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On the Discovery of Platycnemic Men in Denbighshire

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A verbal abstract of the following paper was then given by the authors :—

**XL. *On the discovery of PLATYCNEMIC MEN in DENBIGHSHIRE.***

By W. BOYD DAWKINS, Esq., F.R.S.; *with NOTES on the HUMAN REMAINS*, by PROFESSOR BUSK, F.R.S.

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I. § 1. *Introduction.*—In the following essay I have described the discoveries made in 1869 in a refuse-heap, a tumulus, and two bone-caves in Denbighshire, which establish the fact that platycnemism was manifested by the ancient dwellers in North Wales, as well as by those who buried their dead in the cave of Cro-magnon, in France, and who are found also in the caves of Gibraltar. Professor Busk has been good enough to bring his great knowledge to bear on the human remains, and to ascertain the precise value of platycnemism as a race-character.

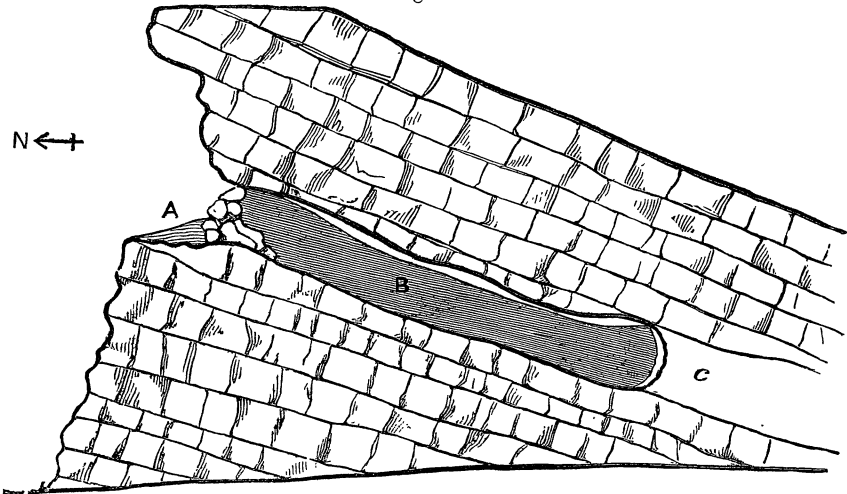
§ 2. *Refuse-heap and Cave at Perthi Chwareu.*—The first hint of the presence of remains of archæological value at Perthi Chwareu, a farm-house about ten miles to the east of Corwen, was afforded by a small box of bones, forwarded through Mr. Charles Darwin; and by the kind assistance of the owner of the property on which they were found, Mrs. Lloyd, of Rhagatt, we were able fully to explore the place from which they were derived. The mountain-limestone which there forms hill and valley consists of thick masses of hard rock, separated by soft beds of shale, and contains large quantities of *Producti*, crinoids, and corals. The strata dip to the south, at an angle of about 1 in 25, and form two parallel ridges with abrupt faces to the north, and separated from each other by a narrow valley passing east and west along the strike. The remains sent by Mr. Darwin were obtained from a space between two strata, near the top of the northern ridge, whence the intervening softer material had been carried away by water. Its maximum height was six inches, and its width twenty feet or more; and it extended in a direction parallel to the bedding of the rock. The bones had evidently

been washed in by the rain, and not carried in by any carnivore. They belong to the following creatures:—

- The Dog (*Canis familiaris*).
- The Fox (*Canis vulpes*).
- The Badger (*Meles taxus*).
- The Pig (*Sus scrofa*).
- The Roe Deer (*Cervus capreolus*).
- The Red Deer (*Cervus elaphus*).
- The Sheep or Goat.
- The Celtic Shorthorn (*Bos longifrons*).
- The Horse (*Equus caballus*).
- The Water-Rat (*Arvicola amphibia*).
- The Hare (*Lepus timidus*).
- The Rabbit (*Lepus cuniculus*).
- The Eagle (sp.?).

Nearly all the bones were broken, and belonged to young animals. Those of the Celtic Shorthorn, of the Sheep or Goat, and of the young Pig were very abundant; while those of the Roe and Red Deer, Hare and Horse, were comparatively rare. The remains of the domestic Dog were rather abundant; and the percentage of young puppies would imply also that they,

Fig. 13.



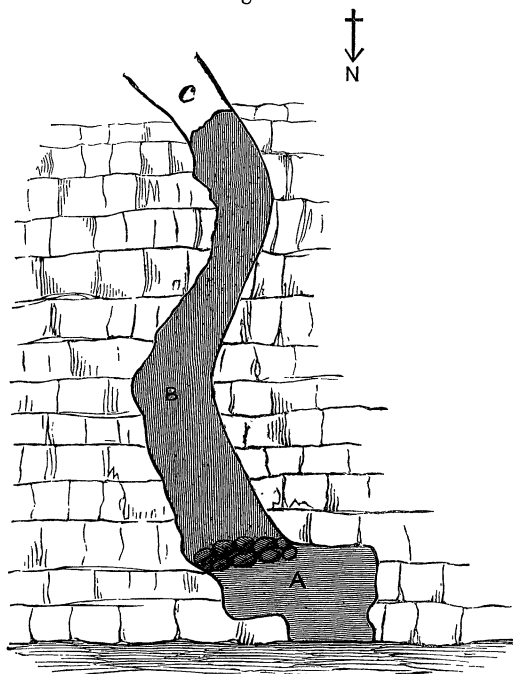
Section of Cave at Perthi Chwareu. Scale 12 feet to 1 inch.

like the other animals, had been used for food. Possibly the Hare may also have been eaten; but its remains were scarce, and belonged to adults. Some of the bones have been gnawed by dogs. The only reasonable cause that can be assigned for the accumulation of the remains of these animals is that the

locality was inhabited by men of pastoral habits but yet to a certain extent dependent on the chase, and that the relics of their food were thrown out to form a refuse-heap. The latter has now altogether disappeared from the surface of the ground, from the action of the rain and other atmospheric causes; while those portions of it which chanced to be washed into the narrow interspace between the strata have been preserved to mark the spot where it once existed.

There was nothing in the deposit that fixes the date of its accumulation. It may have been of the stone, bronze, or iron age; but from the presence of the Sheep or Goat, Short-horned Ox and Dog, it certainly does not date so far back as the epoch of the Reindeer, Mammoth, Rhinoceros, and Cave-Hyæna.

Fig. 14.



Plan of Cave at Perthi Chwareu.

The presence of the Celtic Shorthorn throws no light upon the antiquity, because for centuries after it had ceased to be the domestic breed in England it remained in Wales, and still lives in the small black Welsh cattle, that are lineal descendants of those which furnished beef to the Roman coloni. While this

work was in progress, we selected a small hollow in the precipitous side of the southern ridge, that formed a kind of rock shelter (figs. 13 & 14, A) overlooking the valley, and that seemed to be a likely place for the abode of man or of wild animals. On setting the men to work, in a few minutes we began to discover the remains of Dog, Marten-cat, Fox, Badger, Sheep or Goat, Celtic Shorthorn, Roe Deer and Red Deer, Horse, and large Birds. Mixed with these, as we proceeded, we began to find human bones between and underneath large masses of rock that were completely covered up with red silt and sand. As these were cleared away we gradually realized that we were on the threshold of an ossiferous cave (figs. 13 & 14, B). In the small space then excavated, human remains belonging to no fewer than five individuals were found. Subsequently the work was carried on by Mrs. Lloyd, under the careful supervision of Mr. Reid. The rock-shelter narrowed into a "tunnel cave" that penetrated the rocks in a line parallel to the bedding, and, roughly speaking, at right angles to the valley, having a width varying from 3 feet 4 inches to 5 feet 6 inches, and a height from 3 feet 4 inches to 4 feet 6 inches.

The entrance was completely blocked up with red earth and loose stones, the latter apparently having been placed there by design. The inside of the cave was filled with red earth and sand to within about a foot of the roof. The remains were found for the most part on or near the top, but in some cases they were deep down. One human skull, for example, was found 6 inches only above the rocky floor. The human bones were associated with those of the animals of which a list has been given, and occurred in little confused heaps. One human femur was in a perpendicular position. The account of the continuation of the digging we give almost in the words of Mrs. Lloyd. On the second day, after an hour's work, a human skull was found near the roof of the cave, resting on a femur; then 11 feet explored brought to light a large quantity of human bones, including 9 femurs. The third and fourth days were devoted to clearing out the cave up to this point, and to excavating about 4 feet further in, or 15 from the entrance. During this work two teeth of a horse were found resting on the floor near the entrance, and nine more about 10 feet within the cave, also a Boar's tusk of remarkable size, and, close by, a mussel- and a cockle-shell, and a valve of *Mya truncata*, along with a quantity of human and other bones, including five skulls, more or less perfect, and many fragments. All the skulls were found between the 10th and 15th feet from the entrance. During the fifth and sixth days the work was superintended by Mr. Reid, who entirely cleared the cave for about 13 feet further: the first

8 feet yielded a small quantity of human and other bones, including the perfect skull of a Marten-cat and the incisor of a Wild Boar. The only implement found in the cave, a broken flint flake, occurred here, and a nearly perfect human skull, lying face downwards, with the pelvis adhering to one side. The last 5 feet furnished only two bones, both of the Short-horned Ox.

