the handle of the knife. The bones of young pigs have previously been

<sup>1</sup> For the completeness of the record I am indebted to the finder, Mr James Wood, Coldingham, who left the grave entirely undisturbed as soon as its nature was revealed, and to Mr Robert Dunn, Edington Hill, whose telegram enabled me to reach the spot with a minimum of delay.

found in Yorkshire both in Bronze Age burials and in those of the Early Iron Age.<sup>1</sup>

The knife (fig. 2), which is much corroded and appears to have the

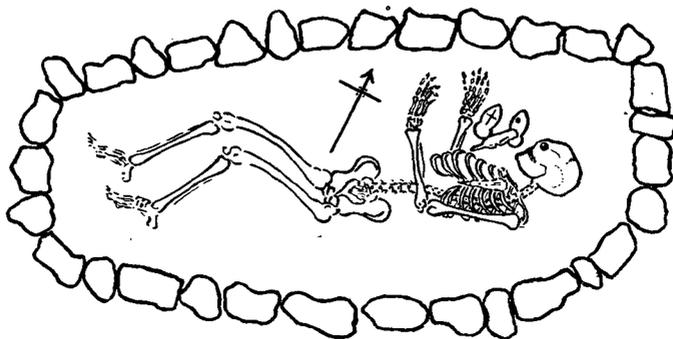


Fig. 1. Grave at Burnmouth.

end broken off, measures  $7\frac{1}{4}$  inches, the blade being 5 inches and the tang  $2\frac{1}{4}$  inches. The blade is  $1\frac{3}{8}$  inch broad and has a back-rib about  $\frac{1}{2}$  inch in width, as if to suit the knife for use with a hammer.

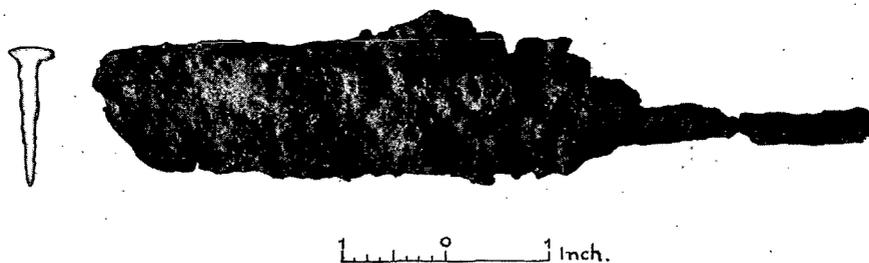


Fig. 2. Iron Knife from Burnmouth.

The spoons (fig. 3), which measure  $4\frac{1}{2}$  inches by  $2\frac{3}{8}$  inches, were found a few inches apart. The blade of the knife lay partly on that which was nearer the skull, staining it with rust. This spoon has a small perforation near the right side of the bowl, as usually figured, handle uppermost. The other spoon bears on the bowl an engraved cross. On the handle

<sup>1</sup> *British Museum Guide to Early Iron Age Antiquities*, and Mortimer's *Forty Years' Researches in the Burial Mounds of East Yorkshire*.

of the perforated spoon can be seen traces of an engraved design consisting of narrow spiral bands with transverse hatched lines. No ornamentation is now traceable on the spoon bearing the cross. Compared with examples from the south of England, the spoons are flatter and of lighter construction ; the ornamentation is comparatively poor in design and execution.

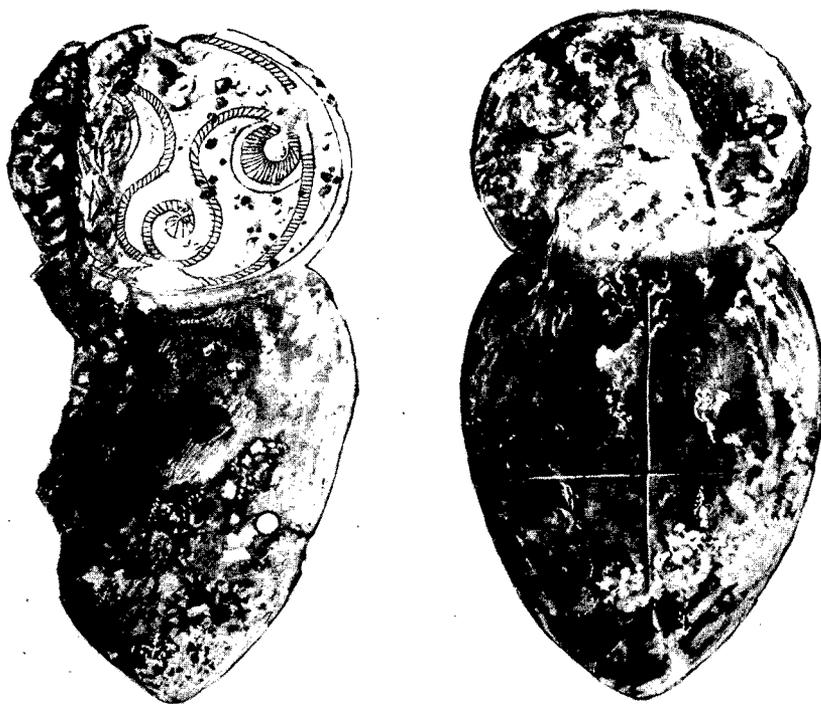


Fig. 3. Bronze Spoons from Burnmouth. (7.)

