

## Report on Kilgreany Human Bones.

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These bones may be most conveniently grouped as A, B and E. The bones in group A were found lying upon the lower stalagmite floor, layer E; those in group B were thoroughly embedded in the floor; while group C comprises part of a left hip-bone belonging to a female, and it lay partially embedded in the floor. [See plan and sections of cave]

The bones of group A consist of:

1. An imperfect cranium and complete mandible.
2. Part of the sacrum of a female.
3. The following upper limb bones: -
  - (a) An almost complete right scapula.
  - (b) A more incomplete left scapula.
  - (c) Two humeri, of which the right lacks only the external epicondyle, but of the left only the lower two-fourths are present. In both there is a large epitrochlear foramen, the left being the larger of the two. The shaft of the humerus on each side shows a large deltoid impression and the bone is bent out at this point.
  - (d) One slender markedly curved clavicle measuring 116 mms. in length.
  - (e) Two fragmentary ulnæ, the left lacking the olecranon process, the right lacking the lower three-fourths or thereabouts. In the right one an unusually large muscular ridge marks the attachment of the Pronator Quadratus.
  - (f) Two radii of which the lower half of the right is present, and which has evidently during life been the subject of Colles's fracture. The left radius lacks the lower extremity, but there is no sign of fracture in it.
4. Lower limbs are represented by: -
  - (a) A fragment of the right hip-bone which probably does not belong to the main skeleton.
  - (b) Two femora.
  - (c) Two tibiæ.
  - (d) A patella.
  - (e) A fibula.
  - (f) Certain tarsal bones.

Of the femora the left is complete and its oblique length is 406.5-mms. or 16 $\frac{1}{16}$ -ins. It has an upper platymeric index of 64, and seems to have lost a third trochanter. The least transverse diameter of its shaft amounts to 28-mms. whilst its antero posterior diameter is 23-mms., giving an unusually flat femur.

The greatest transverse diameter of the lower extremity amounts to 68-mms., thus indicating a female. The right femur lacks its lower fourth. It is not so flat in the shaft nor has it a third trochanter. Its platymeric index is 66.

Of the tibiae the right is so complete that both articular surfaces are present. Its length, exclusive of the spine, is 340-mms., or 13 $\frac{1}{16}$ -ins. From the combined height of femur and tibia one may assume that the individual was about five feet in height.

The patella is of small size.

The left fibula is practically complete, measuring in total length 327-mms., and is well marked by muscle ridges.

The tarsus is represented by the right astragalus and left calcaneum.

The astragalus (Fig 6) shows a large os trigonum; the neck is set at an angle of 26° to the body. Two squatting facets are found on the dorsal aspect of the neck, the inner and smaller of the two is continuous with the inner basal angle of the trochlea, while the outer and larger is quite isolated on the neck.

The calcaneum lacks a peroneal ridge.

The following is a detailed description of the skull.

#### KILGREANY A.

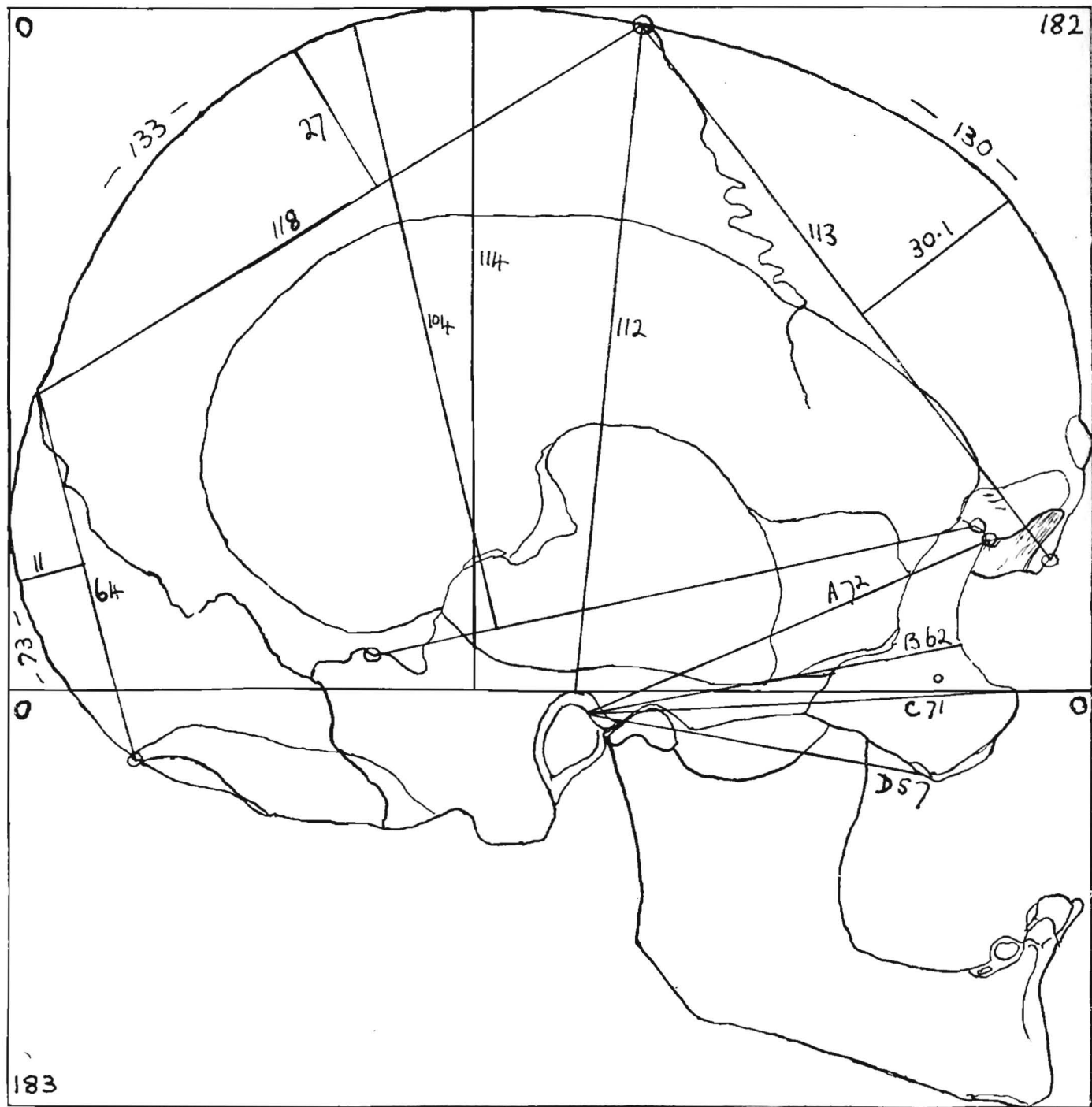
This skull Fgs. 1, 2, 3, 4 and 5 was found resting on and partly cemented to the lower stalagmite floor of the cave, layer E. It is a smaller skull than B and perhaps ten years younger; the probable age is between thirty and forty years. Its length is 182-mms.; its breadth is 133-mms., its breadth index is 73, therefore dolicho-cephalic. It is a higher skull than B, its auriculo-bregmatic height being 112 as against 111; its sub-cerebral height is 104 as against 98 in B. Viewed from above it is markedly pentagonal in outline and when viewed from behind is likewise pentagonal. When viewed from the front the supra-ciliary eminences and the supraorbital tori are both well marked; better proportionately than in B. The biangular frontal breadth exceeds the ophryal breadth by 11-mms. In B the excess is only 8-mms. The post-gleno-malar measurements correspond fairly closely with those of