Small bits of charcoal occurred throughout the cave, and a great many rounded pebbles from the boulder-clay of the neighbourhood. Within the first 10 feet there were bits of modern glazed pottery and small pieces of coal; and near the end of the excavation a small scrap of iron was found, which seems to be a mere splinter broken from one of the tools of the workmen. The coal and the modern pottery have most likely been conveyed into the cave by the wash of the rain, or possibly by the burrowing of the rabbits which abound in fissures of the rock immediately above the cave. The fact that the splinter of iron is scarcely oxidized implies that it had not been in the cave very long.

The human remains belong for the most part to very young or adolescent individuals, from the small infant to youths of twenty-one. Some, however, belonged to men in the prime of life. All the teeth that had been used were ground perfectly flat. The skulls belong to that type which Prof. Huxley terms the river-bed skull. Some of the *tibiæ* present one remarkable peculiarity, now for the first time recognized in any British leg-bone. They are very much compressed in a plane parallel to the median line, and indicate the platycnemic character of the people to whom they belonged. A somewhat similar character has been recognized in remains from the caves of France and Gibraltar, and is presented also by the only fragment of bone which has been obtained by Mr. Foote from the laterite of India, along with stone implements\*.

The remains of the animals in the cave belong to the same species as those which have been before mentioned from the *débris* of the kitchen-heap, and are precisely in the same fragmentary condition. From their close intermixture with the human remains, they probably were deposited with them at the same time. They may, however, be the result of a previous occupation.

How can we account for the presence of the human remains in the cave? Unlike those of the other animals, they are for the most part perfect. They exhibit no marks of scraping or cutting, and therefore cannot be viewed as the relics of the feasts of cannibals. The only satisfactory explanation is that the cave

\* International Congress of Prehistoric Archæology, Norwich volume, 1868, p. 224.

was used as a burial-place. That the dead were not interred at one time is conclusively proved by the fact that the number of individuals was too large to be accommodated in so small a space. They must therefore have been buried at different times. Moreover they were certainly not buried at full length. From the juxtaposition of one of the skulls to the pelvis, the vertical position of a femur, and the confused heaps in which the human bones lay, the corpses must have been buried in a sitting posture, as in the chambered tomb of Cefn.

The flake of flint is an uncertain guide to the antiquity of the burial-place; for the use of flint for solemn purposes lingered on long after that material had been driven out of use in every-day life by bronze and iron. In Egypt, for instance, the first incision in a corpse to be embalmed was made with a sharp flint, although both bronze and iron were in use at the time. In the foundation of the king's palace at Khorsabad flint flakes were deposited, probably for some superstitious reason. In a Romano-British grave at Hardham, in Sussex, a flint flake was discovered. In all these cases a great mistake would manifestly be made were the Egyptians, Assyrians, and Roman provincials in Britain relegated to the stone age. Flint flakes were employed, moreover, for cutting-purposes long after the introduction of bronze, and very possibly after the introduction of iron. The occurrence, therefore, of the flint flake in the cave at Perthi Chwareu does not of itself imply that the people who used it are of the stone age. But nevertheless, when the interment is brought into relation with others, we shall see that it may be referred to the Neolithic age. It is very probable that the folk who ate the animals found in the *débris* of the refuse-heap were the same as those who used the cave as a burial-place. The identity of animal remains in both is strongly in favour of such a view.

§ 3. *The Cefn Cave.*—In the collection of fossil bones from the caves of Cefn, near St. Asaph, in the possession of Mrs. Williams-Wynn, there is a human skull and lower jaw along with platycnemic limb-bones. They were found mingled with the bones of Sheep or Goat, Pig, Fox, and Badger, and cut antlers of the Red Deer, inside the lower entrance of the cave in which the extinct postglacial animals were found in the valley of the Elwy. Four flint flakes also were found along with them. The skull in its general features strongly resembles those found in the Perthi-Chwareu cave, and presents a cephalic index of  $\cdot770$ , which comes within the limits of the extreme forms from that locality\*. Mr. Busk, however, as will be seen

\* The mean cephalic index of the Perthi-Chwareu skulls is  $\cdot765$ , while this is  $\cdot770$ .

in his account of this skull, because of its low altitudinal index, ·702, as compared with ·710 of the lowest Perthi-Chwareu skull, is inclined to view it as of a different type. The conditions, on the other hand, under which it was found appear to me to be circumstantial evidence that the interment is of the same relative age as that of Perthi Chwareu. Both were in caves: in both the remains of the same domestic and wild animals were found in the same fragmentary condition. Flint flakes also occurred in both; and what is more important, the platyenic limb-bones in both imply a somewhat similar mode of life in the people to whom they belonged. This body of evidence in favour of the interments having been made by the same race of men who lived some time in Denbighshire seems to me of greater weight than that to the contrary afforded by the difference of ·008 in the altitudinal indices of the skulls. After a comparison of the carefully prepared measurements of the crania published in the 'Crania Britannica' with those published elsewhere, I cannot resist the conviction that if similar modes of life and of burial in Britain imply an identity of race, cranial variation within the limits of that race is by no means very small. Absolute purity of blood in an island so near the Continent as Britain cannot be looked for; and therefore the result of isolation from other races, such as that presented by the Australian, cannot be obtained. It is therefore very probable that some of the variations may be accounted for by the blending of different ethnical elements in one race. I am consequently inclined to view the interments in these two caves as having been made by the same people, in spite of the small cranial difference manifested by the Cefn skull.

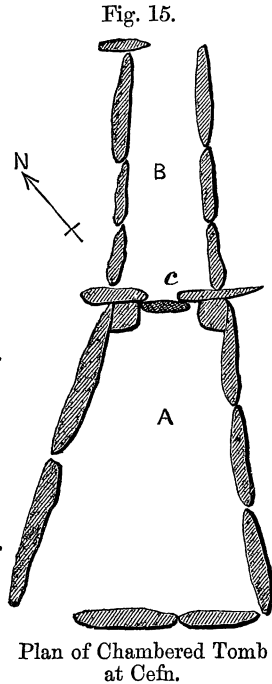
§ 4. *Chambered Tomb at Cefn*.—The systematic exploration of the chambered tomb at Cefn was begun in the spring of 1869, under the care of the Rev. D. R. Thomas, to whom I am indebted for the following account:—

"On the 23rd of January 1869, one of our farmers, who had been busy carting away stones from a part of a field where until lately there had been some old trees growing, came upon some bones, and, conceiving them to be human, sent me a message to that effect. Hastening to the spot, I saw at once that he had come upon an old cistvaen, and that it was from within it, after breaking one of the upright stones which formed its base, that the bones had been extracted. The stones of the surrounding cairn had been removed at different times for the mending of the roads. The farmer at once consented to let it remain as it was; and Mrs. Williams-Wynn, on whose property it was found, being from home, allowed it to be opened in the presence of Mr. Williams, of Rhydycroesau, who fortunately was my guest at the time. This was done on the 26th. First clearing away the loose stones from above and around it, we found it to be in the form of an isosceles triangle, with the apex pointing north-east, the base measuring four feet on the inside, and formed of two large upright stones standing some two feet out of the ground, and the sides measuring about nine feet each and consisting of



three upright stones. The whole of the interior was filled up with fine sand ; and capstones seem to have been placed over the whole, but had been broken or removed. Beginning carefully to remove the sand near the base, where the bones had first been found, we discovered several skulls, jaws, teeth, and other bones, the skulls in a very fragmentary condition, but the teeth and bones wonderfully preserved. The teeth seem to be those of young people ; but some of them are ground down to a smooth surface, as if from eating hard substances, such as corn. Judging from the position of the bones, the mode of burial would seem to have been, first, to make the cistvaen, then to put in the bodies, with their backs or heads to the sides, and after that to fill the whole up with fine sand, finishing off with capstones and cairn. The name of the field is Tyddyn Bleiddyn ; and one of the workmen remembers hearing a former tenant, a very old man, speak of the Carnedd in it as a nuisance. Hundreds of loads of stones (lime) have been carted away lately, and many more some years ago, when stones as large as any now exposed were broken up, and perhaps a similar cistvaen destroyed, as there is a sort of tradition that there were two burial-places there."