Spoons of this type are of great rarity, and have not previously been found in Scotland. Dr Joseph Anderson, writing over fifty years ago,<sup>1</sup> said of them: "Though no specimens have yet been met with in Scotland, I notice them here because their decoration is so nearly related to that of the Scottish school." They belong to a period shortly prior to the commencement of our era. Of 21 examples now on record, 4 come from Wales, 8 from England, 2 from Scotland, 5 from Ireland,

<sup>1</sup> *Scotland in Pagan Times: The Iron Age*, p. 134.

and 2 from France. The accompanying table sets out the details of the various discoveries, and the spoons are shown in fig. 4.<sup>1</sup> They usually occur in pairs, there being 9 pairs recorded, and 3 odd spoons. They have been made in a mould, and, though similar, are rarely both from the same mould. One of each pair has a small perforation, which, with one exception, is always placed close to the right edge of the bowl; the other bears on the bowl an engraved cross. In the French pair one spoon is plain, while the other bears both the perforation and the cross, the former being in the centre of the bowl instead of at the edge. The use or significance of these features has not been satisfactorily explained; the Eucharistic theory may now be dismissed, as the spoons are known to belong to pre-Christian times. Formerly designated "spoon-like objects," there can now be little doubt that they were actually spoons. The perforation suggests use as a strainer, but further discoveries must be awaited to solve the mystery.<sup>2</sup>

The Welsh spoons and those from the south of England are of the best workmanship, with embossed concentric or curvilinear designs on the handles, the reverses of which are in some cases engraved with curvilinear designs. In one Welsh pair (1 and 2) and in one English spoon (5) the junction of the bowl with the circular handle is strengthened by wide lateral wings. That this junction was a weak part is shown by a small ornamented plate riveted on the back of a spoon found in London (8); the only other evidence of repair is a small gold plug inserted in one of the Cardigan pair (2). The spoons from the north of England, Scotland, and Ireland have engraved designs on the handles and are not embossed; the bowls are less circular than those from the south, the Irish spoons being specially elongated. In the Irish and Westmorland spoons the cross radiates from a small engraved circle; this might suggest an origin from a spoon with a central perforation similar to the French spoon, but the design is probably purely ornamental.

With regard to the circumstances of discovery, the details are regrettably meagre; the French pair (20 and 21) were found in a female full-length burial, being placed one within the other, surrounded by the remains of cloth, in a small bronze vase. At Deal (6 and 7), one was found on either side of the head of a skeleton laid at full length, north-east and south-west, the grave being cut in the chalk on an

<sup>1</sup> For permission to reproduce, grateful acknowledgment is made to M. Auguste Picard, editor of Déchelette's *Manuel d'Archéologie*; the Royal Archaeological Institute; the Cambrian Archaeological Association; and the Kent Archaeological Society.

<sup>2</sup> Mr A. J. H. Edwards, F.S.A.Scot., made an experiment with a shallow spoon in which a small perforation had been drilled. He found that, while water would not run through it, oil flowed freely through the perforation.

