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## ON THE LONG BARROW RACE AND ITS RELATIONSHIP TO THE MODERN INHABITANTS OF LONDON.

By F. G. PARSONS, F.R.C.S.

(*Vice-President, Royal Anthropological Institute.*)

IN *Biometrika* (Vol. iii, 1904, p. 242) the late Dr. Macdonell, speaking of the Whitechapel series of skulls, says, "The great average length, the comparative narrowness, and the resulting degree of dolichocephaly are, of course, not the only distinguishing marks of the Whitechapel crania, but they are those which strike the most casual observer. They lead us at once to ask, where can we find anything which in the least corresponds to these English characters? The answer appears to be, only in the Long Barrow crania of this and other countries. They agree with nothing else on the Continent with which we are acquainted. Our crania do not accord with *Anglo-Saxon*, with Romano-British, or with Round Barrow British, but are in general appearance and biometric constants remarkably close to the Long Barrow British."

Then follows a table of comparative measurements in which we find no notice whatever taken of Anglo-Saxon skulls, but the writer goes on to say, "An examination of these characters seems to warrant the statement, which is amply borne out by the method of appreciation, that the crania of Londoners of not more than 200 to 300 years ago indicate that a very large proportion of the inhabitants of London at that time were of a type which can only be described as approaching that of Long Barrow man. Whether the Long Barrow man has remained a denizen of London through all the invasions to which the country has been subject, or whether a process of selection has gone on, the London environment being suited only to the Long Barrow type, we cannot yet say, but when long series of modern English skulls from other places are dealt with, we shall no doubt see our way farther. Meanwhile the only general conclusion which we can reach is the simple but startling one that the London city crania—from Whitechapel to Moorfields—are far more closely allied to the Long Barrow type than to any other. We do not see how to avoid this conclusion; it is hardly needful to say that, if verified, its importance from both the craniological and historical standpoint can hardly be exaggerated. It would mean that at any rate a section—probably a large section—of the English population are not *Anglo-Saxon*, nor Scandinavian, nor even Celtic, but belong to a still earlier race."

This statement appears to be perfectly definite and understandable, but before proceeding to criticize it, I must make another extract from the same paper.

The second is from p. 207, where Dr. Macdonell says, "Judging solely by appearance and range of abnormality—in default of any published measurements—Prof. Pearson suggests that the present series" (the Whitechapel) "and in a still more marked manner the second series referred to above" (the Moorfields crania) "are closer to the Long Barrow British than to the Round Barrow British, Romano-British, Anglo-Saxon, or the Mediæval English which are represented in our museums."

I think that no one can doubt that, if supported by careful evidence, these conclusions of Dr. Macdonell are indeed simple and startling both from a cranio-logical and historical point of view, nor is there any room for doubt that he was directed toward them by the acumen of Prof. Karl Pearson. My only wonder is that, considering their startling though simple character, they have never, as far as I have seen, been discussed during the last sixteen years until I brought the matter up at the recent meeting of the British Association at Cardiff.

There, after giving the evidence which follows in this Paper, I elicited from Prof. Pearson that he was still of opinion that the modern Londoner was more closely related to the Long Barrow man than to the Anglo-Saxon or any other, although Prof. Fleure was of opinion that I had proved, as far as our present knowledge will allow, that he was almost identical with the Anglo-Saxon and differed markedly from the Long Barrow type. This important question, one of first-rate anthropological interest, is therefore still under discussion, and as a first contribution towards its settlement I wish to lay some further information about the Long Barrow folk before the Institute.

It is a surprise to me that so far I have come across no historical criticism of Prof. Pearson's and Dr. Macdonell's claim for the origin of my fellow citizens, nor can I find that it has been accepted without even a protest. As far as I can learn, it either has been unnoticed or ignored. I am not an historian, but I should like to ask whether London was not a most important town of the Anglo-Saxons? and also whether there are any long barrows, megaliths or skeletal remains to show that its site, or anywhere near its site, was a favourite resort of the Long Barrow men? I know that round barrows exist in Greenwich Park, five miles from London; but I fancy that we should have to go to Sussex or Wiltshire or far into Kent for the nearest remains of Long Barrow man.

I cannot answer these questions with authority, but I can ask them, and hope that some archæologist or historian will throw light on the subject.

In dealing with the question to-day we have, I am glad to say, more material to work with than Dr. Macdonell and Prof. Pearson had when they made their simple yet startling discovery, though quite enough was ready to their hands in 1904 to support or refute their thesis if they had cared to take the trouble to examine it. I am not going to cavil in any way at Dr. Macdonell's examination and description

of the Whitechapel and Moorfields series of skulls. I consider them a valuable addition to our knowledge of what seventeenth and eighteenth century Londoners were like, and I have published the records of another, rather later, series of London skulls, taken from Clare Market region, which shows that the Whitechapel and Moorfields characters were reproduced there too.<sup>1</sup>

So far, then, Dr. Macdonell and I are in perfect harmony as to what the Londoner of the seventeenth and eighteenth century was like, and if Prof. Pearson had taken the trouble to examine and measure, or even to examine without measuring, Long Barrow and Anglo-Saxon skulls, he would have thought twice, probably, before committing himself to his hypothesis. But in any case no real harm has been done, perhaps rather good, because he has pointed out the need of trying to get further knowledge of Long Barrow and Anglo-Saxon skulls.

The limits of a single communication will not allow me to deal with both these subjects, so I must content myself with laying before you an account of the examination of twenty Long Barrow male skulls with the faces intact, because it will be found that in tracing out racial characteristics the face is quite as important as the cranium.

The skulls which I used were taken from the Thurnam collection in the University of Cambridge and the Rolleston collection in the University of Oxford; one skull, unfortunately, is all that the Royal College of Surgeons Museum can contribute, and one is preserved in Guy's Hospital Museum. There are probably other perfect skulls scattered about the country in local museums, but they will take years to locate and obtain permission to borrow, and I am trusting to the effect of the publication of this paper for helping me to gain that permission. Meanwhile there is every reason to believe that, if it can be shown that the present series is a homogeneous one with a low coefficient of variation, above all if it possesses certain constant and characteristic features throughout the series, it is unlikely that more material will modify it appreciably.

In dealing with skulls I have for many years felt the need of planning and recording measurements which will enable a type of the series to be reproduced from an average of the measurements. This is impossible from any series of measurements which I have hitherto seen—indeed I was first persuaded of the necessity for devising something of the sort by trying to reconstruct an average Whitechapel skull from Dr. Macdonell's measurements. It could not be done because the author had not that end in view, but had only set out to tell us what certain arbitrary measurements were without arranging for us to fill in the intervening gaps.

My plan is, I admit, laborious—and this is the most damaging criticism I have heard so far—but I am pleased to see that one or two younger craniologists are using it with good results.

In the first place a projection contour of the front, top and side views of each skull is made with Martin's dioptograph, and these are checked by numerous measurements

<sup>1</sup> *Lancet*, April 20th, 1918.



chin, (12) Angle of lower jaw, (13)  $180^\circ$ , (14) Mastoid tip, (15) Opisthion, (16) Inion, (17) Occipital point, (18) Lambda, (19)  $340^\circ$ , (20)  $360^\circ$ . When these points are joined by anyone with a knowledge of the shape of a skull, it will be found that it is