Subsequently, in the autumn, the work was resumed, and the chamber *A* (fig. 15) fully cleared out. At the point *c* it was partially shut off from the passage *B* by a slab of stone 18 inches high. The passage passed from the chamber in a northern direction, and was 6 feet long by 2 wide. The chamber gradually narrowed towards the passage, being 5 feet wide at its broad end, and 9 feet long. In the passage, as well as in the chamber, there were human bones belonging to individuals who had been buried in a crouching posture. Unfortunately, as the remains have been scattered, it is impossible to ascertain the exact number of the burials. I have, however, restored one skull and have examined seven frontal bones, and other remains, which indicate that there were at least twelve persons, varying in age from infancy to full prime, buried in this tomb. In addition to these, there is a large box of bones in the possession of the Rev. D. R. Thomas, as well as other remains in other hands. But although the exact number of bodies interred cannot be made out, there is full proof that there were too many to have been deposited at one time in so small a cubic area ; and therefore they must have been deposited at different times, as in the Perthi-Chwareu cave. Some of the *tibiae* are of the platynemic type. There were no remains of



either wild or domestic animals; and the only foreign object was a small slightly chipped flint pebble. From the remarkable conformation of the nasal bones of some of the skulls, it would seem likely that the burial-place belonged to one family; but, for a reason stated by Professor Busk, this is by no means a certain inference.

The plan of the chamber and passage (fig. 15) corresponds with that of the long barrow of West Kennet, figured in the 'Crania Britannica,' and with that of the cromlech of Le Creux des Féés, Guernsey, described by Lieut. Oliver\*. In the former of these the corpses were buried in a crouching posture, along with flint scrapers and fragments of rude pottery. In the latter the original contents have disappeared. To speak in general terms, the chamber and passage belong to the class of tombs which Dr. Thurnham names Long Barrows, and Prof. Nilsson "Ganggräber," and which are found in Scandinavia and France, as well as in Britain. And it is worthy of note that the partial insulation of the chamber A (fig. 15) from the passage B by a slab (c), which does not reach up to the height of the walls, is to be seen also in like tombs both in Guernsey and in Brittany.

§ 5. *Correlation of Chambered Tomb with Interments in Cefn and Perthi-Chwareu Caves.*—Out of the large number of fragments at my disposal, I have only been able to restore one cranium sufficiently to obtain the measurements necessary for comparison. If the last row of Professor Busk's Table I. (p. 452) be compared with the rest, it will be seen that this cranium is precisely of the same character as those from the caves of Cefn and Perthi Chwareu. This fact, coupled with the occurrence of platycnemic *tibiae* and the crouching posture of the dead, would imply that all these three interments were made by one and the same race of men, although the remains of the animals found in the latter were not found also in the tumulus. To explain this difference, I must fall back on the hypothesis of the origin of chambered tombs invented by Prof. Nilsson. Chambered tombs, according to that great authority, were originally the subterranean houses in which the deceased lived, and there the dead were laid literally each "in his own house." And long after this mode of habitation had been given up in Britain, the plan of the huts was probably preserved in that of the sepulchral chamber, in obedience to that strong principle of conservatism which has always been manifested in religious and solemn ceremonial. And it is very likely that the people who no longer built huts for themselves after the fashion of the dwellers within the

\* Journal of the Ethnological Society of London, vol. ii., new series, no. 1, April 1870, p. 45, pl. vii. fig. 3.

arctic circle, built tumuli for their dead in accordance with an ancient practice. The absence of the remains of animals in the chambered tomb at Cefn may easily be explained by the fact of its never having been a dwelling, while the remains of the caves of Cefn and Perthi Chwareu are probably evidence of occupation. And thus the idea of the dead being interred in his dwelling-place would be the cause of burial both in the caves and in the tumulus; and it is not at all strange that people of the same race should have buried their dead in caves as well as in chambered tombs.

§ 6. *Relative Age.*—The question naturally arises, When did this ancient platycnemic race of men live in Denbighshire? Were they stone-folk or bronze-folk, or users of iron? A decisive answer cannot be given; but the circumstantial evidence points very strongly in one direction. In the first place no traces of metal (to pass over one *unoxidized* fragment of iron) were found in the caves of the tumulus, but merely fragments of flint. This fact *per se* is merely negative; and, as I have stated before, of no very high significance. When, however, it is viewed in connexion with the crouching posture of the corpse in all three interments, it implies the high probability of all three being of the Neolithic age. The platycnemicism also is a character that has not been recognized in any human remains later than that age. This conclusion is considerably strengthened by an appeal to the skulls. They all agree in shape with those described by Professor Huxley as river-bed skulls\*, and with some of those given in Tables i. and ii. of the 'Crania Britannica,' as "ancient British." As examples † I may quote from the latter work:—the skull found in a kistvaen in Phoenix Park, Dublin, along with a shell necklace, a bone pin and pottery; that from a barrow on Acklam Wold, Yorkshire, in which the corpse was buried in a crouching posture and accompanied by flint flakes, coarse pottery, and bone pins; and that from Haytop Barrow, in Derbyshire, which presented precisely the same condition of burial as at Acklam, excepting that instead of bone pins there were jet beads. The skull found in the chambered barrow at Plas Heaton, Denbighshire, in which the dead were buried in the crouching posture, is also of the same character. In all these cases, the identity of cranial form,

\* Compare the Muskham and Blackwater skulls with those under notice, the one having a cephalic index of .77, the other .78. See 'Geologist,' 1862, p. 201.

† A comparison of the measurements in the 'Crania Britannica' with those of the skulls from Denbighshire shows a remarkable similarity of form in a great many cases. I have not given the measurements in the latter work, because they would needlessly add to the length of this essay.

coupled with similar modes of interment, implies an identity of race. Many other instances might be quoted from the 'Crania Britannica' to show that the skulls, with a few exceptions, belong to the neolithic age; and those few exceptions belong to the age of bronze. On the whole, therefore, it may be inferred, with a high degree of probability, that the platycnemismen who buried their dead in the tumuli and caves of Denbighshire were of the neolithic age. I have not the slightest doubt that platycnemism will be recognized in remains from chambered tombs in many parts of Britain, and that eventually the men found in Denbighshire will be proved to belong to a race that spread over Britain and Ireland, and a large area on the Continent.

*Notes on the Human Remains.* By Professor BUSK, F.R.S.

II. § 1. *Introduction.*—The remains discovered in the sepulchral cave at Perthi Chwareu, according to a list furnished by Mr. Boyd Dawkins, are as under; but, I believe, this catalogue does not include all that were found in the locality.

1. Eleven more or less perfect skulls, some, however, represented by mere fragments.
2. Twelve mandibles.
3. Seven arm-bones or *humeri*—four right, and three left.
4. Six *ulnæ*.
5. Twenty-two thigh-bones, including five pairs, five odd ones of the right side, and seven of the left; and amongst them are three of very young children.
6. Seventeen *tibiæ* or leg-bones, nine of the right and eight of the left side, and, apparently none of them in pairs; so that there must probably have been a good many more.
7. Eight *astragali*.
8. Nine *calcaneæ* or heel-bones.

The number of individuals, therefore, whose relics were deposited in this cavern could not have been less than sixteen, and may have been many more. They appear to have been of all ages and of both sexes.

Of the other bones of the skeleton, of which there must have been abundance, I have received no information.

In the Cefn cave there were discovered:—

1. One mandible.
2. One *humerus*.
3. Two *ulnæ*.
4. A pair of thigh-bones.
5. A pair of leg-bones.

- And in the tumulus:—1. Portions of seven skulls.  
 2. Two right *humeri*.  
 3. A pair of *ulnæ*.  
 4. A right *femur*.

From St. Asaph the only bone that has come under my observation is a single *calvaria*.

§2. *Description of the bones from the cavern at Perthi Chwareu.*

a. *General Condition*.—In general condition, as regards colour and texture, these bones present some, but no very striking, differences; on the whole they are much alike, though it might be supposed that some have lain longer in the ground than the others. One or two among them (but these are apparently the younger bones) are fragile; the majority, however, are as firm as common churchyard bones, and some have quite the natural degree of hardness. They are of a lightish yellow colour, do not adhere to the tongue, and afford scarcely any earthy smell when breathed upon or moistened: only one among them presents any staining from oxide of manganese; and this exists in diffuse blotches, and is not at all of the dendritic form. Many are partially covered with a very thin film of crystalline carbonate of lime.

b. *The Skulls*.—Of these only three of the more perfect have come under my observation. These alone will form the subject of what I have to remark on this portion of the skeleton. But in the subjoined Table I. (p. 452) I have given, together with the dimensions of these three, those of five others which have been furnished to me by Mr. Dawkins.

In the specimen No. 1 (Pl. XXXI. figs. 1, 2, 3) the entire facial part is wanting, together with the whole of the base and a great part of one side of the *calvaria*. The skull is of an oval form, symmetrical, with a rather prominent occiput. The region of the vertex is slightly and evenly arched; and the forehead, though not high, is vertical, and slightly compressed on the sides. The sutures are all open and finely serrated. The frontal sinuses are distinct though small. The supraorbital ridge is thin but rather prominent towards the external angular process. The mastoid processes are very large, and the digastric *fossa* remarkably deep. The occipital spine is very prominent, as are the lateral ridges. The temporal ridges, also, and, in short, all the muscular impressions are very strongly marked.