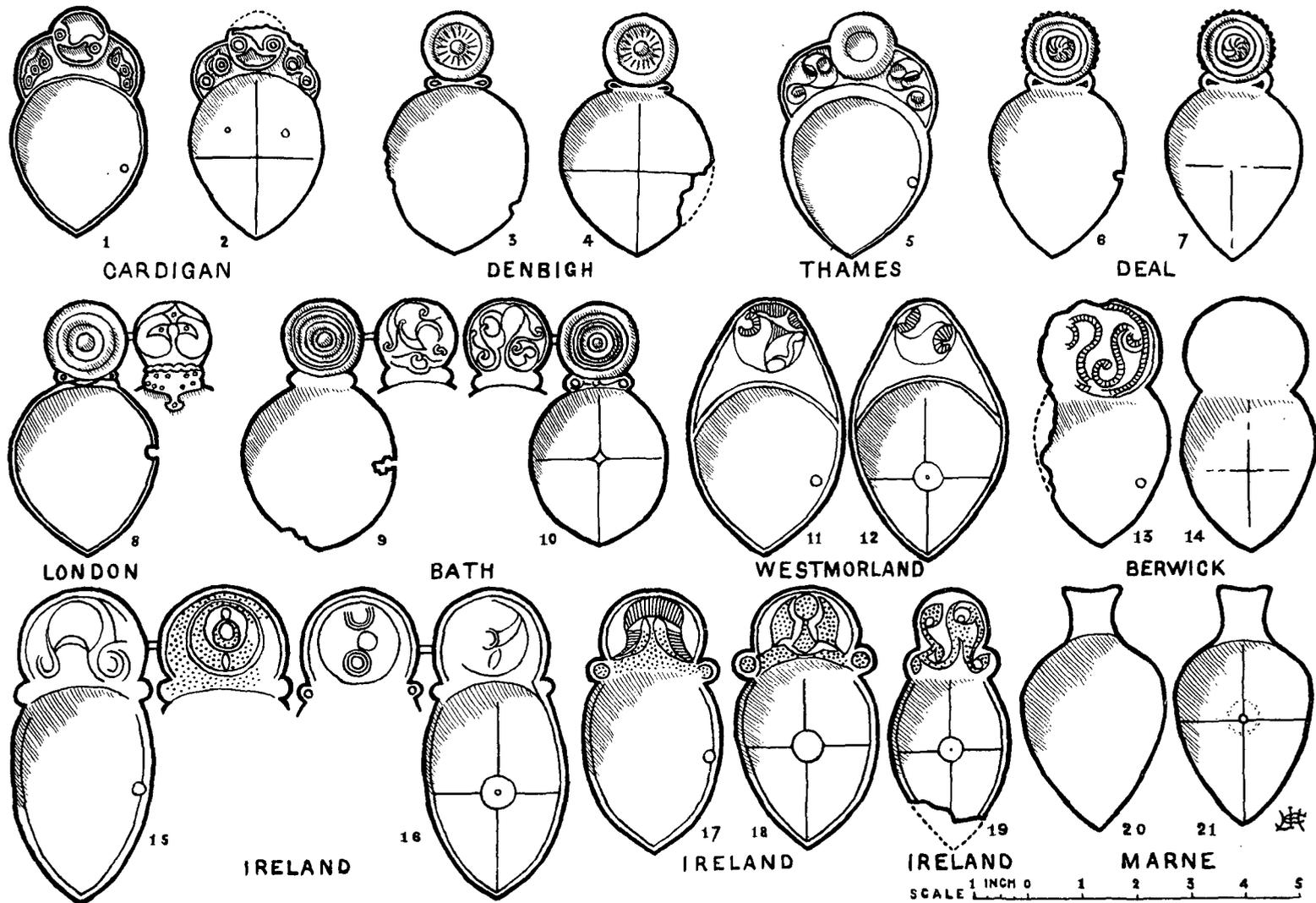


Fig. 4. Recorded examples of Bronze Spoons. (3.)

DISCOVERIES OF BRONZE SPOONS.

No.	Locality.	Date.	Particulars of Discovery.	Size in Inches.	Description of Spoons.	Museum.	Authority.
WALES.							
1 2	Pembryn parish, near Cardigan.	About 1829.	Under a heap of stones in a non- Roman camp called Castell Nadolig. No associated relics recorded.	$4\frac{1}{8} \times 2\frac{1}{8}$	Of orange-yellow bronze. In form resembling No. 5. Curvilinear designs on handles. 1. Perforation at right side. 2. Design on handle differing from No. 1. Incised cross on bowl. Two small holes in bowl, one being filled with a gold plug.	Ashmolean, Oxford.	<i>Archæologia Cam- brensis</i> , 3rd ser., vol. viii. p. 214 (1862). <i>Archæo- logical Journal</i> , vol. xxvi. p. 58 (1869).
3 4	Llanfair parish, Denbigh.	1861.	Among rubbish thrown from a railway cutting (depth not known) to the south of Ffynogion. Close- ly adhering face to face by encrusta- tion.	$4\frac{1}{4} \times 2\frac{1}{2}$	Bronze, having a large percentage of copper. Apparently from the same mould. Concentric emb- ossed design, resembling Nos. 6, 7, 8, 9, and 10. No engrav- ing in design. 3. A fracture close to the right edge probably represents an in- dentation such as those in Nos. 6 and 8, which take the place of the usual perforation. 4. Engraved cross.	National Museum of Anti- quities, Edin- burgh.	<i>Archæologia Cam- brensis</i> , 3rd ser., vol. viii. p. 208. <i>Archæological Journal</i> , vol. xxvi. p. 56, and vol. x. p. 57. <i>Scotland in Pagan Times: The Iron Age</i> , p. 136. <i>Proc. Soc. Ant. Scot.</i> , vol. v. p. 110, and vol. vii. p. 356.
ENGLAND.							
5	Thames.	Before 1856.	Not recorded. Taken from the bed of the river.	$4\frac{1}{2} \times 3$	Of fine yellow bronze. A very fine example. Handle wider than bowl. Resembling No. 1. Edges of bowl raised. Perfora- tion at right side. Handle worn with friction of thumb and forefinger.	British Museum (Roach Smith Collec- tion).	<i>Archæologia Cam- brensis</i> , 3rd ser., vol. viii. p. 210. <i>Archæological Journal</i> , vol. xxvi. p. 54. <i>Brit. Mus. Guide to Antiq. of Early Iron Age</i> (1905), p. 136.
6 7	The Mill Hill, Upper Walmer, Deal.	Shortly before 1904.	On an elevated plateau, among graves of later Romano-British date. One spoon on either side of the head of a skeleton laid at full length N.E. and S.W. in a grave in the chalk.	$4\frac{7}{8} \times 2\frac{7}{8}$ $4\frac{1}{3} \times 2\frac{1}{2}$	Handles with wavy outline; con- centric moulding like Nos. 3, 4, 8, 9, and 10; central boss spirally ornamented. Traces of fibrous matter on back.	Corporation Buildings, Deal.	<i>Archæologia Can- tiana</i> , vol. xxvi. p. 9 (pl. iv.). <i>Proc. Soc. Ant. Lond.</i> , 2nd ser., vol. xxxi. (1918- 19).