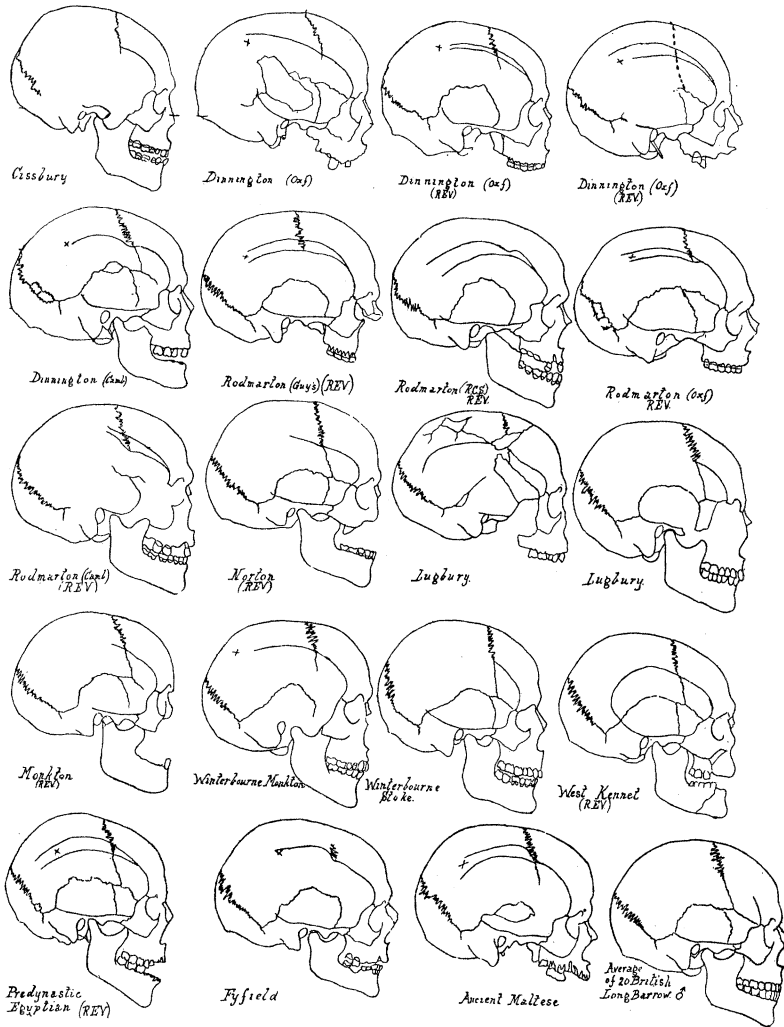


FIG. 2.—NORMA LATERALIS OF LONG BARROW MALE SKULLS.

(REV.) indicates that the contour has been reversed for purposes of comparison. The last figure is a composite of twenty.

hardly possible to avoid reproducing the contour almost exactly. After this, as many points within the contour as are needed, such as the highest point of the orbit, the pterion, asterion, parietal eminence, etc., can have their bearings and distance registered.

It now only remains to get the averages of these angles and distances in all the skulls of the series, when a type contour and other details of the whole may be constructed for comparison with similar details of another series.

The *norma facialis*, or front view, is measured by taking the nasion as zero and recording the various breadths with their distance above or below this point. The dots on Fig. 1 will show the points from which breadths are taken, or, if they are

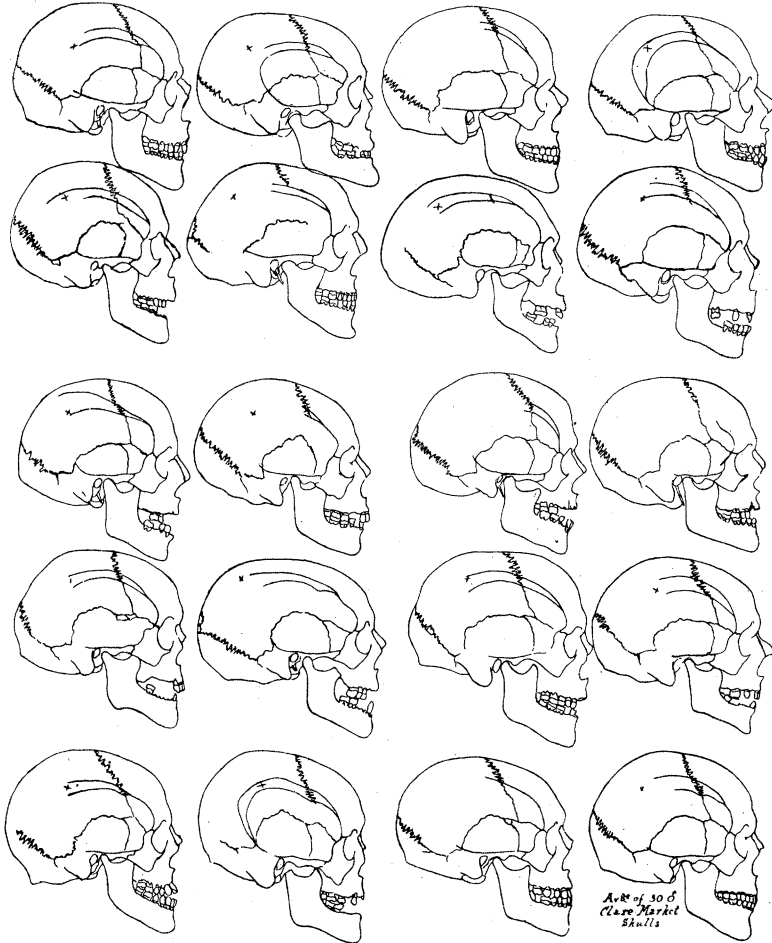


FIG. 3.—NORMA LATERALIS OF 18TH CENTURY MALE LONDONERS FROM CLARE MARKET.

The last figure is a composite contour of thirty.

in the mid line, the distance above or below the nasion. One point, however, needs special mention. It will be seen that breadths are recorded at 20, 40, 60, 70 and 80 mm. above the nasion, and as all the skulls of this series are over 80 mm. above the nasion, no difficulty arises; but we are here dealing with a homogeneous race of specially high skulls, and in other races it often happens that one or more of the series do not reach 80 mm. in height. When this is the case, Mr. Le Gros Clark

found that a true average may be obtained by taking the width as far below the vertex as the skull is short of 80 mm., and subtracting this width instead of adding it to the sum of the widths at 80 mm.

For instance, let us suppose that skull A is 90 mm. at the vertex and 83 mm. broad at the height of 80 mm., B is 84 and 39, while C is only 78 mm. high. The procedure is to take the width of C at 76 mm. (as much below the vertex, 78, as the vertex is below 80). Say the width here is 15 mm., then the average width at 80 mm.

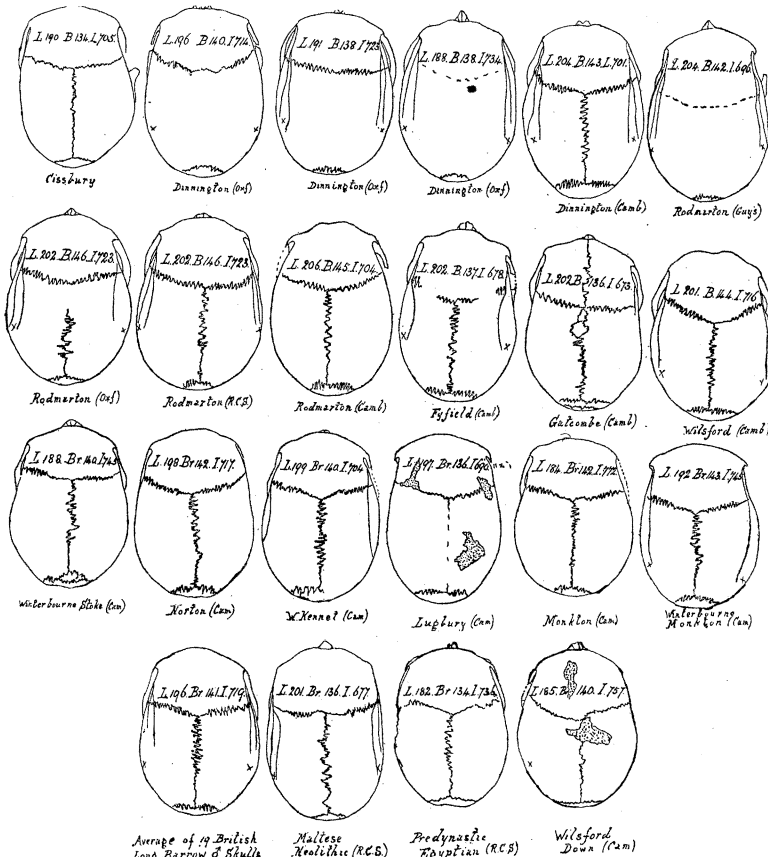


FIG. 4.—NORMA VERTICALIS OF LONG BARROW MALE SKULLS.

The first figure in the last line is a composite of nineteen British Long Barrow skulls.

is 83 for A + 39 for B - 15 for C =  $\frac{107}{3} = 36$ . I confess that I am not enough of a mathematician to know whether this is correct in theory, but I find that the contour comes out perfectly, and that even the scaphocephaly of Eskimo skulls can be shown on the average contour by its means.