The skull is evidently that of a powerful, muscular man, in the prime of life, and apparently of robust but not coarse build\*.

\* Amongst the Keiss crania described by Prof. Huxley, this most closely resembles his No. 5; but it is of the same type as No. 3 and No. 7, and not very far from that of the Towyn-y-Capel cranium, through which the transition to the Mewslade form (Nat. Hist. Rev. vol. i. p. 174, pl. v.) is very easy.

TABLE I.—Dimensions of Perthi-Chivareu Skulls.

No.	Length.	Breadth.	Height.	Least frontal breadth.	Greatest frontal breadth.	Parietal breadth.	Occipital breadth.	Zygomatic breadth.	Frontal radius.	Vertical radius.	Parietal radius.	Occipital radius.	Maxillary radius.	Fronto-nasal radius.	Circumference.	Longitudinal arc.	(a) Frontal.	(b) Parietal.	(c) Occipital.	Frontal transverse arc.	Parietal transverse arc.	Occipital transverse arc.	Latitudinal or cephalic index.	Altitudinal index.
1.	7.5	5.7	...	4.0	5.0	5.5	4.6	...	...	...	...	...	...	...	21.2	...	5.0	5.5	...	12.0	13.0	14.0	12.0	...
2.	7.6	5.7	5.4	4.0	4.9	5.5	4.8	...	4.9	5.0	5.2	4.4	...	3.7	21.6	15.9	5.5	5.6	4.8	13.0	13.5	13.8	12.4	.750
3.	6.5	5.2	5.5	3.4	4.5	5.1	4.1	3.9	4.2	4.5	4.7	4.1	3.2	3.0	19.0	14.7	4.9	5.3	4.5	11.6	12.45	13.4	11.2	.846
4.	7.4	5.8	5.8	3.9	5.0	5.8	4.4	4.7	4.4	4.6	4.7	4.3	3.9	3.6	23.5	16.9	5.0	5.0	6?	11.0	13.0	14.0	12.0	.797
5.	6.7	5.0	...	3.5	4.4	5.4	4.1	...	4.0	4.3	4.6	4.0	...	...	18.5	...	4.4	5.2	...	11.0	12.5	13.4	...	.746
6.	6.8	5.4	...	3.6	4.3	5.3	4.0	...	4.3	4.5	4.8	4.2	...	...	19.8	14.6	4.8	5.3	4.5	14.0	12.0	13.0	11.0	.794
7.	...	5.5	...	...	...	5.3	...	...	...	...	4.6	4.0	...	...	...	...	...	...	...	...	...	...	...	...
8.	7.0	5.2	...	3.6	4.4	5.2	4.1	...	4.1	4.3	4.5	4.1	...	3.4	19.5	...	4.5	4.9	4.8	11.0	11.5	13.0	12.0	.743
Mean ....	7.07	5.5	5.6	3.8	4.64	5.4	4.3	...	4.3	4.5	4.7	4.2	3.5	3.42	20.0	15.3	4.9	5.2	5.0	12.0	12.5	13.5	11.8	.765*
Cefn and St. Asaph.	7.4	5.7	5.2	3.8	4.7	5.5	4.8	...	4.6	4.6	4.7	4.0	...	3.8	21.0	15.1	5.0	5.5	4.6	12.2	12.8	13.8	12.0	.770
Cefn Tunnulus.	7.38	5.65	...	3.6	4.5	5.55	...	...	4.5	4.6	4.9	4.5	...	3.6	...	...	5.2	5.2	...	12.4	12.4	12.8	10.9	.765

\* In taking this mean, the cephalic index of the young skull, No. 3, is omitted; if included, the mean would be .785.

Skull No. 2 (Pl. XXXI. figs. 4, 5, 6) is that of an adult male, presenting as nearly as possible the same dimensions, form, and other characters as that above described, except that the bone is somewhat thicker and heavier. The muscular ridges and impressions are even more strongly developed than in the former, and especially the temporal ridges immediately above the external angular processes. The left *maxilla* remains loosely attached, containing the two bicuspid teeth, which are of small size, and worn quite flat, and to such an extent as to render it probable that the man was somewhat advanced in years, although none of the sutures are closed. The face is strictly orthognathous, and the skull dolichocephalic and aphanozygous\*.

Skull No. 3 is the entire *calvaria* of a very young individual. The two milk-molars remain on either side; and behind them the first true molar is fully out but not in the least worn. The incisors and canines have fallen out. The former, from the size of the *alveoli*, were of the permanent set, but not the latter. The age of the individual, therefore, may be estimated as about seven or eight.

The only point worthy of notice in this *calvaria* is the existence of a well-marked depression across the middle of the occipital bone, which appears exactly as if it had been caused by the constriction of a bandage. The depression barely extends beyond the lambdoidal suture into the parietals. It requires, perhaps, some imagination to perceive the slight traces of a corresponding depression in the fore part of the skull; but I think a faint depression may be there perceived on careful inspection. The effect of the occipital constriction, if it be such, reminds one of some of the deformed French skulls described by M. Foville † and by M. Gosse ‡. In all other respects the skull is well formed and symmetrical. It is strictly orthognathous, and of a broad oval shape.

If deformed artificially, it would come under the head of "tête annulaire" of M. Gosse; and Dr. Foville shows that this kind of deformation arises from the popular custom of applying a kind of bandage round the head of the new-born infant, which, passing over the anterior fontanelle, descends obliquely, and is crossed behind the occiput and brought back and tied in front. This band, or "serre-tête," he states, is worn during the first

\* The forms most closely resembling this skull amongst those from Keiss are Nos. 3 & 7.

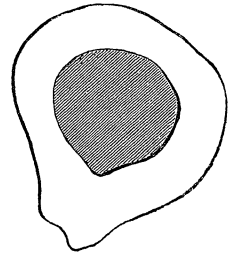
† Déformation du crâne résultant de la méthode la plus générale de couvrir la tête des enfans. Paris, 1834.

‡ Essai sur les déformations artificielles du crâne, par. L. A. Gosse, de Genève. Paris, 1855.

year, and for a longer period by female children than by males. Dr. Lunier gives pretty nearly the same account, adding, however, further particulars\*. It may be remarked, also, that the Berbers, who formed great part of the Moorish forces that invaded Europe in the eighth, ninth, and tenth centuries, used to elongate the skull posteriorly and flatten the forehead.

c. *Thigh-bones*.—I have had an opportunity of examining only a single perfect specimen of the thigh-bones. This is an entire bone, 18·2 inches long, with a least circumference of 3·5. Its perimetral index† consequently is ·192, which is about the normal standard. The *linea aspera*, at the middle of the bone more especially, is very prominent, so that the bone may be termed, in some degree, carinated (fig. 16). The shaft is straight; and the chief peculiarities, besides the prominent *linea aspera*, which it presents are (1) an unusual compression in the antero-posterior direction in the upper part, for the extent of about three inches below the *trochanter minor*. At about two inches below that process, or at a point corresponding with the lower part of the insertion of the *pectineus* muscle, the shaft measures ·9 × 1·45, whilst in three other ordinary *femora* with which I have compared it, the bone at the corresponding part measures ·9 × 1·20, ·9 × 1·10, ·9 × 1·15, showing that the Perthi-Chwareu *femur* is unusually expanded laterally in the upper part of the shaft. The consequence is to give the bone at that part a peculiar aspect, which is especially seen in an acute internal angle, and one rather less acute externally, instead of the usually rounded internal and external borders. (2). The distal extremity appears to be rather disproportionately large as compared with a recent well-formed bone of the same length, the condyles measuring 2·5 × 3·3 instead of 2·4 × 3·05; and the lower part of the shaft is also somewhat expanded. But the chief peculiarity, as above remarked, is the compression of the shaft in the upper part. Besides the *linea aspera*, all the muscular impressions are strongly marked, and especially those for the insertion of the *gluteus maximus* and the *trochanter minor*. The neck is long and very oblique, and the head, upon which only a small portion of the articular surface is left, must have had a diameter of about 1·9.

Fig. 16.



\* "Recherches sur quelques déformations du crâne observées dans le Département des Deux-Sèvres" (Ann. Médico-psychologique). Paris, 1852.

† This index is obtained by dividing the least circumference by the length of the bone.