8	Brick Hill Lane, Upper Thames Street, London.	1852.	Not recorded.	Nearly $4\frac{3}{8} \times 2\frac{1}{2}$ .	Handle with embossed concentric design, reverse engraved with curvilinear design. Repaired on back with ornamented plate fixed with rivets. Perforation close to right edge.	British Museum (Albert Way's Collection).	<i>Archaeologia Cambrensis</i> , 3rd ser., vol. viii, p. 212. <i>Archaeological Journal</i> , vol. xxvi, p. 55.
9 10	Weston, about 1 mile N.E. of Bath, Somersetshire, near the road to Bristol.	1866.	On the brow of a small hollow in which a rivulet flows. In removing soil for a quarry, 7 ft. below surface (depth probably due to soil slipping down a cultivated bank). No other relics.	$4\frac{3}{8} \times 2\frac{1}{2}$ .	Embossed concentric designs, not similar. Produced on a mould turned on a lathe. Dissimilar designs on reverse of handles. 9. Damaged perforation. 10. Engraved cross radiating from a quadrangular figure in the centre.	National Museum of Antiquities, Edinburgh.	<i>Archaeological Journal</i> , vol. xxvi, p. 60. <i>Scotland in Pagan Times: The Iron Age</i> , p. 134. <i>Proc. Soc. Ant. Scot.</i> , vol. viii, p. 360.
11 12	Graben, in Crosby-Ravensworth parish, Westmorland.	Shortly before 1869.	Found 7 or 8 yds. apart, and 12 to 18 ins. deep, in boggy ground near a spring.	$4\frac{3}{8} \times 2\frac{3}{4}$ .	Pale-coloured bronze, handles only slightly defined. Designs dissimilar, not in relief, curvilinear engraved lines of a fine zigzag tooling. Resemble Irish examples. 11. Perforation punched, showing a bar at back. 12. Cross with central circle.	British Museum.	<i>Archaeological Journal</i> , vol. xxvi, p. 62 (1869).
13 14	SCOTLAND. Catch - a - Penny, Burnmouth, Berwickshire.	1923.	At a quarry; in a stone-built grave 5 ft. 7 ins. long and 27 ins. beneath the surface. With skeleton of a man, laid on right side, knees slightly fixed, hands in front of chest. Between hands and skull two spoons, 6 ins. apart, an iron knife lying on one of them, bones of a young pig, and fragments of coal and wood.	$4\frac{1}{2} \times 2\frac{3}{4}$ .	Much corroded; bowls slightly hollowed, metal thin. 13. Perforation at right side, left side damaged, stained with rust from iron knife. Traces of curvilinear engraved design on handle. 14. Cross very faint, handle much corroded.	National Museum of Antiquities, Edinburgh.	

## DISCOVERIES OF BRONZE SPOONS—Continued.

No.	Locality.	Date.	Particulars of Discovery.	Size in Inches.	Description of Spoons.	Museum.	Authority.
15 16	IRELAND. Ireland.	Before 1853.	Not stated.	5g × 2g.	Yellow-coloured bronze. Not from the same mould. Long and narrow, flattened. Not embossed. Engraved design on back and front, curvilinear, with stipple-marking. 15. With perforation to right. 16. Cross radiating from a central circle.	Museum of Royal Irish Academy, Dublin.	<i>Archeologia Cambrensis</i> , 3rd ser., vol. viii. pp. 209, 212. <i>Archæological Journal</i> , vol. xxvi. p. 66.
17 18	Ireland.	Before 1853.	Not stated.	5 × 2½.	Brown rusty colour. Not fellows. Design engraved, curvilinear, with stipple-marked ground, and hatching.	Museum of Royal Irish Academy, Dublin.	<i>Archeologia Cambrensis</i> , 3rd ser., vol. viii. pp. 209, 212. <i>Archæological Journal</i> , vol. xxvi. p. 67.
19	Ireland.	Before 1863.	Probably from a turbarry or bog.	4½ × nearly 2½.	Slight and elongated. Engraved curvilinear design with stippled ground. Cross radiating from a central circle. Point of bowl damaged.	Free Public Museum, Liverpool (Meyer Collection).	<i>Archeological Journal</i> , vol. xxvi. p. 64 (1869).
20 21	FRANCE. Pogny, in Marne, France.	1910.	From the grave of a woman, one within the other, surrounded by the remains of cloth, in a small bronze vase.		Handles narrow and squarish, with no ornamentation. 20. Quite plain, no perforation. 21. With incised cross, having a perforation at the centre.		<i>Manuel d'Archéologie Préhistorique</i> (Déchelette), vol. ii. p. 1275.

elevated plateau close to later cremated burials of Romano-British date. Of the other discoveries little is known; the earliest was made near Cardigan (1 and 2) about 1829, the spoons being found beneath a heap of stones in a camp of non-Roman construction.

The British spoons are all placed in public museums: 6 are now in the National Museum of Antiquities in Edinburgh, 4 in the British Museum, 4 in Dublin, 2 in Deal, 2 in Oxford, and 1 in Liverpool.

#### REPORT ON THE SKELETON FOUND IN THE GRAVE.

By PROFESSOR ARTHUR ROBINSON, M.D.

The bones available for investigation are:—

*Axial Skeleton.*—The cranium, considerably broken; parts of the maxillæ with the teeth complete; the greater parts of the two zygomatic bones; the mandible with the third left molar missing; parts of several vertebræ; a small part of the sacrum; twenty-two fragments of ribs; the greater part of the manubrium and part of the body of the sternum.

*Appendicular Skeleton—Superior Extremities.*—Part of the left scapula; the greater parts of both clavicles; the right humerus with the greater tuberosity and the intertubercular sulcus broken; the distal five-sixths of the left humerus; the right ulna complete and the greater part of the left ulna; the right radius and the greater part of the left radius; the left navicular bone; some metacarpal bones and phalanges and fragments.

*Inferior Extremities.*—Fragments of both hip-bones; the right femur with the distal end partly destroyed, and a portion of the left femur; fragments of both tibiæ; fragments of both fibulæ; both tali; fragments of the calcanei; metatarsals and fragments of metatarsals.

*Associated Bones.*—A number of bones, teeth, and fragments of bone which are identified by Dr James Ritchie of the Scottish Museum as belonging to a young pig.

A general examination of the human bones leads to the conclusion that they are those of a man about 35 years old, and about 5 feet 9 inches in stature. He had a well-developed thorax, generally well-developed and graceful limbs with strong muscles, and, in spite of the fact that the left fibula is a relatively slight bone, it may be asserted that the muscles which are specially associated with springiness and lightness of foot were particularly well developed.

He may have been a soldier or a hunter, but was certainly not a regular worker on the land.

For the main part, the bones of opposite sides are symmetrical, but, as already stated, the left fibula was relatively slight, and the right ramus of the mandible is smaller in antero-posterior measurement than the opposite ramus.