an ordinary modern female skull. The mandible has similar remarkable antero-posterior width in the ramus to that of B. The left ramus seems to have been involved in some disease, probably arising in the last molar tooth. A foramen perforates the lower part of the anterior border of the ramus and leads to a Y-shaped groove on the outer surface of the ramus, whose front limb extends towards the coronoid process, and whose back limb extends toward the articular process. The antero-posterior width of the left ramus is much reduced. The teeth, except the four incisors, the canines and the first bicuspid, had been lost from the mandible some little time before death, as the alveolar walls had been absorbed.

From the general appearance of this skull and its measurements, and from the limb bones found with it, the conclusion may be drawn that it is female; and though its cranial contour is somewhat more convex than that of B, it may be regarded as a female specimen of the same race.

The objects belonging to Group B comprise:—

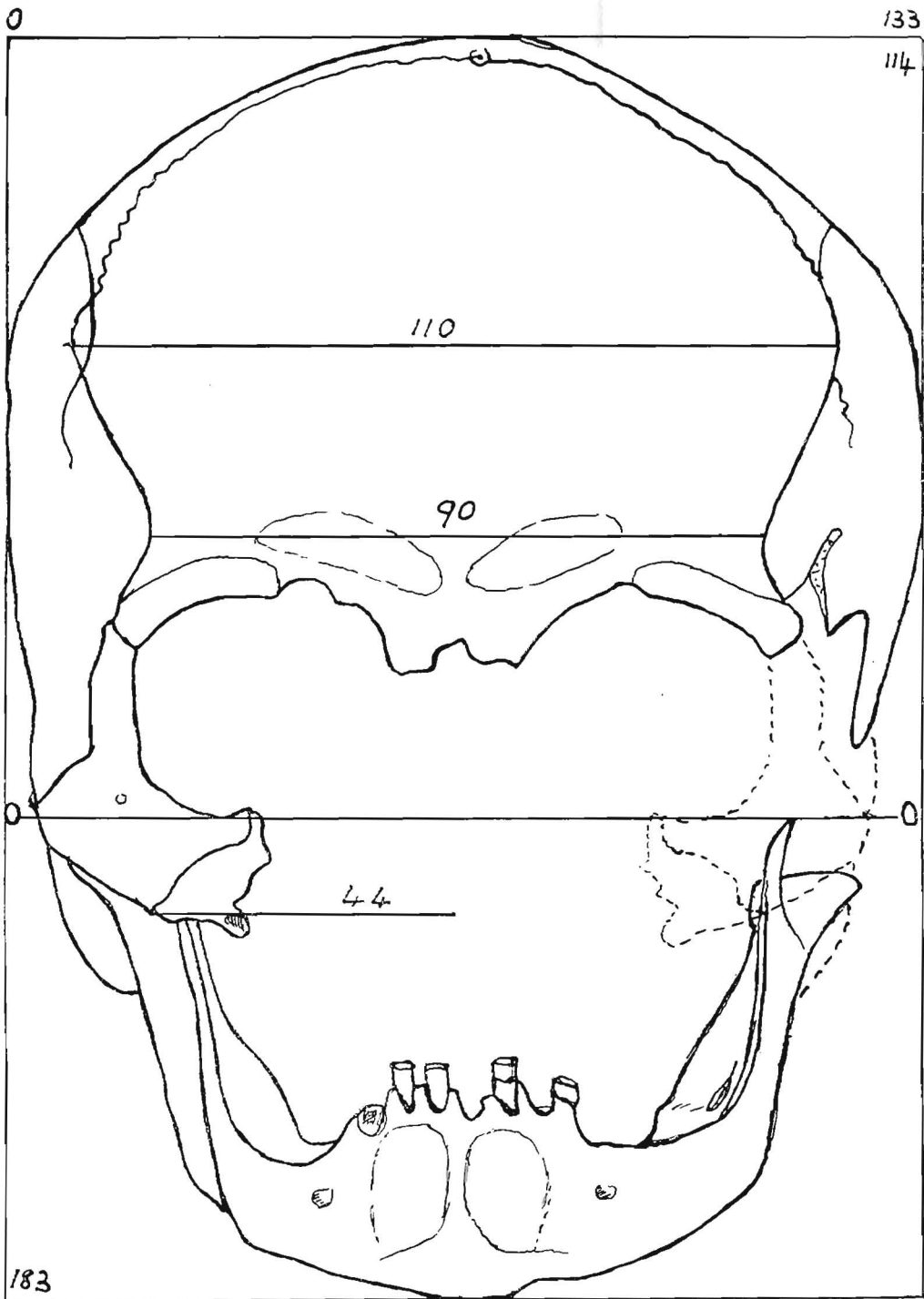
1. A skull with mandible in a condition practically complete in essentials.
2. Part of a left temporal bone.
3. Part of a supra-orbital segment of the left half of the frontal bone.
4. The right half of the atlas vertebra.
5. A complete axis vertebra.
6. An incomplete third cervical vertebra.
7. An incomplete fourth cervical vertebra.
8. The first thoracic vertebra, incomplete.
9. The body of a lower cervical vertebra.
10. A fragment of the right adult scapula including part of the spine and the acromion process, neck and glenoid cavity.
11. A small fragment of the left scapula including a little of the spine and upper and lower spinous fossæ.
12. The right and left clavicles, both nearly complete, and clearly from the same subject, who was probably male.
13. A right humerus, about the middle  $\frac{1}{3}$  of the shaft.
14. A left humerus wanting the head and surgical neck.
15. A right radius wanting the lower extremity.
16. A left radius wanting the upper extremity, (head).
17. A left ulna wanting the head and olecranon process.
18. A right ulna essentially complete.