Mr. W. B. Dawkins has furnished me with the principal dimensions of several other *femora*, varying in length from 16 to 18 inches, and affording an average length of about 17, corresponding to a mean height of the individuals of about 5 ft. 4 in. to 5 ft. 5 in., the tallest being perhaps 5 ft. 6 in., and the shortest about 5 ft. 2 in., no doubt a woman. The mean perimetral index of the eight *femora* is .186, which shows, in comparison with the usual thickness of well-formed male thigh-bones of the present day, a certain degree of slenderness. That this is not altogether owing to the circumstance that the bones include those of perhaps more than one female, is proved by the fact that in no instance does the perimetral index exceed .192, and in one thigh-bone, 18''·2 long, it is not more, if the circumference is correctly given, than .178, the normal perimetral index for the adult male *femur* in this country being taken as about .194.

d. *Tibiæ*.—Of the leg-bones brought under my notice, five are entire, and five more or less defective. The principal dimensions and proportions of these bones, so far as they could be taken, are given in the subjoined Table.

TABLE II.—Dimensions &c. of Perthi-Chwareu Tibiæ.

No.	Length.	Transverse diameter, proximal end.	Least circumference.	Antero-posterior diameter and transverse diameter of shaft.	Perimetral index.	Latitudinal index.
1.	14·9	2·8	3·2	140 × 80	·214	·571
2.	13·7	2·7	2·9	120 × 75	·211	·625
3.	13·2	3·0	3·0	135 × 80	·227	·592
4.	12·9	2·5	2·5	125 × 70	·193	·541
5.	12·9	2·5	2·75	100 × 70	·211	·700
6.	...	...	...	135 × 90	...	·666
7.	...	...	...	140 × 90	...	·642
8.	...	...	...	130 × 70	...	·538
9.	...	...	...	135 × 85	...	·629
Mean.	13·5	2·7	2·86	129 × 79	·211	·611

In this Table the *length* means the extreme length of the bone as measured from the summit of the spinous process to the point of the internal malleolus; and the numbers in the fifth column represent the antero-posterior and the transverse diameter of the shaft at the point where the popliteal line terminates at the inner border of the bone, which is usually about an inch and a half below the nutritive foramen. The *latitudinal* index represents the relation that the transverse diameter bears to the antero-posterior, and it is employed to indicate, with some degree of precision, the actual amount of compression or flattening of

the shaft as compared with the normal form, which may, so far as my observations show, be taken for the ordinary English tibiae as from .700 to .800, or in the mean at .730, as will be seen in the subjoined Table, which contains the proportions of thirteen leg-bones taken indiscriminately from a drawer in the College of Surgeons.

TABLE III.—Proportions &amp;c. of ordinary Tibiæ.

No.	Length.	Transverse diameter, proximal end.	Least circumference.	Antero-posterior diameter and transverse diameter of shaft.	Perimetral index.	Latitudinal index.
1.	16.7	3.15	3.4	130×100	.203	.769
2.	16.4	3.2	3.5	150×115	.213	.766
3.	15.8	2.95	3.0	120×90	.189	.750
4.	15.5	2.95	2.9	140×90	.122	.642
5.	15.3	2.9	2.8	130×90	.150	.692
6.	15.2	3.0	3.2	140×90	.213	.642
7.	15.0	2.8	2.8	140×90	.187	.642
8.	15.0	2.6	2.8	120×85	.187	.709
9.	15.0	2.6	2.8	120×90	.187	.782
10.	15.5	3.0	2.9	120×95	.193	.791
11.	13.5	2.8	2.9	120×90	.214	.750
12.	13.4	2.75	2.7	120×85	.201	.708
13.	12.8	2.5	2.4	100×85	.187	.850
Mean.	15.1	2.88	2.9	126×91	.188	.730

Comparison of the mean proportions given in the two tables shows:—

(1) That the Perthi-Chwareu leg-bones are, on the whole, shorter, and absolutely smaller in all dimensions but one, viz. in the antero-posterior diameter of the shaft, which, notwithstanding the smaller size generally of the bones, is rather greater (that is to say in the proportion of 129 to 126) than in the ordinary run of English *tibiæ*.

(2) That their perimetral index is greater, showing that, in proportion to their length, the Welsh bones are somewhat thicker, or in the proportion of 211 to 188.

(3) But the most marked difference is seen in the latitudinal index, which in the Perthi-Chwareu bones is .611, and in those of the ordinary type .730, varying in the former case from .538 to .700, and in the latter from .642 to .850; but the last is probably an exceptional case. In accordance with this, we find that the mean transverse diameter of the shaft at the point above indicated is greatly under the usual mark, viz. as 79 to 91.

It is clear, therefore, that the Perthi-Chwareu *tibiæ* are more compressed or flattened than the usual run of modern European *tibiæ*; in other words, they belong to the platymeric type.

As this is, I believe, the first instance in which the occurrence of *tibiæ* of this peculiar conformation has been observed in this country, the circumstance is of some interest, especially with relation to the occurrence of prisca bones of the same type elsewhere.

This peculiar conformation of the *tibia*, to which we gave the name of "platycnemic," was, I believe, first noticed by Dr. Falconer and myself, in 1863, in the human remains procured by Captain Brome from the Genista Cave, on Windmill Hill, Gibraltar, of which an account will be found in the Transactions of the International Congress of Prehistoric Archaeology for the year 1868 (p. 161); and about the same time, or in May 1864, M. Broca\* independently observed the same condition in *tibiæ* procured from the dolmen of Chamant (Oise), and afterwards in bones from the dolmen of Maintenon (Eure-et-Loire). Similar bones have since been noticed in other localities on the Continent, as, for instance, in the diluvium of Montmartre, by M. Eugène Bertrand. But that the peculiarity in question is not common in all the varieties of prisca man belonging to the reindeer period is shown by the fact that it has not been observed in any of the *tibiæ* exhumed by M. Dupont in the Belgian caves.

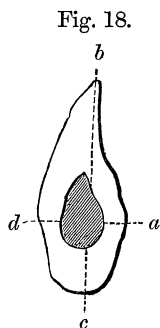
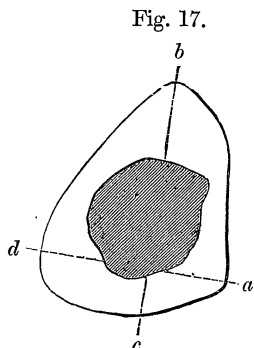
M. Broca's almost exhaustive remarks upon the anatomical, physiological, and pathological relations of this form of *tibia* leave but little to be said under those heads. I would, however, venture to add a few words as to its ethnological significance. But before doing so I would remark that there appear to be two forms of platycnemicism, apparently indicative of some difference in the cause or nature of this aberration from the more usual shape of the bone. To save many words, I subjoin outlines of several well-marked instances of platycnemic bones, all drawn of the natural size and in the same position, the letter (*a*) in each corresponding to the interosseous ridge, and (*b*) to the *crista* or shin.

The line *b c*, drawn through the *crista* and the middle of the posterior surface of the bone, is bisected by another (*a d*), drawn at right angles to it, at the level of the interosseous ridge.

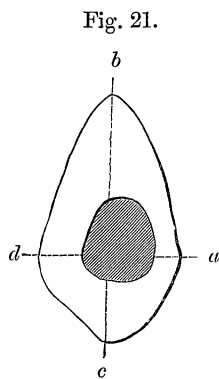
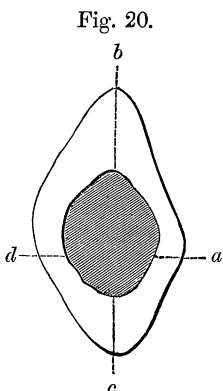
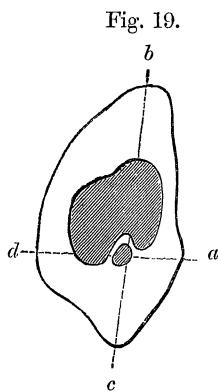
In fig. 17, which represents what may be regarded as a normal *tibia*, the length of that portion of the antero-posterior line which is behind the transverse line is to that of the anterior as 274 to 1000, whilst in fig. 18, taken from Mr. Broca's outline of the Cro-magnon *tibia*, which would seem to represent the

\* Mémoires sur les ossements des Eyzies : Paris, 1868. "On the Human Skulls and bones found in the cave of Cro-magnon," Reliquiæ Aquitanicæ, p. 97.

extremest degree of platycnemism as yet observed, the propor-



tion in question is as 623 to 1000. Figs. 19, 20, 21 are taken from as many of the Gibraltar *tibiae*\*, in which the proportion

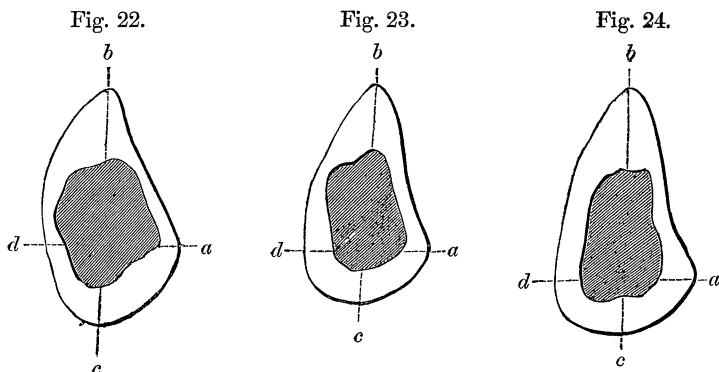


varies from 600 to 523, whilst it will be observed that in figs. 22, 23, 24, taken from the most platycnemic of the Perthi-Chwareu *tibiae*, the proportion in one only differs in any considerable degree from the extreme normal proportion shown in fig. 17; and in this it is as 512 to 1000, whilst in fig. 23, which is nevertheless undoubtedly platycnemic, the proportion is exactly the same as in the most triangular form of bone.