The *norma verticalis*, or top view, has the breadths measured from the most anterior point in the median line at  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $\frac{7}{8}$  of the total length, and at other

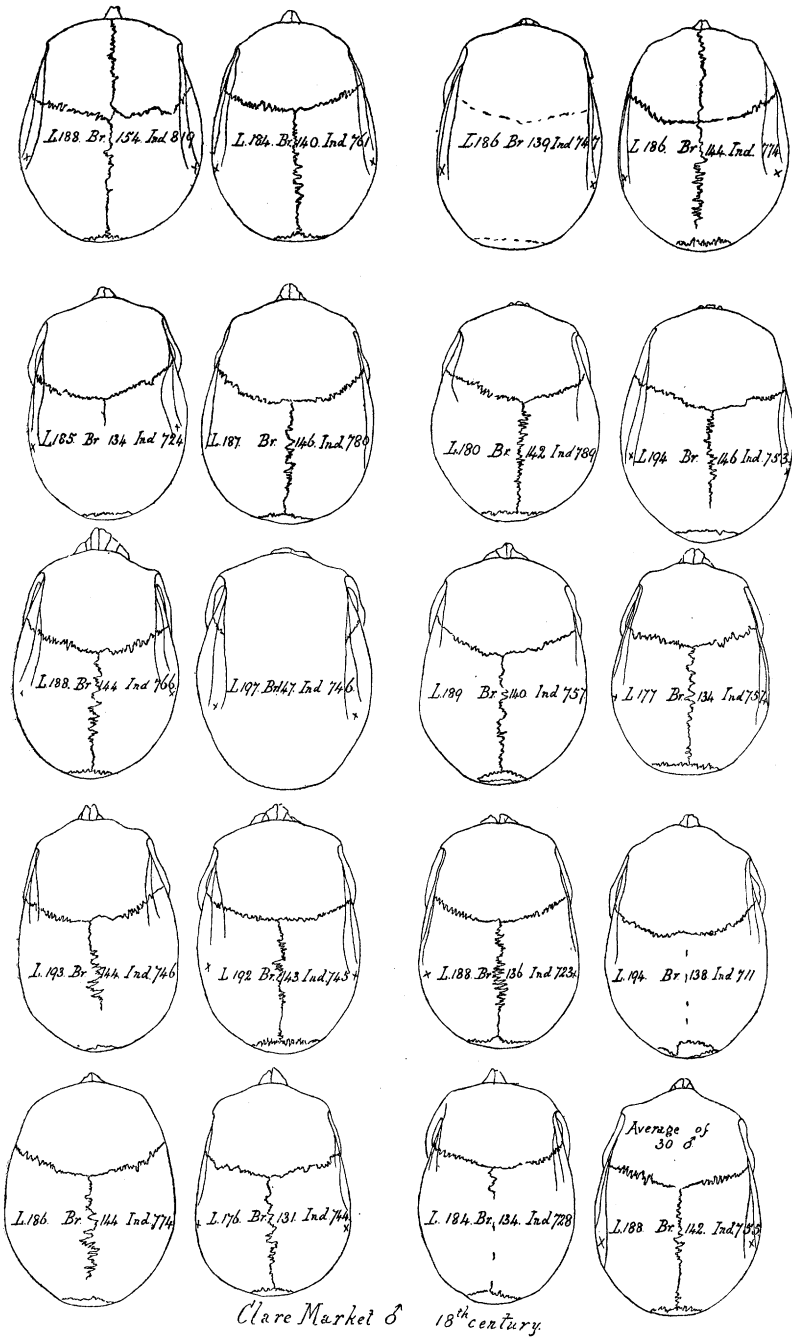


FIG. 5.—NORMA VERTICALIS OF 18TH CENTURY MALE LONDONERS' SKULLS.

The last figure is a composite of thirty.

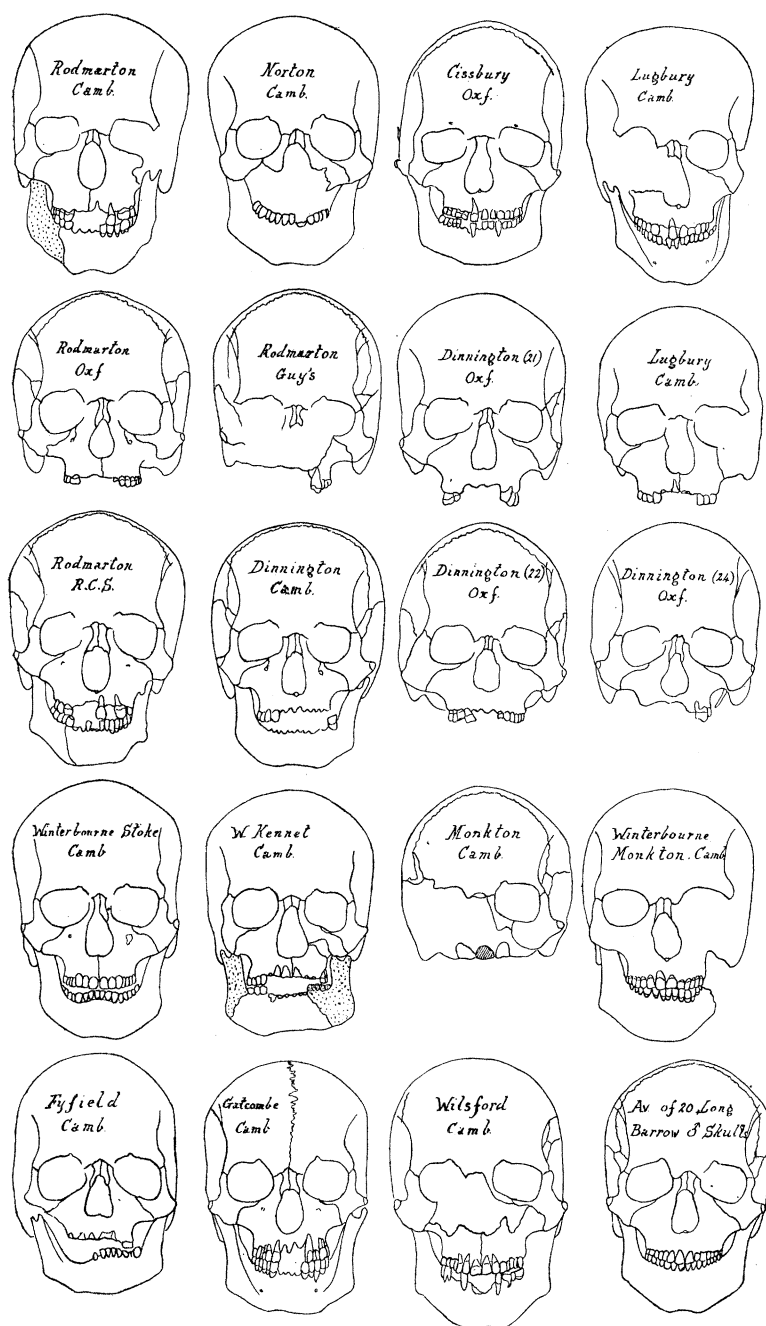


FIG. 6.—NORMA FACIALIS OF LONG BARROW MALE SKULLS.

The first name is the place of burial; the second, the Museum. The last figure is a composite of twenty skulls.

arbitrary points, indicated on Fig. 1, such as the maximal width, the width at the external angular process, the lambda, etc.