Kilgreany A. ♀ Norma lateralis.

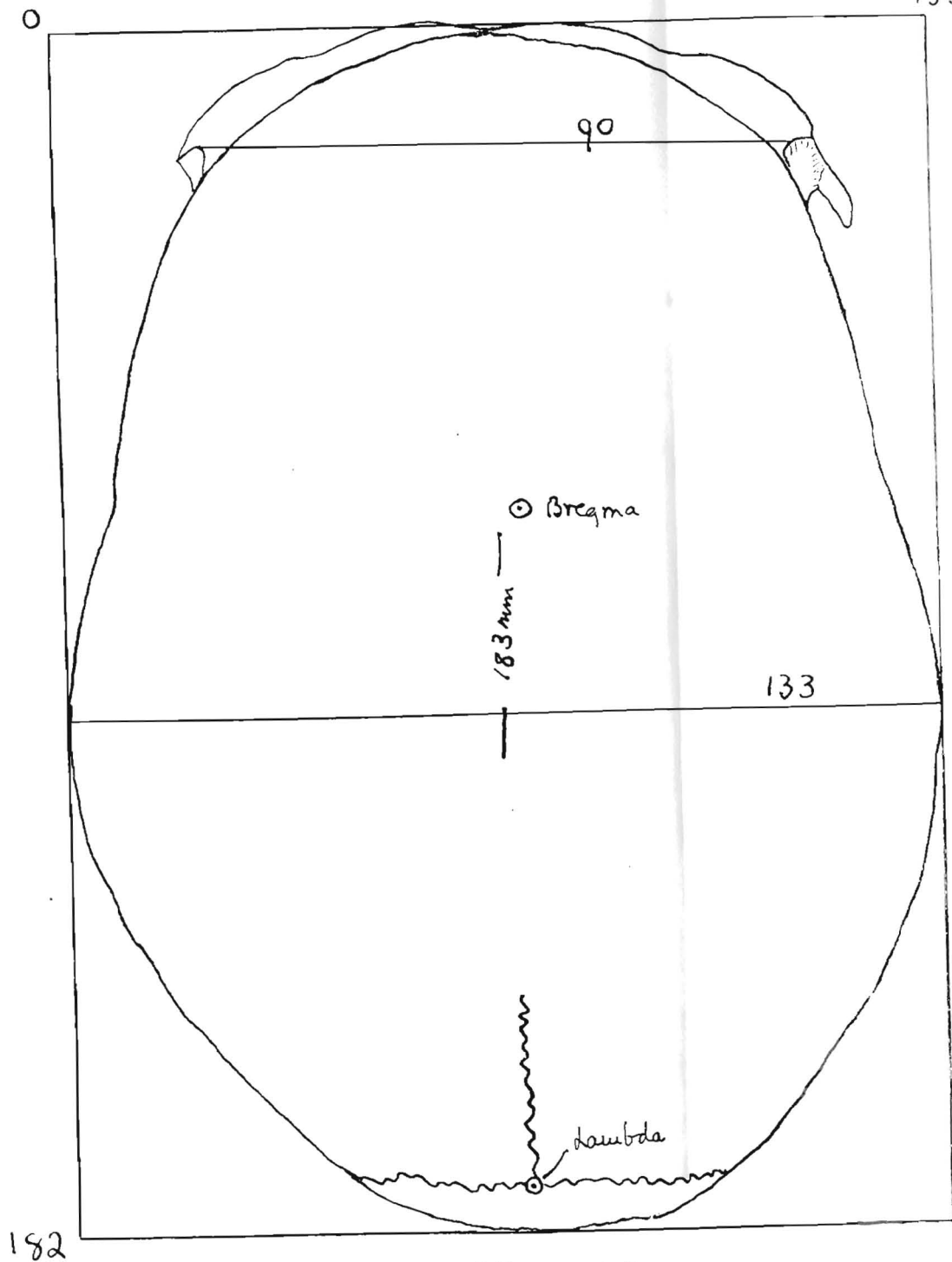
FIG. 1.