It would seem, therefore, that platycnemism may arise from an unusual antero-posterior expansion of the bone, either in front or behind the level of the interosseous ridge. What this difference may indicate, or of what importance it may be in the

\* But these are by no means extreme instances of the Gibraltar *tibiae*.

consideration of questions relating to platycnemism, I am not prepared to discuss; but as in all probability it is connected with a difference in the cause of the deformation (if it be deformation), I have thought that the observation should be recorded,



and would merely, in addition, remark that, so far as I have noticed, the occasional and not infrequent platycnemism observed in the shin-bones of negroes is what may be termed anterior.

With respect to the ethnological value of the platycnemic *tibia*, I conceive we are as yet very much in the dark. That it is a race-character would seem to me in the highest degree improbable, seeing that it would be difficult to find any other points of resemblance between the Cro-magnon platycnemic men and those whose remains were met with in the Gibraltar caves, although the platycnemism is of the same kind in each; and still less could the former gigantic race be identified with the occupants of the Perthi-Chwareu sepulchre, from whom they differ not only in stature but even more remarkably in cranial conformation.

If, then, platycnemism cannot be regarded as of any value as a race-character, it can *a fortiori* be still less looked upon as indicative of simian tendencies, a notion that M. Broca seems somewhat inclined to favour. It is quite true that the *tibiæ* of the gorilla and of the chimpanzee are, to a certain extent, platycnemic; but it is by no means so much so as the human platycnemic bone. The *tibia* of a male gorilla in the College of Surgeons has a latitudinal index of  $\cdot681$ , and that of a female of  $\cdot650$ , whilst that of the chimpanzee is  $\cdot611$ , or exactly the mean of the Perthi-Chwareu bones. It is needless to insist upon the other marked distinctions between the simian and the human *tibia*; but as regards platycnemism it will be obvious, if we

are disposed to trace it to any genetic descent, that the descendant has, in this respect, at one time far out-simianized the Simiæ.

But this comparison with the anthropoid apes may, perhaps, afford ground for a suggestion respecting some possible connexion between this peculiar form of the *tibia* and the habits of the people amongst whom it has been observed. One great distinction between the human and the simian foot consists in their respective adaptations to totally distinct functions. In the one case it is simply an organ of support and progression; in the other, for the most part, of prehension. This necessarily involves a considerable difference in the proportions, &c. of the muscles by which the greater mobility and adaptability of the foot, and more particularly of the digits, are ensured. Would it not, then, be admissible to inquire how far, at any rate posterior platicnemism may be connected with the greater freedom of motion and general adaptability of the toes enjoyed by those peoples whose feet have not been subjected to the confinement of shoes or other coverings, and who at the same time have been compelled to lead an active existence in a rude and rugged or mountainous and wooded country, where the exigencies of the chase would demand the utmost agility in climbing and otherwise?

Some common cause of this kind would seem to be not improbable; and it would not, perhaps, be difficult to ascertain whether it is a *vera causa* or not. But, with respect to this, observations are at present wanting.

From the foregoing data we may conclude:—

(1) That the Perthi-Chwareu bones belonged to a race characterized by the proportionally rather large dimensions of the cranium, whose form presents nothing very remarkable, and is pretty nearly conformable to several of those found by Mr. Laing in the ancient shell-mounds in Shetland\*.

(2) That this form is distinctly different from that of the Mewslade skull, in which the vertical region is somewhat flattened, as is the case also with several Anglesea crania, which, however, appear to pass, by gradual transition, into the Keiss and Perthi-Chwareu shape, through such a form as that of the Towyn-y-

\* As regards the absolute dimensions of the skulls, it would seem that the Welsh crania stand high in the scale—quite as high as any of the existing races of mankind. I have made the comparison in a rough way in the following manner:—

If the numbers representing the *length*, *breadth*, and *height* of the skull are added together, a number is obtained which will, of course, in some measure, indicate the gross dimensions of the skull. From the rather numerous data furnished by my own Tables of measurements I obtain the results stated in

capel skull figured by Professor Huxley\* ; and the whole of them consequently may be regarded as belonging to the so-called "River-bed skulls" of that author, excepting the Borris cranium, which appears to belong to a different type altogether.

(3) That the people whose remains were found in this locality were of low stature (the mean height, deduced from the lengths of the long bones, being little more than 5 feet), the tallest being 5 ft. 6 in., and the shortest adult not more than 4 ft. 10 in., the intermediate ones being 5 ft. 1 in. and 5 ft. 2 in.

(4) That the proportions of the long bones are rather thick, and the muscular impressions in all are very strongly marked.

(5) That the *tibiæ* are, for the most part, of a much more compressed form than those of the modern English, but that this platycnemicism does not appear to be exactly of the same kind as that which is exhibited in the Gibraltar bones and in those from Cro-magnon (as figured by M. Broca), the difference consisting in the fact that in the two latter instances the bone is expanded backwards behind the transverse plane at the interosseous ridge as much as it is in front of that plane, whilst in the Welsh *tibiæ* it is the anterior portion of the shaft only which is expanded ; or, in other words, the platycnemicism in them is due simply to an absolute compression of the shaft.

§ 3. *Human Remains from the Cefn Tumulus.*—These remains, as submitted to my inspection, consist of :—

(1) Portions of three frontal bones, two of which are nearly complete, and one constituted of little more than the superciliary region.

(2) Two parietals and a left temporal, probably belonging to the same skull as the more mutilated frontal.

the subjoined list, in which the gross mean dimensions of various sets of crania are contrasted.

1. Scandinavian priscan skulls of the Neolithic epoch	18·88
2. Esquimaux and Greenlanders	18·81
3. Perthi-Chwareu skulls	18·65
4. Modern European	18·58
5. Various ancient and priscan skulls	18·55
6. Burmese	18·55
7. Caffres and Zooloos (extratropical negroes)	18·45
8. Derbyshire tumuli	18·42
9. Tasmanian	17·95
10. Hottentot	17·80
11. Negroes (intertropical)	17·67
12. Australian	17·58
13. Bushmen	17·48
14. Veddahs	17·09
15. Andamanese	17·00

\* Notes on the Human Remains from Keiss, p. 85.

(3) Portions of four thigh-bones, two left and two right, one of the latter wanting the proximal, the other both extremities.

We have thus the remains of three individuals from this interment.

1. *The Frontal Bones*.—No. 1. The least transverse diameter, immediately behind the external angular processes is 3''·6, and its greatest (at the coronal suture) about 4''·3. Longitudinal arc 4''·1. The profile outline of the forehead is slightly receding; the frontal sinuses moderately developed; and the supraorbital border thin and acute, whilst the glabellar eminence is large and prominent. The bone is a good deal compressed on the sides, so as to have almost the appearance of having formed part of a cymbecephalic skull. The bone itself is thin, and probably without any *diploë*.

No. 2 presents exactly the same characters, except that the longitudinal arc is greater, being 5''·3. The postorbital or least transverse diameter is 3''·4, and the coronal or greatest 4''·4. The frontal sinuses are well developed; the supraorbital ridge rather prominent, but thin and sharp; the external angular process prominent and thick. Glabellar eminence large and prominent. The nasals remain *in situ*, and project almost, if not quite, horizontally forwards, with a rapid curve at first, and then straight out. The general contour of the bone is exactly like that of No. 1, in which also, although the nasals are wanting, the position of the surface by which they were attached shows that they must in all probability have resembled those of No. 2. The *crista galli* of the ethmoid, which is left *in situ*, is remarkably thick and high.

No. 3 is a portion of a larger and wider bone, the postorbital diameter being at least 4''·0. The frontal sinuses are very large, but distinctly defined, as the remainder of the supraorbital border is not thickened. Owing perhaps to the greater prominence of the sinuses, the glabella does not appear so protuberant as in the other instances. The nasal bones remain and project forwards in the same curious fashion as in No. 2. The frontal crest on the inner surface is remarkably developed, being at least half an inch high, though it is separated by a wide notch from the equally strongly developed *crista galli* of the ethmoid.

No. 4, when the three bones of which it is composed are put together, consists of the greater part of the parietal region of the skull, to which, as before said, the last-described frontal may have belonged. The left parietal is quite perfect; and a considerable portion of the right also remains, together with the entire left temporal; so that a very sufficient estimate of the proportions of the parietal region of the skull can be obtained.