His teeth are much worn for his age; not so much as those of Australian natives of similar age, but more than those of four Short Cist skulls in the University, which are available for comparison.

*Cranium.*—The cranium, viewed as a whole (fig. 5), appears to be moderately long and low, with a low, square forehead. Viewed from above, it is quadrangular, with sharp anterior and rounded posterior



Fig. 5. Side view of Burnmouth Skull.

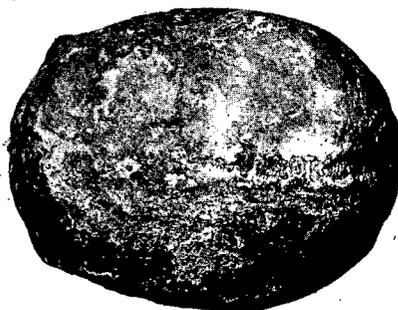


Fig. 6. Upper view of Burnmouth Skull.

angles (fig. 6), and the posterior aspect is also quadrangular, with rounded upper angles.

The frontal tuberosities are present but not prominent. The parietal tubers are more prominent. The superciliary ridges are moderate.

The circumference measures 515 mm., the nasion opisthionic arc 370 mm., and the biauricular arc 298 mm.

The greatest length, measured from the glabella, is 181 mm., the greatest breadth 138 mm., and the basi-bregmatic height 137 mm.

Its cephalic index is, therefore, 76.2 (mesocranial), its length-height index 72.8 (metrio-cranial), and its breadth-height index 95.6 (metrio-cranial).

Contrasted with four Short Cist crania in the University Museum (catalogue numbers 1 B 205, 1 B 208, 1 B 223, and 1 B 221), of which the first three are male and the last female, the cephalic index does not differ greatly, for one only of the four Short Cist crania (1 B 205) is

brachycranial, with a cephalic index of 80·1, the other three being metrio-cranial, whilst the average cephalic index of the three male Short Cist crania is 79·3.

The length-height index, 72·8, differs still less from that of the two Short Cist crania in which it is obtainable, 1 B 208 (male), 73, and 1 B 221 (female), 72·8.

The difference between the breadth-height indices of the Early Iron Age cranium 95·6, and that of the two Short Cist crania 1 B 208 and 1 B 221, in both of which it is 92, is also not extreme; all three falling into the metrio-cranial group.

The capacity of the Early Iron Age cranium measured with shot is 1430 c.c., and estimated by the general Pearson formula 1352 c.c.

The capacity of Short Cist cranium 1 B 205, calculated by the Pearson formula, is 1508 c.c.

The measured capacity of Short Cist cranium 1 B 208 is 1430 c.c., and the estimated capacity 1404 c.c.

The estimated capacity of Short Cist cranium 1 B 221 is 1369 c.c., and that of Short Cist cranium 1 B 223, 1461 c.c.

The average estimated capacity of the three male Short Cist crania is therefore about 1457 c.c., or about 105 c.c. more than the estimated capacity of the Early Iron Age cranium.

The smallest transverse frontal measurements of the five crania are as follows:—Early Iron (104·5 mm.), 1 B 205 (97 mm.), 1 B 208 (89 mm.), 1 B 221 (96 mm.), 1 B 223 (100 mm.), and the fronto-parietal indices respectively 75·7 (eurymetopic), 66·2 (metrio-metopic), 63·1 (steno-metopic), and 71·9 (eurymetopic).

The greatest transverse frontal measurements are:—Early Iron, 125 mm.; 1 B 205, 122 mm.; 1 B 208, 117 mm.; 1 B 221, 122 mm.; and 1 B 223, 121·5 mm., giving with the smallest transverse frontal measurements the following transverse frontal indices:—83·6, 79·5, 75·7, 78·6, and 82·3.

The transverse frontal measurements and indices show, therefore, greater differences between the Early Iron Age cranium and the four Short Cist crania than do the other indices; the differences are not striking, but when contour tracings of the crania are taken in various planes, and those of the Short Cist crania are superposed on the tracings of the Early Iron Age cranium and are oriented on similar points, very obvious differences appear.

When the median sagittal sections of the Short Cist crania are superposed on a similar section of the Early Iron Age cranium, the orientation being the glabello-inion plane and its centre, it is at once seen (fig. 7, A, B, C) that all the Short Cist crania rise to a higher level at the bregma, and for a varying distance anterior and posterior

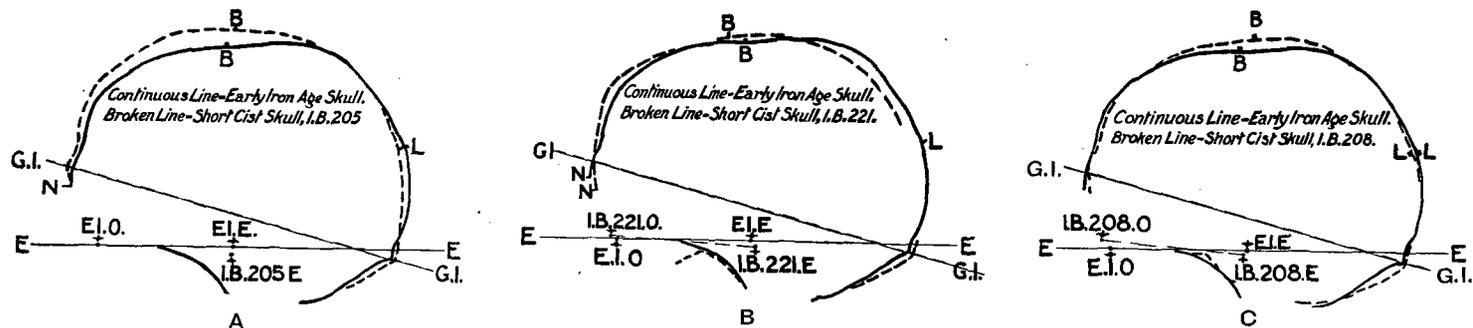


Fig. 7, A, B, C. Median sagittal sections of Early Iron Age cranium and Short Cist crania I.B.205, I.B.221, I.B.208 superposed on glabello-inion plane and its centre. (4.)