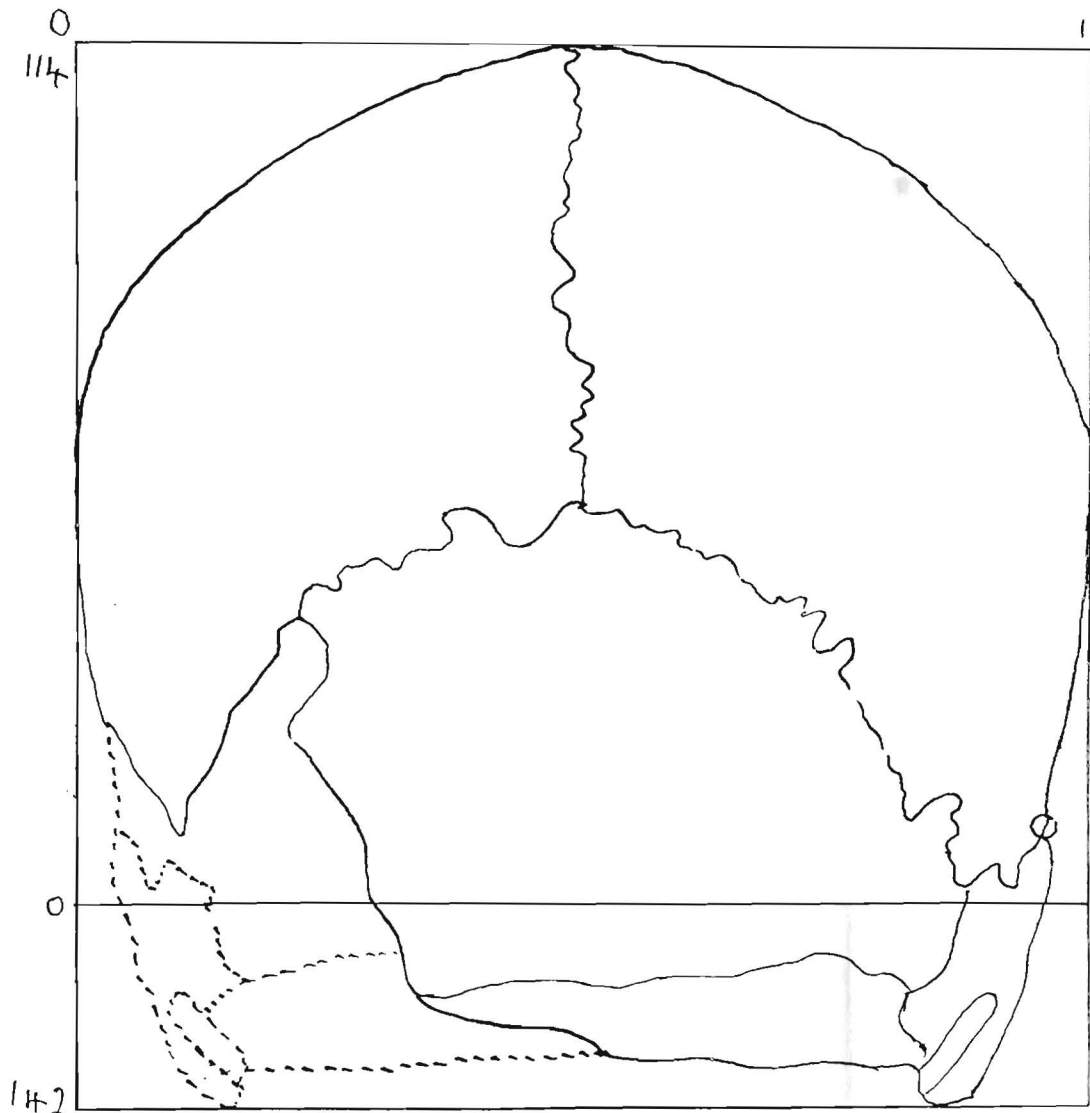
Kilgreany A. ♀ Norma frontalis.

FIG. 2.



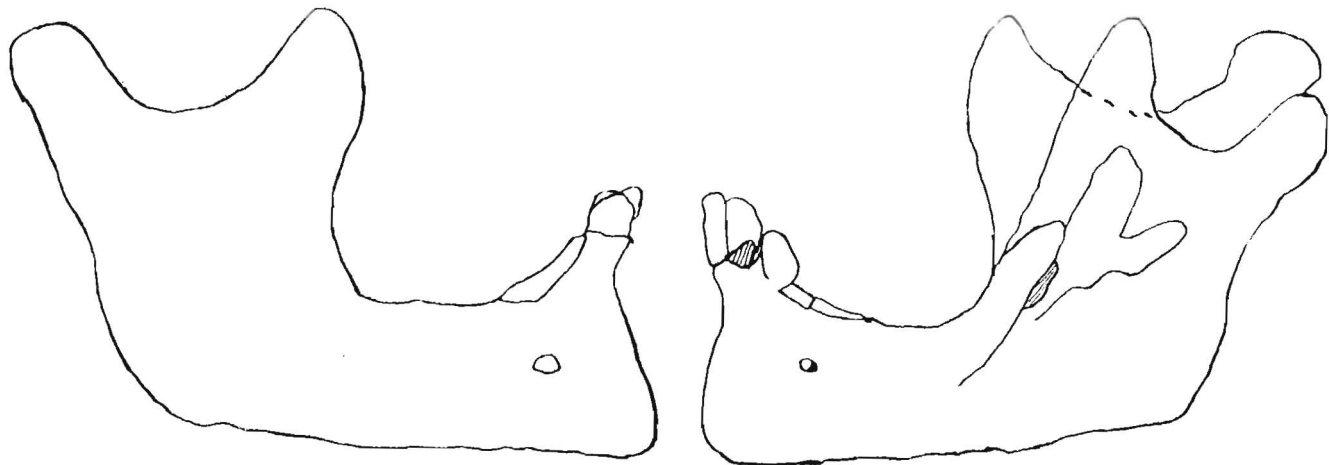
Kilgreany A. ♀ Norma verticalis.

FIG. 3.

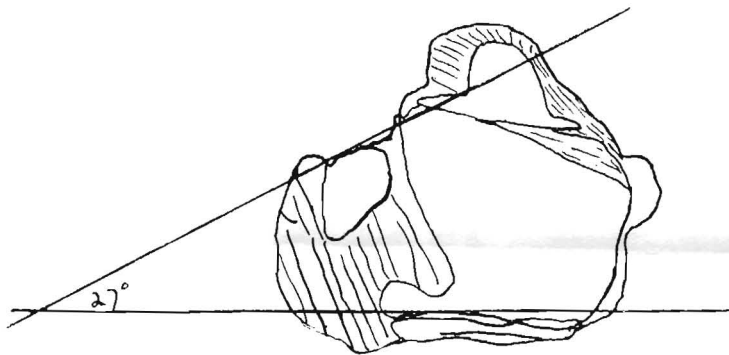


Kilgreany A. ♀ Norma occipitalis.

FIG. 4.



Mandible of Kilgreany A. ♀.  
**FIG. 5.**



Kilgreany A. ♀ Right astragalus, shewing 'squatting' facets

**FIG. 6.**

19. The upper extremity of a left ulna in a very perfect condition.
20. The following carpal bones :—  
One right cuneiform, one right semilunar, one right scaphoid, one right os magnum, one right unciform.
21. Metacarpals :—  
One left first, one left third, one left fourth, one right fifth. The first and third were somewhat incomplete.
22. Phalanges :—  
Six proximal; two intermediate; one probably intermediate, but being young has lost its epiphysis.
23. Ribs :—  
One right first rib, incomplete. Proximal end of about the seventh right rib.
24. Lower limb :—
  - (a) A left femur lacking the upper extremity.
  - (b) A left tibia, about the upper half.
  - (c) The upper half of a left fibula, but lacking the head.
  - (d) A fragment of a fibula impossible to refer to its side.