As a matter of fact, the labour of taking a good many of these points may be saved because they can be obtained with parallel rulers from the already constructed *norma lateralis* and *frontalis*, but taking them is an additional check on any inaccuracy in drawing or measuring. No craniologist would be content to deduce racial

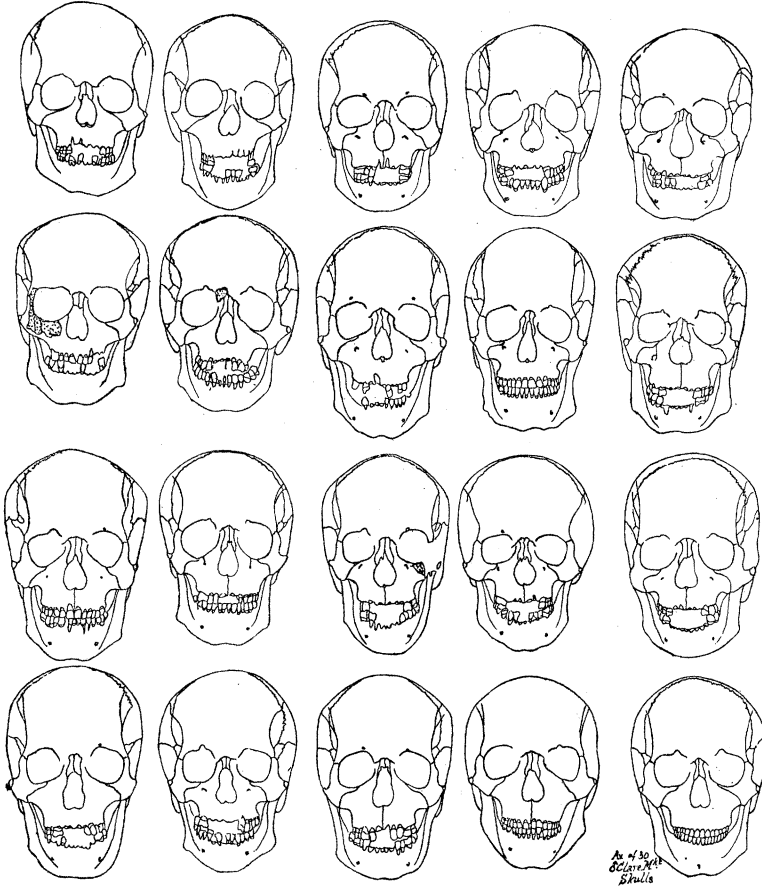


FIG. 7.—NORMA FACIALIS OF 18TH CENTURY MALE LONDONERS FROM CLARE MARKET.

The last figure is a composite contour of thirty.

characteristics from the comparison of these contours alone, but they are very valuable in showing at a glance where the differences in contour or proportions are to be sought and where the skulls should be specially examined.

The ideal of everyone with experience is to have all the skulls of the series orientated in exactly the same way and placed side by side in a row for comparison, but how often can this be done? Certainly not in this case, for no curators would allow skulls of such fragility and value to leave their museums to meet on the same table in

London; so that the only means of comparison is to have all the contours side by side, for the purpose of checking the average contour, and it is possible to have twenty of these contours reduced by photography so as to be included in one picture without obscuring their proportions. This has been done in Figs. 2 to 7, and when these are compared it is possible to get a good idea of the characteristics of these Long Barrow skulls.

It is quite obvious that, taken as a whole, they are long and narrow. Their average length is 196 mm. and their breadth 140 mm., giving a breadth index of 71.7. As these are exactly the same measurements which Prof. Macalister obtained and gave to Dr. Macdonell for publication in *Biometrika*,<sup>1</sup> after examining between 37 and 54 male skulls, it is probable that they will pass without opposition. When we compare them with Dr. Macdonell's Whitechapel skulls, we find L. 189, B. 141, Ind. 74.3; Moorfields, L. 189, B. 143, Ind. 75.5, and College of Surgeons Clare Market series, L. 188, B. 142, Ind. 75.5; and it is obvious that the London skulls are very close together in their indices and markedly wider in proportion to their length than the Long Barrow ones.

In auricular height the Long Barrow skulls are 117 mm., the Whitechapel 114, the Moorfields 114, and the Clare Market 114. Here again the London series are alike and appreciably lower than the Long Barrow.

These are the points upon which Prof. Pearson was relying chiefly when he propounded his discovery of the seventeenth century Londoners being Long Barrow men, and so far he does not seem to have very much to go upon, but it is when the standard types of the two sets of skulls are placed side by side that the marked contrasts appear, and by their sides I will place the types derived from measurements of twenty-four Anglo-Saxon skulls, which is as far as I have got, up to the present, in an attempt to measure and record all the Saxon skulls to which I can obtain access. I need hardly repeat that in all these comparisons only male skulls, or skulls which are believed to be male<sup>2</sup> are used.

In looking at the full face view the wonderful difference in the orbits between the Long Barrow and the Clare Market skulls arrests the attention at once. In the former they are low and apparently broad, though, as a matter of fact, their breadth is about equal in the two series, while their upper and lower margins are nearly parallel. In the latter they are deep and often have a tendency to be wider externally than they are internally owing to the lower margin being more oblique than the upper. When the Anglo-Saxon skulls are examined it is seen that they agree with the Londoners and contrast sharply with the Long Barrow people in this respect.

Then again the whole face of the Long Barrow skull differs from the other two in being compressed from above downward and widened from side to side. The nasion has come down nearer to the Frankfurt plane and the incisor point has gone

<sup>1</sup> Vol. iii, 1904, p. 243. (I measured only the skulls which had perfect faces.)

<sup>2</sup> See also Figs. 6 and 7.

up ; in other words the long face, which is regarded as such a distinguishing Nordic characteristic, is wanting, so that these Long Barrow skulls make up their height in the cranial region and lose it in the face. Another point worthy of notice is that in most of these Long Barrow skulls the sides are very vertical and parallel, instead of showing the almost circular convexity of the London, Saxon or Alpine skull, and this is evidently the characteristic to which Prof. Elliot Smith was referring when he described the pre-dynastic Egyptian skulls as being "ill filled."<sup>1</sup>

I cannot leave the very important question of the height of the orbits and face without recalling its ontogenetic significance. If the *norma facialis* of an English child at birth—and I presume that this applies equally to children of other nationalities—is looked at it will be seen that the orbits are as low and oblong as, or even more so than, they are in adult Long Barrow faces (see Fig. 9), and the specimen of the

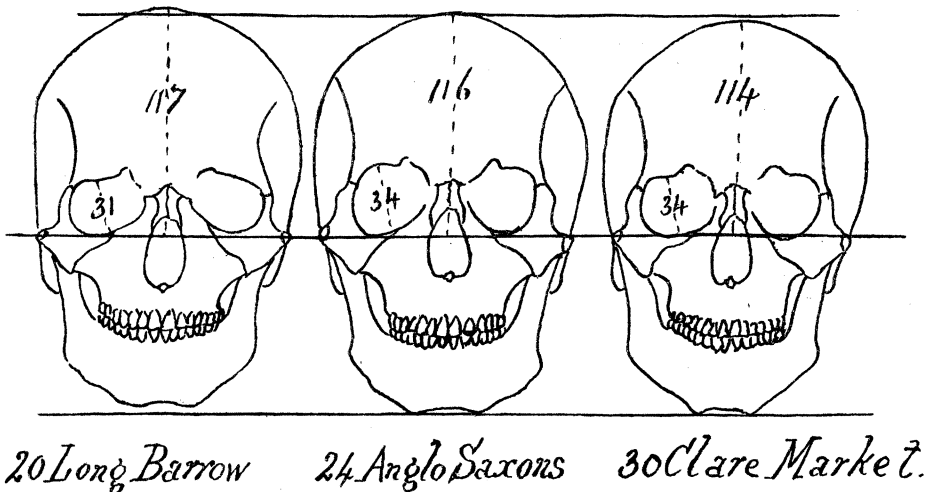
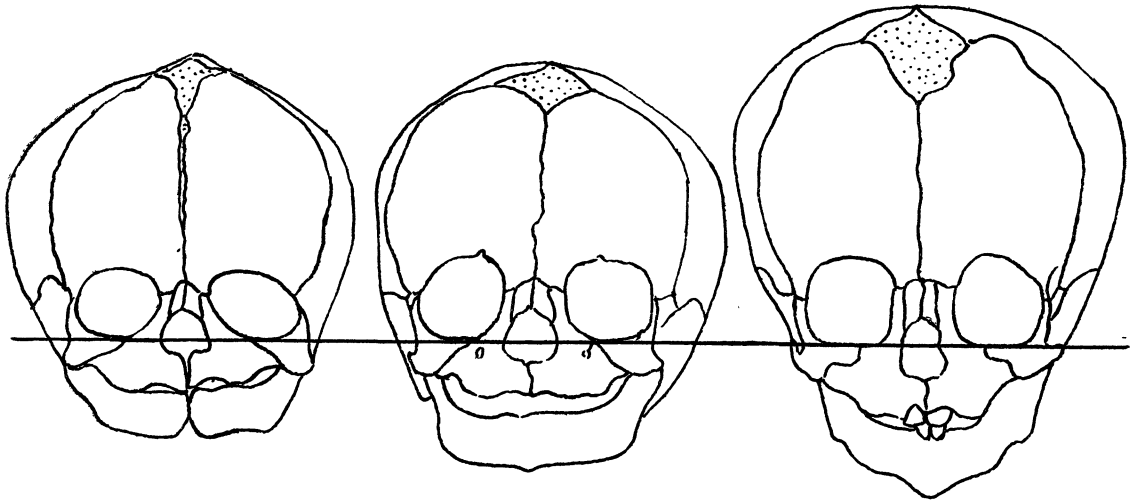


FIG. 8.