As well as can be estimated, the parietal longitudinal arc, or



length of the sagittal suture, is 5''·2. The vertical transverse arc, or that drawn from one auditory foramen to the other, over the point of junction of the coronal and sagittal sutures, is 12''·2, the parietal 13'', and the occipital 12''·2. In the temporal bone, the external auditory foramen is large, the mastoid process of moderate size, but the digastric fossa is wide and deep. The channels for the middle meningeal artery and its branches are large and deep; and very deep depressions on the sides of the sagittal suture show that the *glandula Pacchioni* must have been greatly developed. The bone is very thin, and with scarcely a trace of *diploë* where its structure is visible. None of the sutures, however, which are strongly serrated, are in the slightest degree closed, although, as I should imagine, the skull must have been that of a man beyond the middle period of life.

2. *The Thigh-bones.*—Two of these bones, which, though much alike, differ sufficiently to show that they did not belong to the same individual, are decidedly carinate.

No. 1 wants the upper and lower ends. The least circumference of the shaft, which is at a point about 3½ inches below the *trochanter minor*, is 3''·2. That process, as well as all the other muscular impressions, is strongly developed; and that for the insertion of the *gluteus maximus* is peculiar in presenting the form of a deep elongated pit instead of a roughened elevation as usual. The antero-posterior and transverse diameters of the shaft, about 1½ inch below the *trochanter minor*, are ·85 × 1·4; and the shaft at this part, like that of the above-described from Perthi Chwareu, presents a rather acute or narrow external and internal border instead of the usual more rounded form. Lower down, the shaft becomes strongly carinate; and, owing to the flattened form of the anterior surface, its transverse section affords a subtriangular figure (fig. 25). The walls, or cortical

Fig. 25.

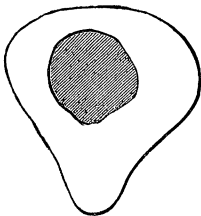
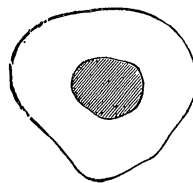


Fig. 26.



substance, are rather thicker than usual, and the substance of the bone is dense and hard.

No. 2 is very similar in character to the foregoing, but is not quite so much compressed in the upper part, measuring ·8 × 1·2. Nevertheless the inner border is very acute, and the outer more

so than in the common form of *femur*. The shaft lower down is not so strongly carinate as it is in the former instance, but is still so in some degree (fig. 26); and the walls (or cortical substance) were still thicker in proportion.

No. 3. A third specimen consists of the lower half, or rather more, of the right *femur*. The least circumference is 3''·2. The bone exhibits no special external characters, and is in no degree carinated. The shaft, at about the middle of its length, is somewhat angular in front; and the pit for the origin of the *popliteus* muscle is deeper and perhaps larger than in most bones of the same size. The texture of the cortical substance is quite eburneous; and it is extremely thick, so that the medullary canal is reduced to a calibre of little more than 0''·25 in its longest diameter. The shaft, however, is straight, and exhibits no other sign whatever of having been affected with *rachitis*. It is, however, a curious circumstance that many of the Gibraltar thigh-bones, most of which are carinate, present the same thickening of the cortical substance (fig. 27).

Fig. 27.

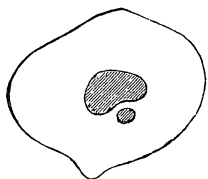
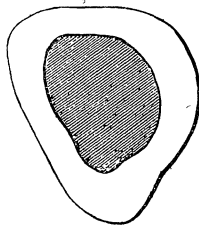


Fig. 28.



No. 4. A fourth specimen is constituted of merely a portion of the shaft, about 12 inches long, and without either extremity. Its least diameter is 3''·3, and its antero-posterior and transverse diameters, at the same point as in the other bones,  $1 \times 1\cdot25$ , or pretty nearly in the usual proportions. Nevertheless the bone, throughout its whole remaining extent, is less rounded on the inner side of the shaft than is usual. The *trochanter minor* is of gigantic size; and the shaft of the bone, about and below the middle, exhibits a subtriangular aspect (fig. 28), though scarcely to be called carinate. The cortical substance is of the normal thickness.

3. *Tibiae*.—No. 1 consists of the greater portion of the left tibia, wanting only the lower extremity. The proximal end measures  $2\cdot9 \times 1\cdot9$ ; and the diameters of the shaft, about the middle, are  $1\cdot2 \times \cdot75$ , giving a latitudinal index of  $\cdot620$ . The shin is remarkably sharp and prominent, and rather curved over to the outer side; and the apparent compression or tendency to

platycnemism may in some measure be referred more to the production in front of the anterior part of the bone than to actual narrowing of the posterior side of the triangle, which is nevertheless rather more rounded than in most cases. The axis of the shaft is quite straight; and the bone has not the least rickety appearance.

No. 2 is also a portion of the left tibia. Both extremities are wanting, and the bone offers nothing worthy of remark. Its least circumference is 2''·65; and the shaft, at the middle, measures 1''·1 × ·65; so that the latitudinal index is about ·640, showing a slight degree of compression. The entire length of the bone may be estimated as rather more than 13 inches, corresponding to a height of about 5 ft. 4 in. or 5 ft. 5 in., so that the subject may be supposed to have been a female.

These remains represent at least four individuals—one probably somewhat aged, another of strong and robust make, and one, in all probability, a woman—in fact, a family group. No correct idea can be formed of the cranial conformation of these persons. In general shape it would seem to correspond with that of the Perthi-Chwareu skulls; but two of them at any rate are of smaller size, if we may judge from the least frontal diameter. The forehead also is perhaps a little more reclined. The most striking feature in two of the specimens, and which appears also to have existed in a third, is the extraordinary projection forwards of the nasal bones. In the present case this may probably be regarded as a family peculiarity; but with reference to it, it should be remembered that M. Broca\* has described a very similar condition in the skull of the "Old man" of Cro-magnon, in whom, he says, "the ridge of the nose, slightly depressed at its base, rises again almost immediately, and advances boldly forward, making a rapid curve, with the concavity directed rather forward and especially upward, so that the lower ends of the *ossa nasi* are placed 18 mm. (·7 inch) in front of a line dropped vertically from the fronto-nasal suture."

The condition of the bones from the Cefn tumulus differs very considerably from that of the remains from Perthi Chwareu. They all have an appearance of much greater antiquity. With the exception of the very dense *femur*, they adhere to the tongue; and they are all deeply stained with manganoous oxide, by which the substance even of the hardest portions is stained to a depth of more than one-eighth of an inch. That this discoloration, which for the most part does not assume the dendritic appearance, is due to manganese and not to any vegetable stain, is quite certain.

\* *l. c.* p. 114.

The form of the skull, so far as it can be ascertained from such imperfect remains, and the rather platycnemid shape of the tibiae, may perhaps justify our supposing that the Cefn bones belong to a cognate race to those whose remains were deposited at Perth Chwareu, or to one which had lived under similar conditions. But the cranial data are hardly sufficient to allow of any satisfactory inference being drawn from them; and as regards the *tibiae*, it has already been pointed out that platycnemism cannot, in the present state of our knowledge, be regarded as an important ethnological character amongst priscan peoples, though it may undoubtedly be considered a character betokening remote antiquity.

§ 4. *Skull from the Cefn Cave near St. Asaph.*—The only specimen of human remains from this locality is a nearly entire *calvaria*, wanting the whole of the face below the superciliary border.

In the middle of the left parietal bone is a small irregular opening, with short radiating lines of fracture proceeding from it; but this appears to have been recently caused, and from the inside.

The bone generally is of a brown colour, and, as regards firmness, in a natural condition; and it does not adhere to the tongue. Judging from its aspect alone, it would not appear to be of any very great antiquity; but as it has lain in a dry soil, and sheltered from rain or moisture, this appearance may be deceptive.

Its dimensions are given in Table I. (*suprà*), from which it will be seen that the cephalic or latitudinal index is  $\cdot770$ , and the altitudinal  $\cdot702$ . It belongs, therefore, to the category of subbrachycephalic skulls of Thurnam and Professor Huxley.

In the side view (*norma lateralis*) (Pl. XXXI. fig. 7), it so closely resembles, except in one respect, that described and figured by Professor Huxley (*l. c.* p. 125, figs. 60, 61) from the bed of the Nore, at Borris, in Ireland, that we can scarcely refuse to recognize a common character between them, which, since in the present case it cannot be looked upon as denoting a mere family relationship, may reasonably be regarded as indicative of some affinity of race. The chief difference observable in this view of the two skulls is the greater development of the frontal sinuses in the Borris *calvaria*. The occipital view (*norma occipitalis*, fig. 8) is also very similar, except that in the Borris skull the greatest width appears to be in the temporal, and in the other in the parietal region. In the Borris skull, also, there is a shallow groove in the course of the sagittal suture, which does not exist in that from St. Asaph.