An examination of the bones of the lower limb and comparison of them with those of the skeleton of Jonathan Wilde in the Museum of the Royal College of Surgeons in London kindly afforded me by Sir Arthur Keith, suggests that the majority of them belonged to a male 4½-ft. to 5-ft. in height.

*Group E*, belonging to the doubtful region partially embedded in the stalagmite floor, consists of part of a left hip-bone including the acetabulum, ischium and pubis of a female.

#### KILGREANY B.

The skull save the middle part of the two zygomatic arches, the articular process hind margin and angle of the right ramus which are lacking, is sufficiently complete to enable one to take all important measurements of it. A low, almost comma shaped hollow reaching over part of the frontal and parietal bones of the left side near the sagittal section was evidently a healed skull wound as its edges are shelving gently.

The sutures, save the sagittal and the lower end of the coronal, are open, and, as the teeth are much worn, place the skull somewhere in the late thirties or even early forties.

As to sex, it is probably male.

It was completely embedded in stalagmite along with the skeletons of other animals of late palaeolithic date. Plate V, B. shows the skull *in situ* after the removal of the surrounding stalagmite]

CHARACTER OF SKULL. [Figs. 7, 8, 9, 10 and 11]

It is a long skull measuring 194 mm. in greatest length from the glabella to the most distant part of the occipital bone in the mid-line, the same length is got by measuring from the region of the frontal eminences, due to the arching of the frontal bone. This arc is 132-mm. long, its chord is 114-mm. that is 86 per cent. of the arc, and the subtense 27 mm. This forward bulging is especially common in the Mediterranean race according to Keith.<sup>1</sup>

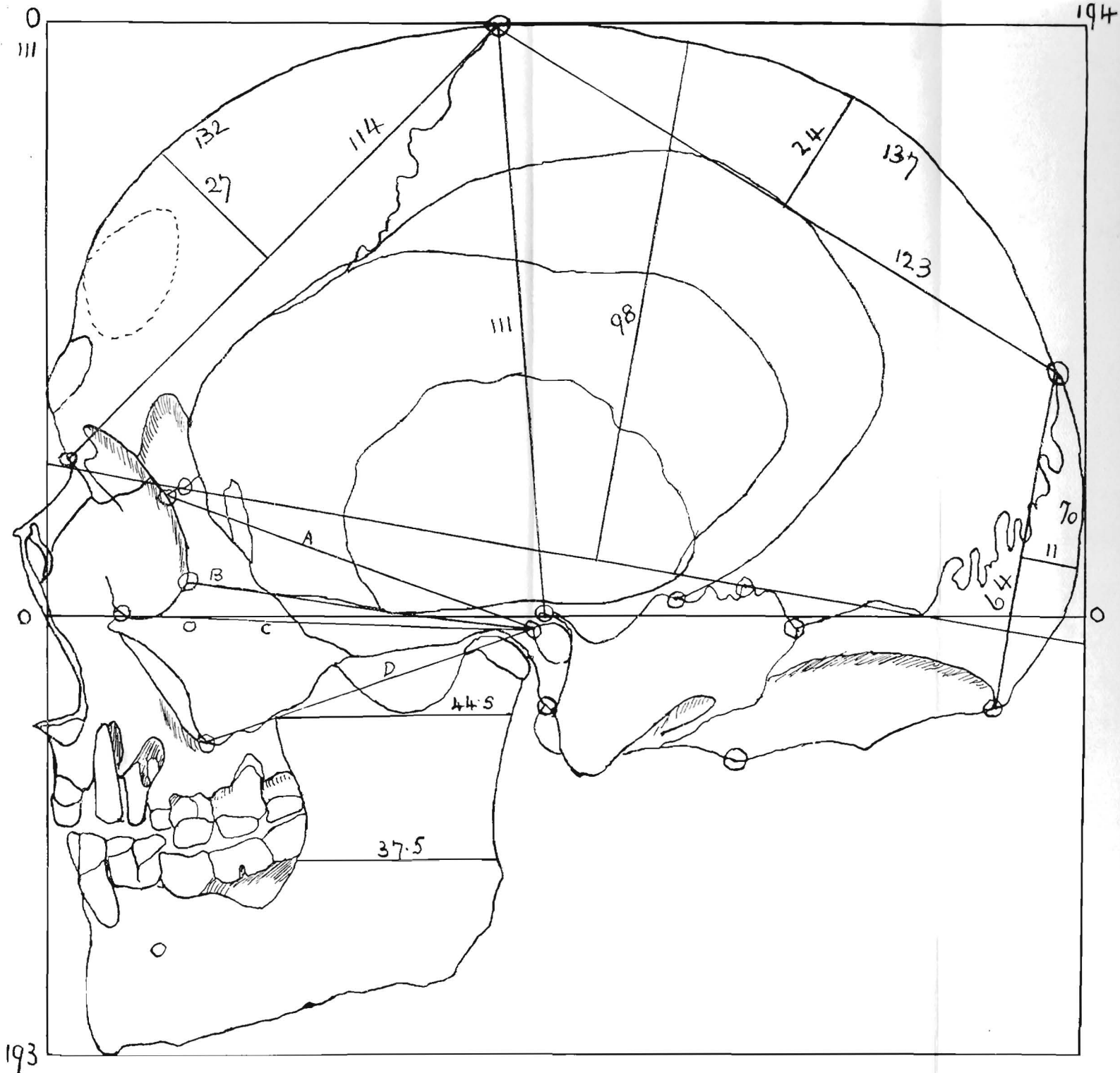
Now as to the width of the skull. It measures 139-mm., and therefore is of Keith's medium type,<sup>1</sup> though just within that group. The breadth index is then 71.6, and the skull is markedly dolichocephalic.

When viewed from behind the skull is distinctly pentagonal, owing to the prominent parietal eminences. The bimastoid breadth is about 129-mm. and the width at the parietal eminences is 139-mm., so the sides of the skull diverge as they rise without curve to the parietal eminences. From these they converge with little upward curving to meet one another in the mid-line. The anterior biastrial width is 130 mm., the posterior biastrial width is 114; the skull therefore is tapering fairly rapidly backwards.