Rodmarton child reproduced in Fig. 10 shows, as far as one specimen may, that this condition persists throughout childhood in the Long Barrow race. In an English child of three months, however, the orbits have already begun to assume the deep opening so characteristic of the English and Saxon face, and the process has gone still further by five months ; the whole face has deepened with the deepening of the orbits. The change has occurred chiefly in the *maxillæ* and malar bones, and I cannot connect it with mastication, since it occurs before the incisors are cut ; nor can I refer it to any difference in the teeth themselves in the two races. We must not be led away by the arbitrary orientation of the skull on the Frankfurt plane into thinking that the tops of the orbits have necessarily grown up from that plane more rapidly in the Nordic than in the Long Barrow face, and that the alveolar margins

<sup>1</sup> *The Ancient Egyptians*. Harper Bros., London and New York.

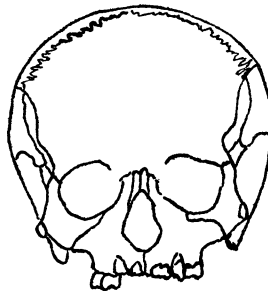
have grown down. It seems to me much more likely that the top of the orbit in each case is the more fixed point and that the malar bone and nasal process of the maxilla grow more rapidly in the Nordic skull, thus deepening the orbit. In addition



*Birth                      3½ months                      5½ months.*  
*English children.*

FIG. 9.

to this the body of the maxilla itself deepens more rapidly in the Nordic child, so that, when the Nordic and Long Barrow skulls are orientated on the Frankfurt plane, the upper incisor point of the former is lower than that of the latter.



*Long Barrow child*  
*about 12.*

FIG. 10.

When an average contour of Eskimo skulls is contrasted with the London and Long Barrow it is evident that the same facial change has gone on in them as in the Nordic Londoners, and that they too have the same long face and high orbital openings, and I cannot help thinking that these two changes are correlated and are the result of the narrowing and deepening of the nose to adapt it to a cold climate, ensuring that the air shall be brought as much as possible in contact with the turbinated bones, which act as heat radiators.

Prof. Arthur Thomson has already called attention to the fact that in cold climates the nose is narrow while in warm climates it is broad, and it may well be objected that in the Long Barrow face the nose is as narrow as in either of the contrasted races. Personally I am inclined to think that this is the first stage in an adaptive change on the part of the Mediterranean race to the colder climate of England, because I notice that in the pre-dynastic Egyptian skulls presented to the

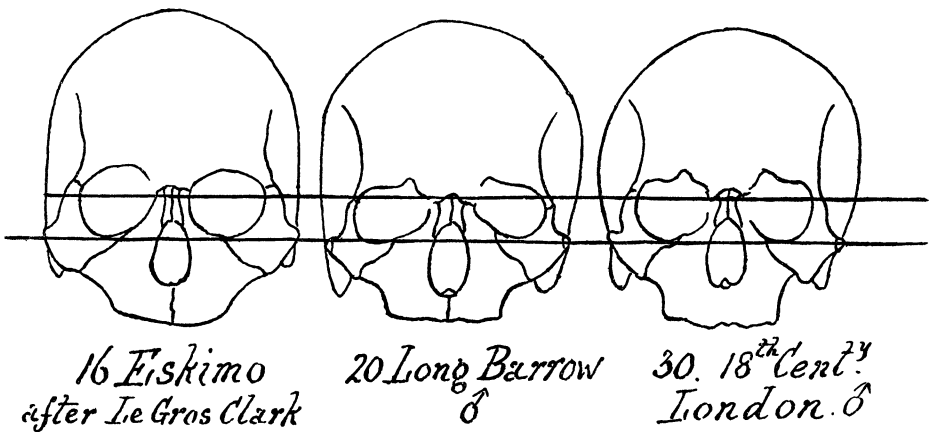


FIG. 11.

Royal College of Surgeons by Prof. Elliot Smith and in the early Maltese skulls presented by Dr. Zammit the noses are distinctly broad (see Fig. 12), but in no other respect have the Long Barrow people altered their racial characteristic skull shape during their long trek from Egypt to England, as far as I can see at present. I am not at all inclined to agree with those who, like Prof. Flinders Petrie, hold that the skull-shape or cranial index of a race can be modified in a few hundred years in any other way than by the race being bred out by another more tenacious of existence in the new surroundings. Adaptive modifications must, of course, and do occur, but all the evidence is in favour of their taking a very long time to do so.

While I am discussing these points of difference in the faces of the Nordic and Mediterranean races I should like to call attention once more to the fact that, in its wide short *nares*, as well as in its short face and low orbital openings the Nordic infant reproduces the Maltese and Egyptian adult face (compare Figs. 9 and 12), and to submit that these are evidences in favour of regarding the Mediterranean as

being nearer the original stock if we are to regard, as some anthropologists do, the Mediterranean and Nordic stocks as having a common ancestry.

When a series of contours of the *norma verticalis* is looked at, a practised eye will notice that the sides are more parallel than in the mixed skulls upon which our anatomical teaching is usually based ; and we can reduce this appearance to definite figures by placing the standard contours of Long Barrow, of seventeenth and eighteenth century Londoners, and of Anglo-Saxons side by side, and noticing the relation of the width of the fore part of the skull to the maximal width in each. It

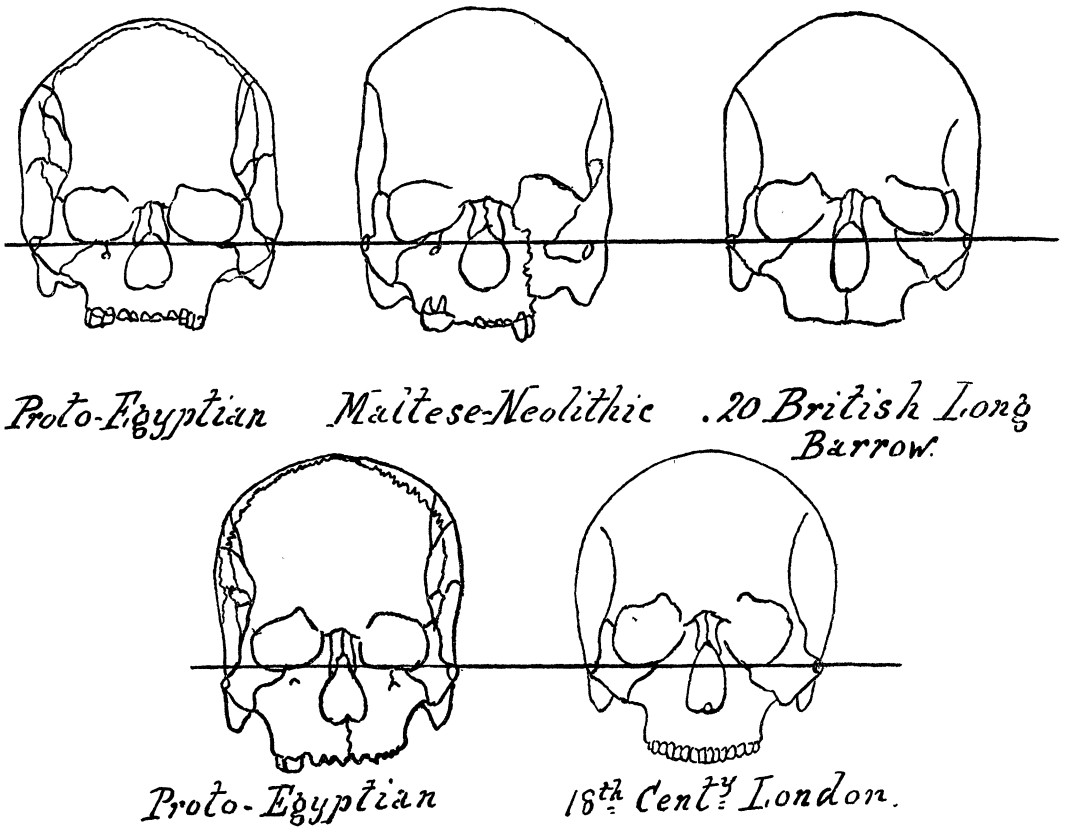


FIG. 12.

will be seen from Fig. 13 that the Long Barrow skull is actually wider than either of the others in the fore part, though relatively narrower in the maximal breadth.