G.I. = Glabello-inion plane. E.E. = Eye-ear plane. E.I.E. = Early Iron Age external Meatus. I.B.208 E, I.B.221, I.B.205 = Short Cist external Meatus. E.I.O. = Early Iron Age lower margin of Orbit. I.B.208.O, I.B.221.O = Short Cist lower margin of Orbit.

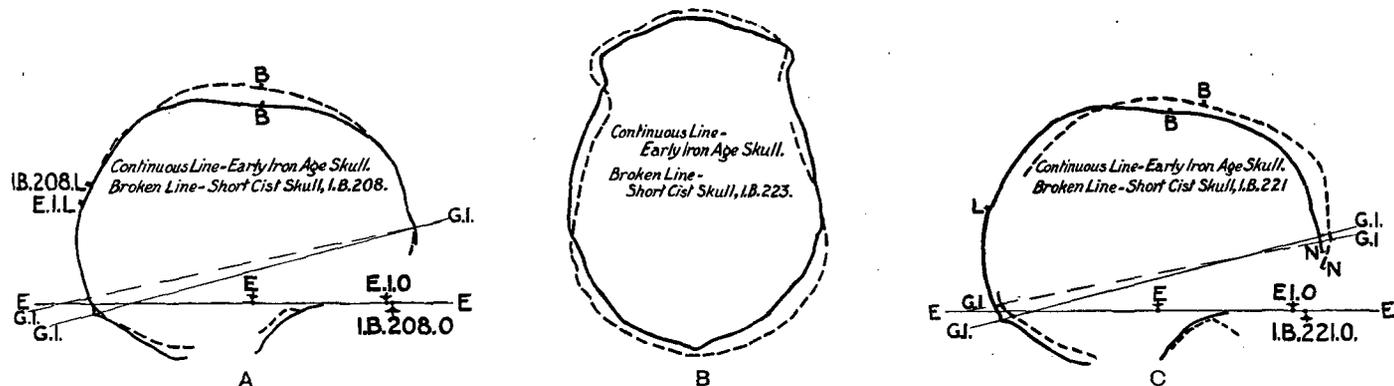


Fig. 8, A and C. Median sagittal tracings of Early Iron Age cranium and Short Cist cranium I.B.208, I.B.221 superposed on Eye-ear plane and upper border of external Meatus.

G.I. = Glabello-inion plane. E.E. = Eye-ear plane. E.I.O. = Early Iron Age lower border of Orbit. I.B.221.O, I.B.208.O = Lower border of Orbit. L. = Lambda. B. = Bregma.

B. Glabello-inion plane sections of Early Iron Age and Short Cist I.B.223 crania oriented on central glabello-inion plane. (4.)

to that point, than does the Early Iron Age cranium, and that the nuchal area of the occipital bone lies, on the whole, on a lower and more posterior level.

When the crania are oriented on the eye-ear plane (fig. 8, A, C) and the middle of the upper border of the external meatus, and for this purpose only three of the Short Cist crania are available (1 B 208, 1 B 221, and 1 B 223) of which the first two are figured, the greater elevation of the Short Cist crania above the chosen plane, in the region of the bregma and anterior and posterior to it, is seen to be more marked than when the crania were oriented on the glabello-inion plane.

It is also obvious that in the cases of the three Short Cist crania the glabello-inion and eye-ear planes meet, behind, outside the crania, whilst in the case of the Early Iron Age cranium they meet inside the cranium. The angle of meeting of the two planes in Short Cist crania 1 B 208 and 1 B 221 is  $12^\circ$ , and in 1 B 223,  $11^\circ$ , whilst the corresponding angle in the Early Iron Age cranium is  $15^\circ$ .

In the cases of Short Cist crania 1 B 221 and 1 B 223 a greater part of the cranium lies anterior to the middle of the upper margin of the external meatus than in the case of the Early Iron Age cranium, but in this respect Short Cist cranium 1 B 223 agrees with the Early Iron Age cranium.

In all three Short Cist crania the nuchal plane of the occipital bone is at a higher level than the corresponding area of the Early Iron Age cranium, and in all three Short Cist crania the eye-ear length is greater, to a variable extent, than the corresponding distance in the Early Iron Age cranium.

When glabello-inion plane sections of Short Cist crania are superposed on a similar section of the Early Iron Age cranium two differential characters appear; they are the greater depth and extent of the post-orbital constriction and the greater width and roundness of the occipital region of the Short Cist crania (fig. 8, B).

The breadth index of the cranial base, which indicates the relative proportion of the biauricular breadth to the breadth between the points where the speno-squamous sutures cut the infra-temporal ridges, also indicates a difference between the Early Iron Age cranium and the Short Cist crania. The necessary measurements were available in three only of the Short Cist crania—1 B 208, 1 B 221, and 1 B 223. The indices are—Early Iron Age, 71·3; 1 B 208, 68·2; 1 B 221, 66·6; 1 B 223, 69·1.

*Face.*—With the aid of plasticine it was possible to make what may be taken as an approximately correct reproduction of the face from which approximately correct measurements could be taken (fig. 9). The reconstruction shows that the face was comparatively long and narrow.