In the frontal region the forehead is wide, the least diameter being 102-mm., whilst the maximum is only 120-mm., and the supra-orbital width (measured between the outer sides of the external angular processes) amounts to 111-mm., which is only 9-mm. more than the minimum width. This is a very important distinction between a primitive skull and one of higher type, for as Keith says the difference in a robust primitive person may be 15-mm. or more.

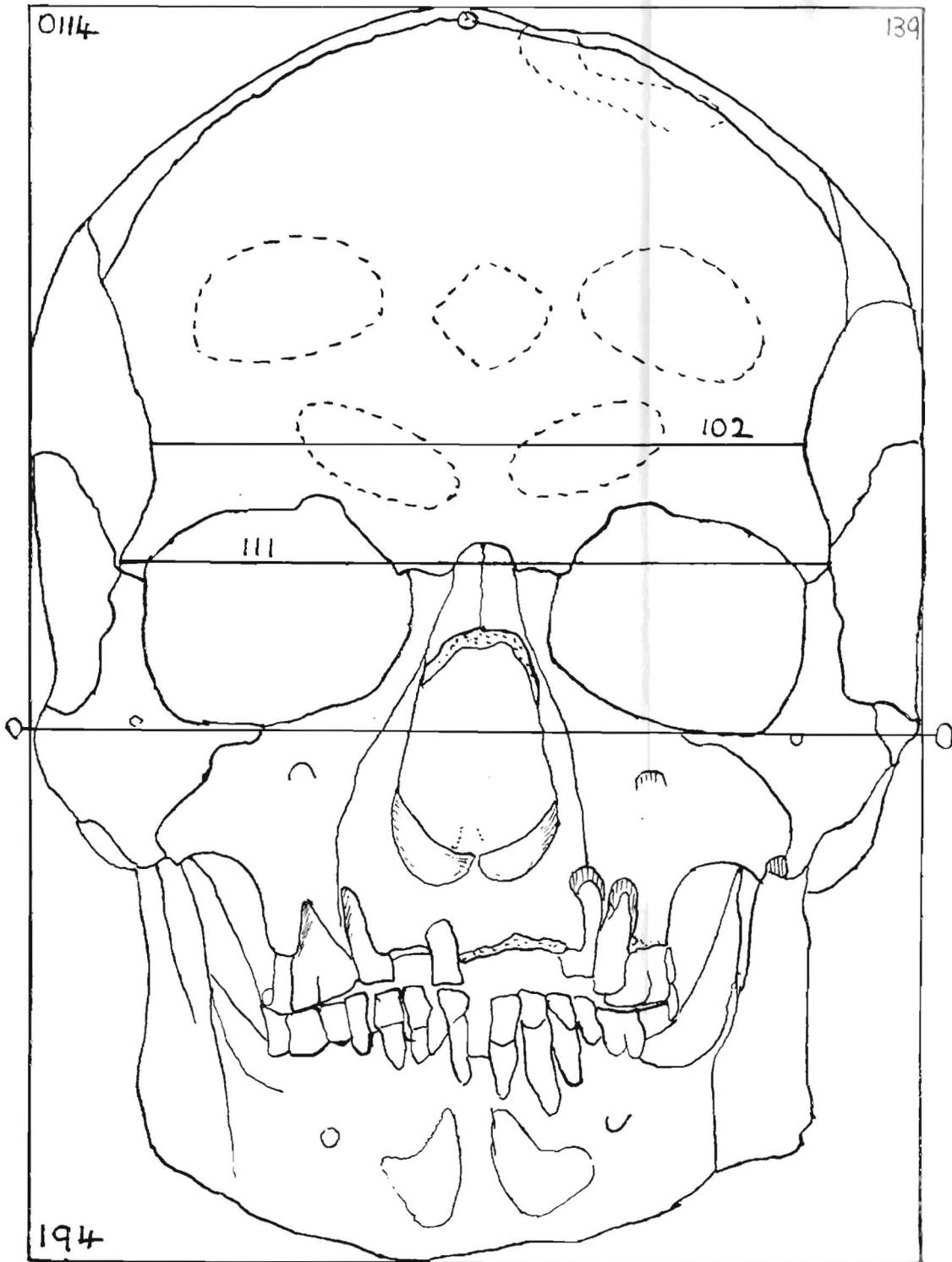
There is nothing of note concerning the various frontal bosses; the two frontal eminences are low in height and are separated from one another by a small lozenge shaped elevation. The superciliary eminences are not strikingly prominent, and reach only about one third of the way over the orbits, the supraorbital loci extending to the external angular processes are small, but the supraorbital sulci are wide and spread out to form a wide supraorbital trigone on each side.

<sup>1</sup> Proceedings University of Bristol Speleological Society, No. 1, Vol. 2.



Kilgreany B. ♂ Norma lateralis.