It is sometimes convenient to express these differences of contour in the form of indices, and a fronto-parietal breadth index is easily constructed in the following way :—

$$\frac{\text{Maximal frontal width} \times 100}{\text{Maximal parietal width.}}$$

When this is worked out it will be found that the Long Barrow index is 76·4, the Anglo-Saxon 74·1, and the Clare Market 73·2. Superimposed, in a dotted line, upon the contour of the Clare Market skulls is one of the Whitechapel series, taken by Dr. Crewdson Bennington's method, and reduced to the same scale. His method reproduces a horizontal section rather than a diptographic tracing, but the close resemblance of the contours of the two series is an important thing to establish.

The series of vertex views<sup>1</sup> also shows the massiveness and prominence of the zygomatic arches. It is true that in the Luggbury and Winterbourne Monkton skulls these are missing, but it is quite obvious that in not one skull of the nineteen here

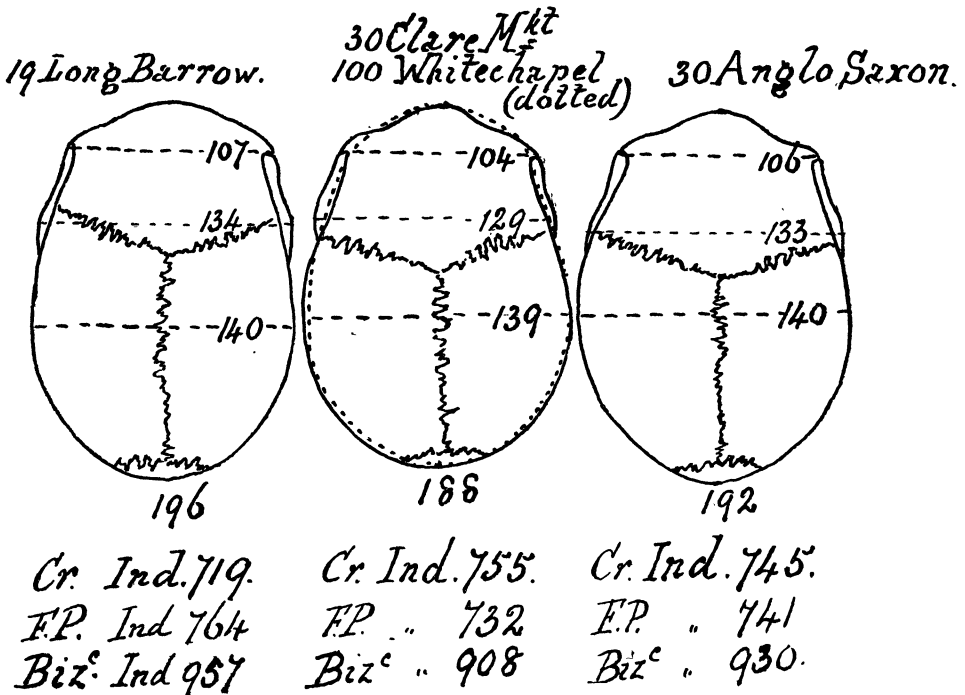


FIG. 13.

shown is there an example of a cryptozygous skull. Among thirty male skulls from Clare Market I found four cryptozygous specimens.

Fig. 13 shows us that compared with the maximal breadth of the skull the bizygomatic index is 95·7 in the Long Barrow, 90·8 in the Londoner, and 93 in the Anglo-Saxon. In other words, the Londoner is, as usual, on the other side of the Anglo-Saxon to the Long Barrow man.

Probably by this time it will have occurred to someone that my series of skulls, twenty in all, is a small one, and that, unless I can prove that it is homogeneous, I have no right to generalize upon it. Unfortunately, when dealing with ancient skulls, we

<sup>1</sup> See Fig. 4.

	Moorfields.			Whitechapel.			Long Barrow.		
	Mean.	Std. Dev.	Coef. Var.	Mean.	Std. Dev.	Coef. Var.	Mean.	Std. Dev.	Coef. Var.
Length ...	189.15 ± 0.57	5.58	2.95	189.06 ± 0.36	6.27	3.31	196 ± 1.005	6.73	3.4
Breadth ...	143.02 ± 0.53	5.31	3.71	140.67 ± 0.31	5.28	3.75	140 ± 0.51	3.41	2.43
Cranl. index ...	75.52 ± 0.31	3.00	3.96	74.34 ± 0.19	3.26	4.38	71.73 ± 0.554	2.48	3.46
Auric ht. ...	113.78 ± 0.47	4.69	4.12	114.59 ± 0.25	4.28	3.73	117.3 ± 0.44	2.94	2.51
Ht. index ...	68.37 ± 0.42	3.47	5.07	69.97 ± 0.20	3.22	4.61	59.8 ± 0.34	2.47	4.12
Upper face ht. ...	68.12 ± 0.62	4.08	5.99	70.17 ± 0.30	3.86	5.50	67.0 ± 0.576	3.57	5.33
Bizygomatic br. ...	129.00 ± 1.19	4.65	3.60	130.05 ± 0.57	5.57	4.28	134.6 ± 0.93	4.58	3.40

have to take what we can get, and I confess that I was surprised and pleased when I found that as many as twenty male Long Barrow skulls with faces attached were forthcoming. To the ordinary craniologist and anatomist, whose training has been to observe form rather than figures, a careful survey of the contours, side by side—or better still, of the skulls, side by side—will convince him that, as skulls go, we are dealing with a singularly homogeneous series. Prof. Pearson, however, said that the only thing that would satisfy him of the homogeneity of the series would be a low coefficient of variation in different measurements (I hope and believe that I am

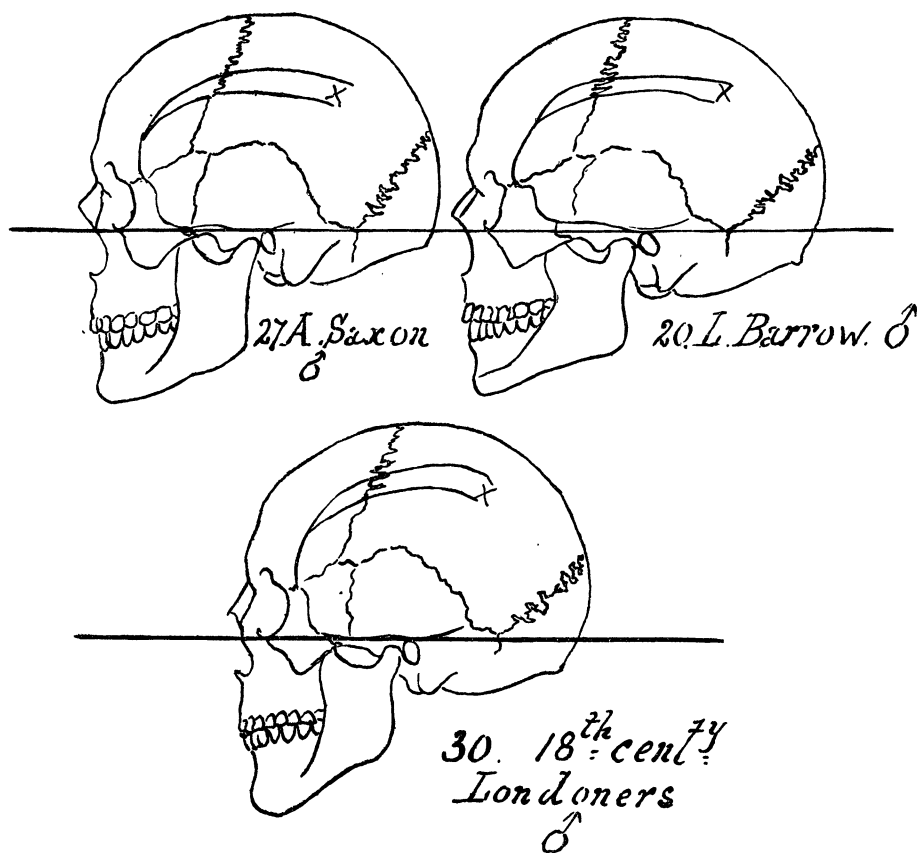


FIG. 14.

quoting his criticism fairly). At Cardiff I knew nothing of coefficients of variation or how they were obtained. Like many of my anatomical colleagues, my training had been for form rather than for mathematics, and I confess to being as innocent of the latter subject as Prof. Pearson is of anatomy. But it is never too late to learn, and I have now mastered the necessary formulæ with the results which I compare in the table (p. 71) with those of the Moorfields and Whitechapel series, which Prof. Pearson considered homogeneous enough to base his startling hypothesis upon.