The total facial length, nasion to gnathion, measured 138 mm., and the upper facial length, nasion to prosthion, 84 mm., whilst the bizygomatic width was 127 mm., giving a total facial index of 108·6 (hyperleptoprosopic) and an upper facial index of 66 (hyperlepten).



Fig. 9. Anterior view of reconstructed Burnmouth Skull.

Only three of the Short Cist skulls were available for comparison—1 B 208, 1 B 221, and 1 B 223, the measurements and indices of which are—1 B 208, total length 117 mm., upper length 68 mm., bizygomatic width 118 mm., total index 99; 1 B 221, total length 115 mm., upper length 63 mm., bizygomatic width 112 mm., total index 102·6, upper index 56·2; 1 B 223, total length 122 mm., upper length 68 mm., bizygomatic width 122 mm., total index 100, upper index 55·7. Therefore all three crania, so far as the total facial index is concerned, fall into the same group, hyperleptoprosopic, but as regards the upper facial index, whilst the Early Iron Age skull is hyperlepten, the three Short Cist skulls are lepten.

*Nose.*—The pyriform aperture of the Early Iron Age skull was apparently long and narrow, but as the right border was missing in the region of greatest breadth, the width had to be estimated as twice the distance from the median plane to the most distant point of the left border. Thus estimated it measured 24 mm., whilst the distance from the nasion to the subnasal point was 59 mm., giving an index of 40·6 (leptorrhine).

Three of the Short Cist skulls were available for comparative measurements—1 B 208, 1 B 221, and 1 B 223, with the following results:—1 B 208, height 48·5 mm., breadth 27 mm., index 59·7 (chamærrhine); 1 B 221, height 47·3 mm., breadth 26 mm., index 54·9 (chamærrhine); 1 B 223, height 52 mm., breadth 24·8 mm., index 47·6 (mesorrhine). On the whole, therefore, the nose is narrower and longer in the Early Iron Age skull than in the Short Cist skulls.

*Orbits.*—The orbital apertures are rounded and wider than high, the measurements being—right orbit, width 40 mm., height 33·5 mm., index 83 (mesoconch); left orbit, width 41 mm., height 40 mm., index 87·9 (hypiconch). Both orbital margins were present in Short Cist skulls 1 B 208 and 1 B 221, and that of the left orbit in 1 B 223. The measurements and indices are as follows:—

1 B 208, right orbit, width 42·5 mm., height 34 mm., index 80 (mesoconch);

left orbit, width 42.5 mm., height 35 mm., index 82.3 (mesoconch). 1 B 221, right orbit, width 41 mm., height 37 mm., index 87.8 (hypsiconch); left orbit, width 38.5 mm., height 37 mm., index 96.1 (hypsiconch). 1 B 223, left orbit, width 42 mm., height 39.8 mm., index 94.7 (chamæconch).

In the case of 1 B 223 the face had been reconstructed, therefore the measurements and index can only be considered as approximate. There is, therefore, no appreciable difference between the Early Iron Age and Short Cist orbits so far as the skulls used are concerned.

The palate of the Early Iron Age skull tends to be V-shaped, whilst that of the Short Cist skulls is typically U-shaped.

The lengths are—Early Iron Age, 45 mm.; 1 B 208, 49 mm.; 1 B 221, 47 mm.; 1 B 223, 47 mm. The breadths—Early Iron Age, 44 mm.; 1 B 208, 38 mm.; 1 B 221, 40 mm.; 1 B 223, 41 mm., giving the following indices:—Early Iron Age, 97.7 (brachystaphline), 1 B 208, 77.5 (leptostaphline), 1 B 221, 85; 1 B 223, 87.2 (brachystaphline).

The dental index, based upon the relation of the pre-molar length and the basi-nasal length, shows that both the Early Iron Age skull and the Short Cist skulls 1 B 208 and 1 B 221, the only two in which the basi-nasal length was obtainable, are all megadont, the dental length being—Early Iron Age, 46 mm.; 1 B 208, 45 mm.; and 1 B 221, 45 mm. The basi-nasal lengths respectively, 102 mm., 90 mm., and 89 mm., giving indices of 45, 50, and 50.5. The Early Iron Age skull is therefore nearest the border line of the mesodont group on account of its greater basi-nasal length.

The profile angles indicating the degree of prognathism are necessarily only approximate in the cases of the Early Iron Age skull and Short Cist skull 1 B 223, being made on reconstructed skulls, but in the Short Cist skulls 1 B 208 and 1 B 221 the facial bones were intact.

In the Early Iron Age skull the angles are—whole profile 84°, nasal profile 87°, and alveolar profile 78°. Short Cist skulls are—1 B 208 gives whole profile 87°, nasal profile 88°, alveolar profile 78°; 1 B 223, whole profile 90°, nasal profile 90°, alveolar profile 90°.

As regards the whole profile and nasal angles all the skulls are orthognathous, but there are differences in the alveolar profile angle, the Early Iron Age and the Short Cist skulls 1 B 208 and 1 B 221 being prognathous, whilst 1 B 223 is orthognathous.