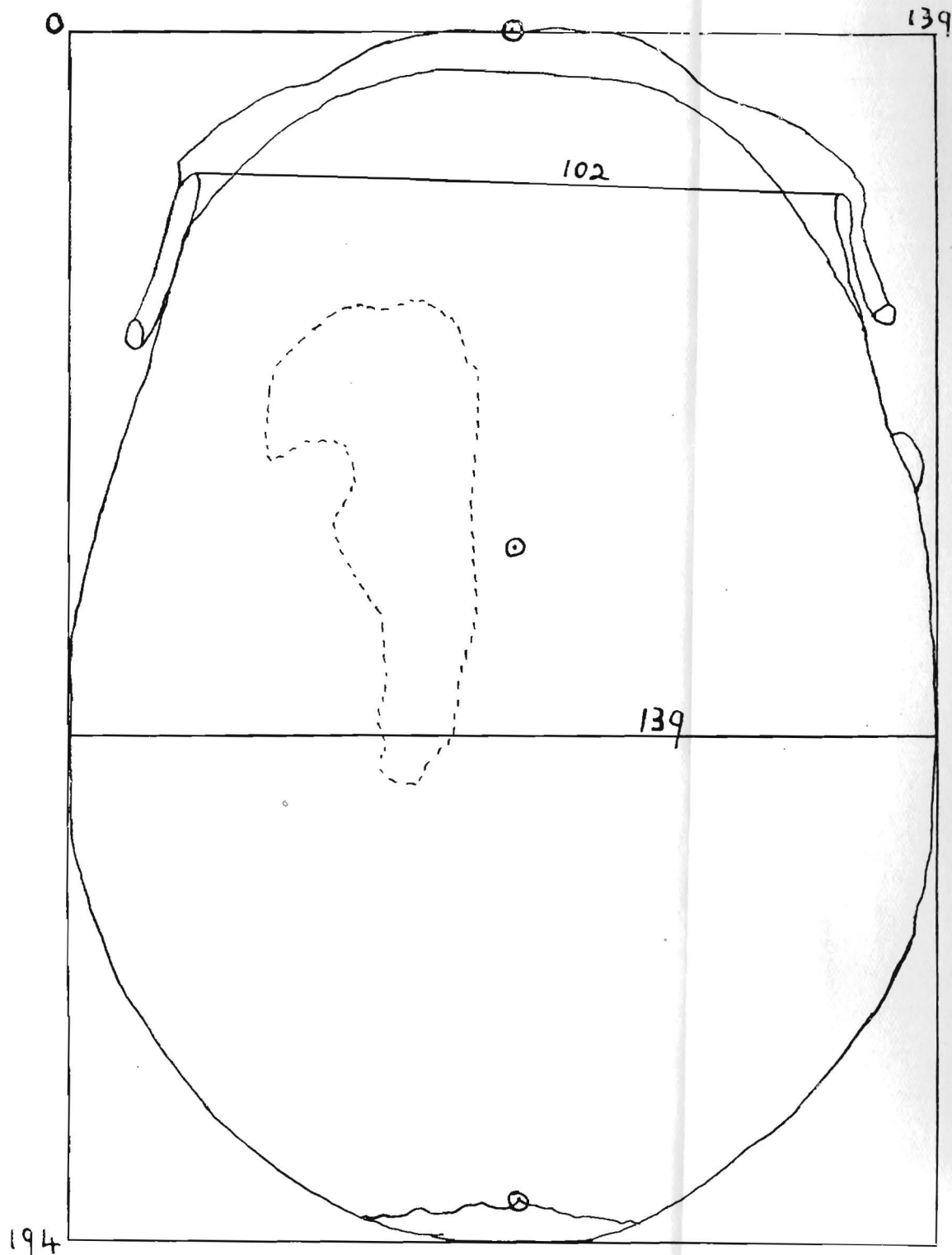
FIG 7



Kilgreany B. ♂ Norma lateralis.

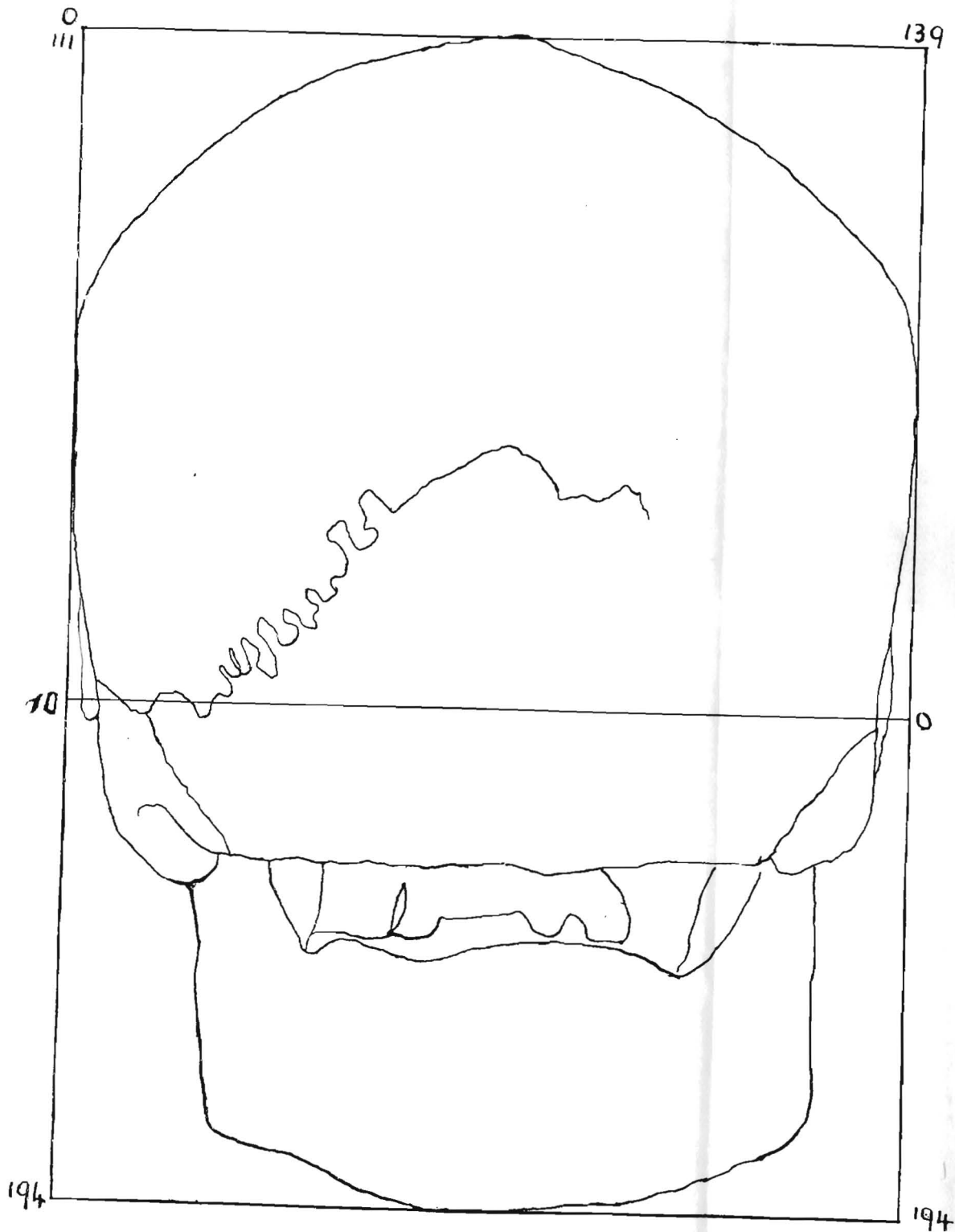
FIG. 8.