The figures show that in every case except that of length the coefficient of variation is lower in the Long Barrow skulls than it is in those from Moorfields or Whitechapel.

We have still to deal with the profile view, or *norma lateralis*, of the Long Barrow skull, though it is perhaps not as valuable as the other points of view already studied. Fig. 14 shows the type contours of 27 Saxons, 20 Long Barrow, and 30 modern Londoners from Clare Market, and it is evident that the Saxon resembles the Londoner in his long face, deep orbital openings, delicate zygomatic arch, narrow and deep ramus of the mandible, more prominent mastoid process which comes down to a level with the condyle, less marked occipital bulging and general shortening of the skull from before back.

When the Long Barrow and Clare Market skulls are superimposed on the Frankfurt plane with the auditory meatuses coinciding (see Fig. 15), it will be noticed

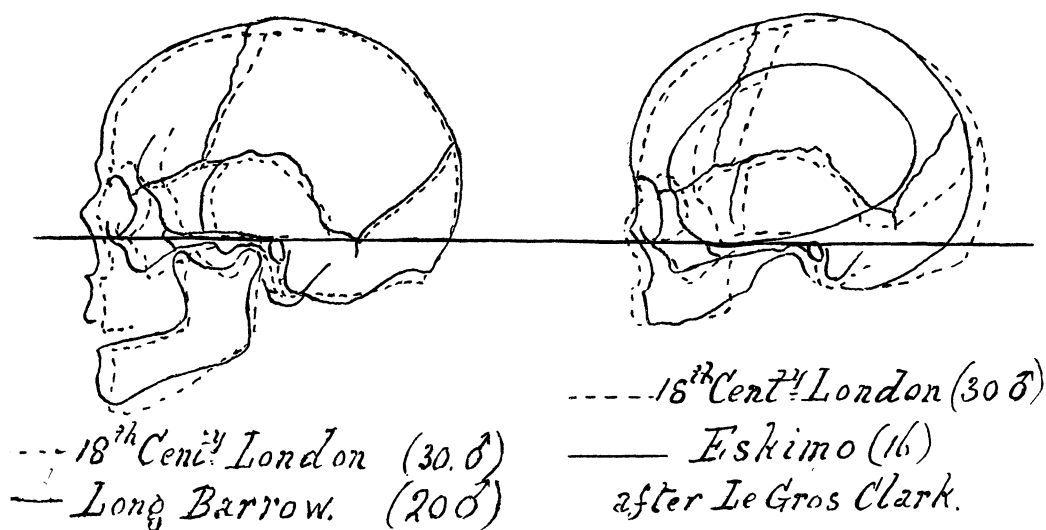


FIG. 15.

that the increased length of the former is all in front of the meatus; that the malar bone and outer part of the orbit has been pushed forward, leading to a flattening of the face and the appearance known as "high cheek bones"; and that the ramus of the mandible is wider, shorter and more splayed than in the Nordic type.

When the same eighteenth century Clare Market skulls are superimposed, in the same way, on the average contour of ancient Eskimo skulls, the same results are more evident still, save that unfortunately the mandibles of the Eskimo were not forthcoming, and these superimpositions make us think that another set of correlated changes are being produced by some factor, in addition to the respiratory ones already noticed, helping to mould the shape of the skull. They are (1) the increased anterior dolichocephaly, (2) the tilting forward of the outer margin of the

orbit, (3) the greater splay and massiveness of the zygomatic arch, (4) the increased width and splaying of the ramus of the mandible, (5) the characteristic flattening of the side of the head (seen in Fig. 11) in the temporal region. These, with the possible exception of the last, about which I am not so sure at present, may all be explained by great development of the temporal and masseter muscles, and even though we cannot demonstrate that the Long Barrow man had bigger teeth or lived on harder fare than his Anglo-Saxon successor, the skull shape once attained would be very permanent. At any rate, it is interesting to notice how the respiratory changes are common to the Nordic and Eskimo, and the masticatory to the Eskimo and Long Barrow man.

I feel that I ought not to leave this question of racial and acquired characteristics in skull shape without putting my present point of view quite clearly before the

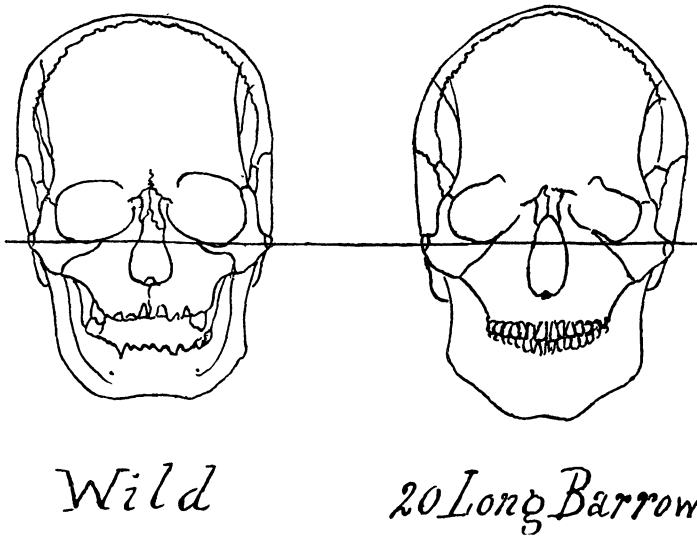


FIG. 16.

reader. It is that the evidence at present at my disposal makes me believe—as I suppose all must believe who really think about the matter—that the shape of the skull is the result of vital or physiological forces, some of which we grasp feebly and others which we do not understand at all as yet, acting on it for a very long time; but that the shape, once established, is very permanent, and that most of its characteristics remain for thousands of years after the race bearing them has changed its habitat. Even when the race has been practically bred out by competing races, better adapted to the changed conditions, the old characters reappear from time to time, sometimes singly but occasionally all together. As an instance of this I would instance the skull of Jonathan Wild in the College of Surgeons Museum (Fig. 16), which is a striking contrast to that of the eighteenth century or even the modern Londoner, but reproduces all the characters of the Long Barrow race. I

think, however, that we should have to look through very many English skulls before meeting another such ; certainly I have never seen one.

Finally I must admit that the skull of the modern twentieth century Londoner has changed from that of the eighteenth, but it is in the direction of increased breadth and shortness, and the change is due, I believe, to admixture with the central European or Alpine race, which in the last two centuries has been pouring into this country in ever-increasing quantities. But that is a subject beyond the scope of this paper.

I must reserve a critical examination of the palate and teeth of these groups for another occasion, but I may mention that I have never yet come across an Anglo-Saxon whose teeth were not ground flat, while in the Long Barrow people they are sometimes ground and at others have the cusps unworn. This, of course, is only a question of the food upon which they lived. Another point which caused me a good deal of wonder was the great frequency in the Long Barrow skull of the *torus palatinus*.