The Borris skull is said to be of the extraordinary length of

8 inches; and this may account for the much lower cephalic index of the skull, whose absolute width in reality somewhat exceeds the Cefn specimen ( $5''\cdot9$  and  $5''\cdot7$ ), whilst the altitudinal as compared with the latitudinal is but very little greater than it would be were the skulls reduced to the same breadth. They may both, therefore, be regarded as "low," or, as this class of skull might be termed, in the euphonious language of craniologists, "tapinocephalic." One great peculiarity of the Cefn *cranium* (which exists also, but apparently not to quite so great a degree, in the other) is the absolute horizontality of the plane of the subnial portion of the occipital bone. And it is to this flattening that the comparative lowness may perhaps be chiefly attributed.

The sutures, where visible, appear to be open. The mastoid processes and all other muscular impressions are strongly marked.

A third skull of very similar character, except that it is not so much depressed, has come under my observation. It was discovered in a submarine or, rather, subterranean peat-bed or ancient forest, 30 feet below the sea-level, at Sennen, near the Land's End, in Cornwall; and a brief notice and outline figure of it will be found in the 'Natural-History Review' for 1861\*. The Sennen skull has the same elongated form; but it is higher than either the Cefn, St. Asaph, or Borris crania, having an altitudinal index of  $\cdot730$ .

On the whole, these three skulls (*i. e.* that from Borris, Sennen, and St. Asaph) would appear to have a common character, and to be of a different type from either the Perthi-Chwareu or the Newslade form.

As a rule it may, I think, be stated that in all brachycephalic skulls the breadth exceeds the height, whilst the reverse is the case in the dolichocephalic. Individual exceptions are of course not unfrequently met with, more especially among very mixed races, such as the modern English; but I am myself acquainted with only two dolichocephalic *races*, properly so termed, in which the rule does not hold good. These are the Tasmanian (not Australian) and the Bushman.

Any exceptions, therefore, to either rule among ancient and, consequently, less mixed races are worthy of being noted.

As regards modern brachycephalic skulls the law holds almost universally, the only marked exception, except in an individual here and there, being in two Karén skulls, in which, although both decidedly brachycephalic, the respective indices stand as  $\cdot848$  to  $\cdot924$ , and as  $\cdot790$  to  $\cdot842$ .

Among priscan brachycephalic skulls the most remarkable

\* Vol. i. p. 174, pl. v.

and important exceptions I have met with occur among the neolithic crania in the Copenhagen Museum, more than half of which are brachycephalic, and most of the others nearly so, the mean cephalic index of 21 skulls being  $\cdot 790$ , whilst the mean altitudinal is as high as  $\cdot 810$ . In fact, out of 12 skulls whose indices vary from  $\cdot 795$  to  $\cdot 838$ , no fewer than 10 have the latitudinal index less than the altitudinal.

The exceptions to the rule as applied to dolichocephalic skulls also appear to be far more common among the ancient than among the modern, excepting the two races I have above referred to.

In a long list of ancient and prisca skulls, I find the following having the tapinocephalic character:—

	L. ind.	Alt. ind.
1. From the Thames alluvium at Old Ford . . . . .	$\cdot 792$	$\cdot 753$
2. From the same deposit at East Ham . . . . .	$\cdot 774$	$\cdot 690$
3. From the same deposit at Battersea . . . . .	$\cdot 763$	$\cdot 743$
4. From the same deposit at London Bridge . . . . .	$\cdot 762$	$\cdot 611$
5. From tumulus at Stanshope . . . . .	$\cdot 763$	$\cdot 684$
6. A Guanche skull . . . . .	$\cdot 775$	$\cdot 737$
7. A Guanche skull . . . . .	$\cdot 763$	$\cdot 684$
8. Cefn, St. Asaph's . . . . .	$\cdot 770$	$\cdot 702$

The number is but small, it must be confessed, and perhaps hardly sufficient to do more than prove the rule; but still I think it will be found worth inquiry whether a departure from the rule in question was more frequent among the unmixed or little-mixed races of ancient times than it is amongst similarly unmixed races of the present day; and whether consequently its infraction in a considerable number of instances may or may not be indicative of a lower type, as which we are accustomed to regard the Tasmanian and Bushman races.

#### EXPLANATION OF PLATE XXXI.

Figs. 1, 2, 3. Skull (No. 1) from Perthi Chwareu, Denbighshire.

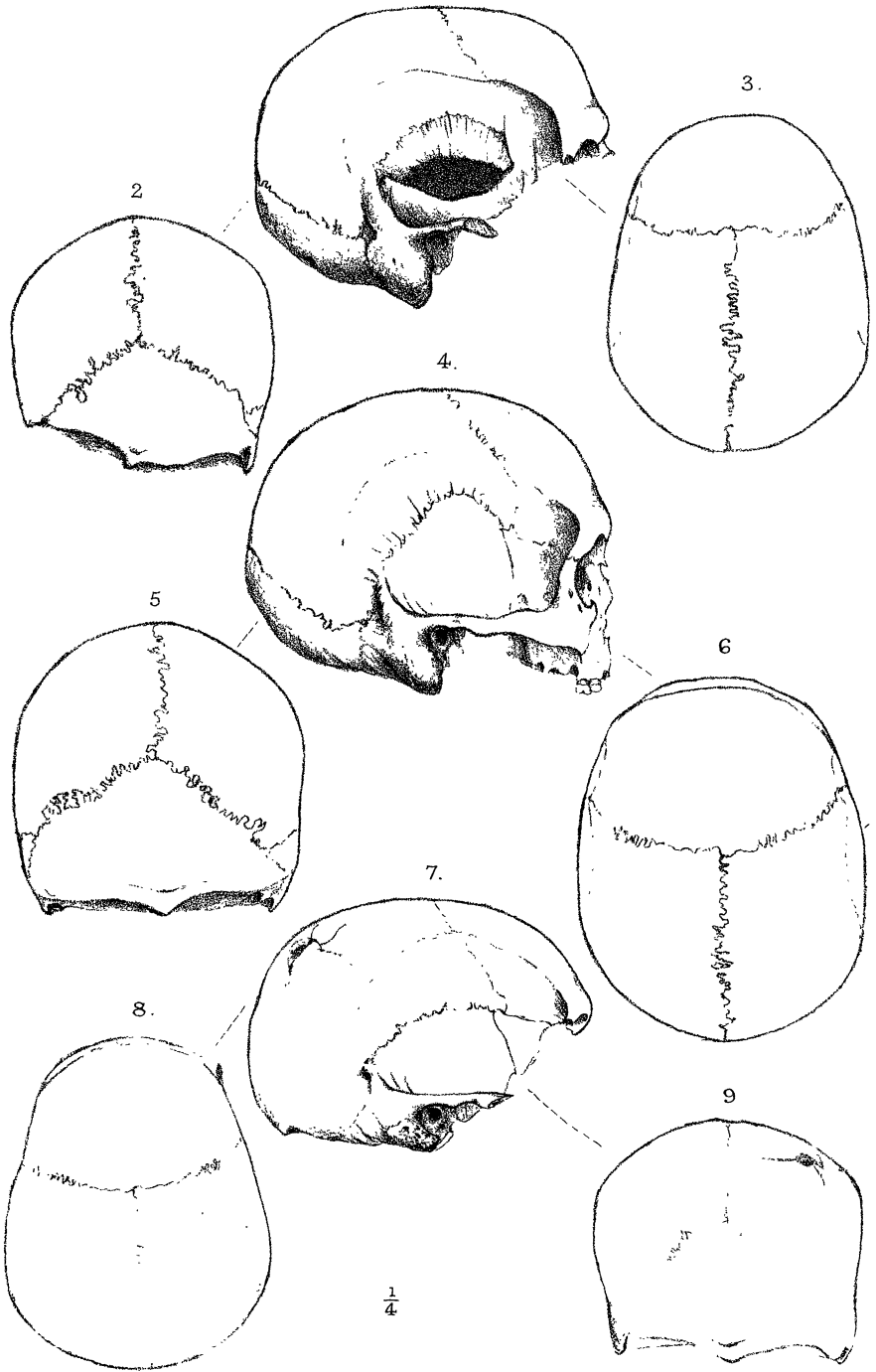
1. *Norma lateralis.*
2. — *occipitalis.*
3. — *verticalis.*

Figs. 4, 5, 6. Skull (No. 2) from Perthi Chwareu.

4. *Norma lateralis.*
5. — *occipitalis.*
6. — *verticalis.*

Figs. 7, 8, 9. Skull from the Cefn Cave, near St. Asaph.

7. *Norma lateralis.*
8. — *occipitalis.*
9. — *verticalis.*



C. B. del. et lith.

W. West & C<sup>o</sup> imp.