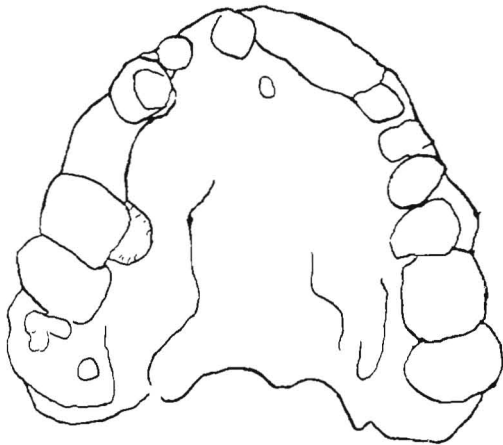
Kilgreany B. ♂ *Norma verticalis*.

FIG. 9.



Kilgreany B. ♂ Norma occipitalis.

FIG. 10.



Kilgreany B. ♂ Hard palate.

**FIG. 11.**

If we now enquire into the height and contour of the cranium, we find that it is low, for the auriculo-bregmatic height is only 111-mm., as compared with the modern British male of 115-mm.

Should the skull be orientated on the subcerebral plane of Keith, its highest point is only 98-mm. above that plane. It is 2-mm. below the average British height. Should we enquire into the amount of curvature of the parietal part of the cranial arc, we shall find it is low; thus the parietal arc measures 137-mm., its chord is 123-mm., practically 90 per cent., and the subtense is 24-mm. If further we examine the curvature of the upper occipital region, we find it comparatively low, at any rate there is nothing of the bun-like condition seen in skulls of the Neanderthal type. The lambda-inion arc is 70-mm. long, its chord is 64, again nearly 90 per cent., and the subtense is 11.

It is clear we have here a low vaulted skull whose greatest curvature is in the frontal region.

Turning to the face (Fig. 8). If the estimate of the bizygomatic breadth be correct the face is somewhat broad and short, the orbits are a little low in height. They measure 33-mm. in height and 42.5 in width, yielding an index of 77, which indicates a low orbit.

As to the condition of the main masticatory muscles as evidenced by the provision made for them on the bones, it may be said at once that so far as the temporal muscles are concerned there is no evidence of great height in them, either by measurement or by inspection of the bones. The temporal ridges are so ill-marked that save on the frontal bone it is almost impossible to be certain of them. As Keith determines the height development in the following way, we may safely adopt his method. By tape a measure is taken vertically from the zygomatic arch near its hind end to a point 20-mm. behind the bregma in the mid-sagittal line. The distance by tape moulded on the skull is 150-mm., a usual distance. The upper temporal line so far as can be ascertained lies about 90-mm. above the zygoma which is not high. If a horizontal measure be taken from the front of fronto-malar suture to the back of the temporal area, the distance is above 140-mm., whereas in an English skull of about the same cranial length the distance is 147-mm., in a plane parallel with the Franfort plane.

The masseter muscle I think in this case was relatively more developed, the malar bone being of great depth and the antero-posterior length of the ramus, *viz.* 45-mm., being great. There is no forward reaching of the malar bone. Tested by the method of Keith

this is conclusive. He takes four measures, all of which start behind at the middle of the back of the post-glenoid tubercle. The first he calls *a*, and takes it to the front of the fronto-malar suture. The second, called *b*, is from the same spot behind to the mid-point of the lateral margin of the orbit. The third, called *c*, reaches to the upper end of the malo-maxillary suture, whilst the last one, *d*, ends in front at the lower end of the malo-maxillary suture.

Now <i>a</i>	Kilgreany B	=73-mm.	Average English skull	= 73-mm.	
<i>b</i>	„	= 66.5-mm.	„	„	= 67-mm.
<i>d</i>	„	= 73-mm.	„	„	= 76-mm.
<i>c</i>	„	= 66-mm.	„	„	= 66-mm.

It is clear that there is no forward setting of the malar bone, but that the malar bone is large the following measurements shew. If measured from the front of the fronto-malar suture to the lower end of the malo-maxillary suture, the height is 48-mm., that is 3-mm. above the average, and the minimum depth of the bone from orbital to lower border is 27 mm., which is likewise 3-mm. above the average.

In further consideration of the face it may be noted that the nose is prominent, the anterior narial aperture is narrow, yielding an index of 48, so that it belongs to the leptorhine type. Perhaps the most noticeable thing about the nasal aperture is the presence of two unusually large pre-nasal fossae at its lower margin. They are separated however, by a very modern looking prominent anterior nasal spine.

The gnathic index is 94.

The lower part of the face must have been relatively wide for the bigonial width of the mandible amounts to 104-mm., which is maintained right up the rami even to the level of the upper molar tooth sockets. The chin, however, is pointed.

The area of the palate as far as can be ascertained is about 2,658 sq. millimetres, and so far as the teeth are concerned they are not of unusual size. They are much worn, and there have been abscess cavities over the first right upper molar, the left canine and the left second bicuspid teeth.

In concluding this report it may be remarked that a curious optical illusion arises out of the somewhat wide curving of the skull at the level of the squamous parts of the temporal bone; neither a photograph nor a tracing nor a measured drawing gives the impression gained by a glance from above which is that of a pentagon. The great prominence of the parietal eminences is misleading because

being of lighter colour than the lower lying squamous parts of the temporal bones the impression given is rather that of a pentagon than an ovoid.

It is evident that we have here a long skull of low height, which, nevertheless, is one presenting everywhere quite modern features. Its pentagonal appearance from behind reminds one of the Cro-magnon feature, on the whole perhaps the skull is of the Mediterranean type.

The bones classified in Mr. Tratman's report as skeletons C and D are not here described. I have modelled this report on that made by Sir Arthur Keith on the skulls found in Aveline's Hole to the *Proceedings of the Spelæological Society* for 1922-23 [Vo. III. No. I.] as the report in question seems to me to meet in a brief and adequate way the important points in an enquiry of this kind. I would finally acknowledge the kindly help he has given me.

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