*Mandible.*—The mandible of the Early Iron Age skull is a strong bone with a very well-developed chin. It possesses a condylo-symphyseal length of 112 mm., and a condylar breadth of 130 mm., giving a condylo-symphyseal index of 86.1. Unfortunately the condylar parts of the Short Cist skulls 1 B 208 and 1 B 223 are missing, but the condyle is present on one side of the mandible in Short Cist skull 1 B 205 and in

1 B 221. Therefore the condylo-symphyseal length could be measured and the intercondylar breadth estimated by doubling the distance between the lateral borders of the condyle present and the median plane. In 1 B 205 the condylo-symphyseal length is 105 mm. and the condylar width 108 mm., giving an index of 97.2. In 1 B 221 the condylo-symphyseal length is 101 mm. and the condylar breadth 118 mm., giving an index of 85.6. The differences so far as the measurements given are concerned are slight, but when orthogonal tracings of the Short Cist mandibles are superposed on a similar tracing of the Early Iron Age mandible and oriented on the alveolar border and the anterior margin of the first molar tooth, differences are at once obvious.

The chin of the Early Iron Age mandible is more pointed, the height of the body is greater, and the ramus is narrower than in any of the Short Cist mandibles, and the angle is better marked and less rounded. The lateral projections of mandibles of Short Cist skulls 1 B 205, 1 B 208, and 1 B 221 correspond closely when superposed upon one another, and that of 1 B 223 is intermediate between them and the Early Iron Age mandible.

When orthogonal projections of the mandibles oriented on the alveolar plane are taken from above and below, the most striking feature is the amount of the inward leaning of the molars of the Short Cist mandibles, one or more of which are visible from below in the cases of all the Short Cist mandibles, but not in the case of the Early Iron Age mandible (fig. 10, A and B).

*The Extremities—Superior Extremity.*—The clavicle is a strong bone 157.5 mm. long, well curved, and well marked by muscles.

The fragment of the scapula is too small for any inferences to be drawn from it.

The humerus of the left side is 358 mm. long and the claviculo-humeral index is 44—that is, about the usual European average.

The radius measures 264 mm., therefore the humero-radial index is 73.7, which is slightly higher than the European average, but lower than the Neolithic average.

*Inferior Extremity.*—The femur measures 484 mm. Its upper platymeric index is 76, its mid-shaft index 120, and its lower platymeric index 60.6, and its angle of torsion 35°.

Though the upper platymeric index is low, it is by no means so low as that found in a femur from the raised beach at Granton.

The torsion is great, and is of interest in connection with a similar condition in an Iron Age femur found at Dolphington, and described by Professor Bryce. It is, however, within the limits of variation of recent men.

Both tibiae were in fragments, and the proximal ends of both were destroyed, but it was possible to obtain a tracing of the shaft at the level of the nutrient foramen, and the platycnemic index was found to be 65·7.

There was no articular facet on the front of the distal end of the tibia such as is associated with races habituated to the squatting position; on the contrary, the anterior border of the distal end fitted during flexion into a fossa on the top of the neck of talus without producing a facet, but effectively preventing great flexion of the ankle joint.

The tali presented no particular features beyond the fact that the ridge for the attachment of the anterior part of the capsule of the

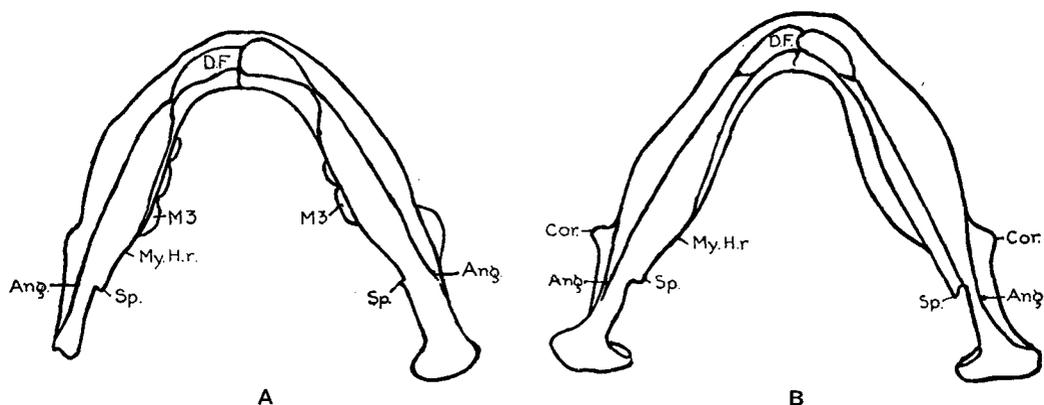


Fig. 10. Orthogonal projections of (A) Short Cist (1 B 221) and (B) Early Iron Age mandibles.

ankle joint is very prominent, indicating that the front of the capsule was frequently stretched, as it would be in running or jumping.

The Short Cist limb bones in the University collection are mostly fragmentary and useless for estimating stature, but in the case of 1 B 205 a humerus and a radius are available. It possessed a brachycephalic cranium with a capacity considerably greater than the capacity of the Early Iron Age skull, and its stature calculated from the radius is 5 feet 7 inches.

The humero-radial index of the Early Iron Age skeleton is 73·7, and that of Short Cist skeleton 1 B 205, 73·1, showing that the radius is relatively longer in proportion to the humerus in the former.

The upper platymetric index of the Early Iron Age femur is 74·3, and that of the Short Cist femur 1 B 208, 80·5; the platymery of the Early Iron Age femur is therefore much the greater.

The platycnemic index of the tibia of the Early Iron Age is 65·6, and

that of the tibia of Short Cist I B 208, 723, showing the very definite and greater platycnemia of the Early Iron Age bone.

When the differences between the Early Iron Age skeleton and those of the Short Cist skeletons are reviewed, it is obvious that, although they are slight, so far as measurements and indices are concerned, nevertheless they are numerous and definite both as regards the skull and the limb bones, and are sufficient to indicate two different groups of people, and it does not seem probable that one could have been evolved from the other, though it is possible that intermediate types between the two, merging into each, might be developed by crossings taking place frequently during a considerable period of time.