*(Tables of measurements follow.)*

LONG BARROW.—*Norma Verticalis.*

	Maxl. Length.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	Extl. Angr. Proc.		Least Frontal Width.		Maxl. Bizyg. Width.		Bregma.		Maxl. Width.		Lambda.	
						A.P.	Tr.	A.P.	Tr.	A.P.	Tr.	A.P.	Tr.	A.P.	Tr.	A.P.	Tr.
Cissbury	190	111	132	120	90	23	110	26	100	—	—	72	116	134	180	56	
Dinnington	196	121	138	126	102	17	107	20	101	63	134?	70	110	140	185	42	
Do.	191	119	136	124	100	17	102	21	95	64	138	70	117	138	186	77	
Do.	188	120	138	127	96	20	104	24	92	56	134	69	104	138	178	66	
Do.	204	117	141	123	95	21	102	25	94	58	134	81	111	143	186	75	
Rodmarton...	204	110	138	130	98	22	104	26	95	66	130?	91	126	142	199	46	
Do.	202	111	144	130	100	28	112	30	100	68	140	83	111	146	194	54	
Do.	202	116	143	139	114	22	109	24	94	63	134	82	134	146	198	56	
Do.	206	115	143	129	102	22	104	27	91	—	—	81	120	145	194	66	
Lugbury	197	116	135	126	98	22	111	27	104	—	—	77	119	136	189	69	
Do.	195	—	—	—	—	—	—	—	—	62	136?	—	—	141	—	—	
Monkton	184	111	138	129	100	—	—	—	—	—	—	72	109	142	178	59	
Winterbourne Monkton	192	115	142	129	103	24	116	30	104	—	—	83	110	143	184	66	
Winterbourne Stoke	188	110	134	126	94	24	107	27	96	61	131	64	109	140	174	82	
Norton	198	118	139	130	99	22	105	25	100	62	130	76	121	142	190	66	
West Kennet	199	118	138	128	102	25	106	32	100	62	134?	75	113	140	188	66	
Fyfield	202	110	134	125	100	19	107	24	97	59	128?	84	120	137	197	64	
Gatecombe	202	113	131	126	94	23	106	27	98	60	131	83	127	136	196	56	
Wilsford	201	113	143	117	98	27	111	30	106	68	145	85	118	144	190	67	
Do.	184	114	137	121	95	24	103	25	98	—	—	82	106	140	178	54	
Average	196	115	138	127	94	23	107	26	98	62	134	78	116	141	188	62.5	

LONG BARROW.—*Norma Frontalis.*

	Supra Orbital.		Least Frontal Breadth.		20 mm.	40 mm.	60 mm.	70 mm.	80 mm.	Ver- tex.	Maxl. Breadth.	Extl. Ang. Proc. and Skull.		Intl. Ang. Proc.	Nasal Tip.	Infra Orbital Line.	
	V.	Tr.	V.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	V.	V.	V.	Tr.	V.	V.	V.	Tr.
Winterbourne	10	56	27	102	142	140	125	110	83	90	12	143	2	106	139	—	23
(Camb. 124)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Monkton	8	42	14	92	141	135	107	88	53	87	2	142	4	—	141	—	26
Do.	6	38	16	96	136	138	125	95	80	94	34	140	4	100	129	10	17
Winterbourne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	131
(Camb. 56)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stoke	10	46	15	97.5	140	142	125	92	80	92	37	142	2	98	136	8	24
Norton ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26
(Camb.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	130
Rodmarton	6	44	14	95	140	138	120	97	78	96	31	142	0	94	126	6	25
Do.	7	46	18	100	143	136	110	87	46	86	7	144	4	100	142	16	26
Do.	8	40	18	94	145	144	122	92	68	91	34	146	4	98	140	11	24
Do.	10	44	23	94	142	138	126	92	85	92	12	143	0	93	142	10	19
(R.C.S. 276.1)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	134
Dinnington	7	40	14	101	139	140	124	94	85	94	40	140	0	94	136	13	20
Do.	8	44	19	95	138	130	108	93	68	94	1	138	2	94	138	11	20
Do.	7	42	17	92	138	135	119	94	74	94	20	138	2	89	138	11	19
Do.	10	44	18	94	136	141	130	93	94	93	40	141	1	91	132	—	25
(Camb. 86)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	134
Lugbury	10	44	20	101	135	132	117	89	70	89	20	135	0	104	138	9	24
Do.	3	47	18	97	132	127	108	86	57	86	7	137	7	100	137	12	22
(Camb. 87)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	128?
Fyfield ...	4	40	10	100	140	137	117	87	58	88	20	140	6	95	137	6	21
West Kennet	4	45	7	99	140	133	102	85	39	84	20	140	8	96	137	16	24
(Camb. 138)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27
Wilsford	9	47	18	106	144	138	124	93	88	93	10	144	0	102	142	7	25
(Camb. 167)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	145
Do.	8	48	20	98	135	117	88	63	88	88	34	136	5	101	133	12	23
(Camb. 170)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	133
Gatcombe	7	54	17	100	133	130	115	93	80	94	7	134	4	102	134	11	24
(Camb. 278)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—
Cissbury	8	45	17	97	139	137	119	100	72	91	20	140	3	98	137	11	22
(Oxford)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	135
Average	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26

LONG BARROW.—*Norma Frontalis*—continued.

	Maxl. Nasal Breadth.		Bimaxy. and Bimaxtd.		Bituber. and Bimand.		Nas. Sp.	Incisor Point.		Angle of Mand.	Chin.	Lowest Level.		Midway between Last.	Eye Ht.	
	V.	Tr.	V.	Tr.	V.	Tr.		V.	Tr.			V.	Tr.		R.	L.
Winterbourne	—	—	43	—	62	66	—	50	66	82	—	118	20	101	30	—
Monkton	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Do. ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Winterbourne	40	23	46	96	64	59	100	50	68	86	90	117	20	103	31	32
Stoke	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Norton ...	33	23	44	90	55	—	104	—	—	78	83	112	—	97.5	31	31
Rodmarton	—	—	42	—	64	67	106	50	68	82	102	120	34	104	30	—
Do.	—	—	44	—	—	—	—	—	—	—	—	—	—	—	30	—
Do.	41	21	50	91	62	63	—	50	66	—	—	—	—	—	34	36
Do.	41	24	46	94	63	64	96	56	68	86	90	116	34	104	—	—
Dinnington	38	20	44	93	64	59	101	50	66	80	91	110	42	100	31	32
Do.	38	21	48	93	64	64	—	51	68?	—	—	—	—	—	32	32
Do.	36	22	44	98	57	66	—	46	64	—	—	—	—	—	31	30
Do.	38	24	44	92	59	58	—	50	63	—	—	—	—	—	30	29
Lugbury	44	22	44	—	63	67	96	55	72	85	83	119	31	103	—	32
Do.	37	25	42	—	63	67	—	46	64	—	—	—	—	—	30	—
Fyfield ...	40	22	50	92?	68	52	106	44	68	80	91	110	20	100	33.5	32
West Kennet	40	26	49	96	68	66	104?	51	68	80	96	111	50	106	31	30
Wilsford	40	24	49	—	57	—	—	50	60	82	82	108	—	—	31	—
Do.	—	—	49	100	68	71	112	52	76	92	100	128	30	115	—	30
Gatcombe	41	22	46	90	62	63	106	54	70	85	100	118	30	110	70	32
Cissbury	36	23?	42	100	58	66	106	48	64	76	86	105	20	96	28	28
Average ...	39	23	46	94	62	64	103	50	67	83	90	114	30	103	31	31

LONG BARROW ♂.—*Norma Lateralis*.

	Point of Chin.		Lower Incisor.		Upper Point.		Nasal Spine.		Tip of Nasal Bone.		Nasion.		Glabella.		Ophryon.		Frontal Eminence.		30°		Bregma.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
1. Cissbury ...	134°	121	122°	110	112°	108	106°	106	—	83°	102	77°	71°	112	63°	113	56°	118	120	18°	121	
2. Dimington Do.	—	—	—	—	115	101	105	98	98	81	95	74	67	104	63	105	56	114	127	11	126	
3. Do.	—	—	—	—	115	97	105	97	96	88	92	75	69	101	61	104	53	112	120	14	119	
4. Do.	—	—	—	—	115	94	105	94	100	86	93	74	71	95	63	101	54	109	122	14	125	
5. Do.	135	119	124	105	114	100	106	97	100	86	100	74	69	102	62	104	53	113	121	9	123	
6. Rodmarton	—	—	—	—	—	—	—	—	112	87	112	78	106	73	113	66	113	56	122	131	11	126
7. Do.	—	—	—	—	110	101	101	103	111	85	111	74	104	71	112	61	116	55	121	128	13	127
8. Do.	138	120	124	113	113	105	105	104	87	111	76	106	73	114	64	118	57	125	130	16	129	
9. Do.	140	125	126	112	115	110	100	106	84	105	78	104	74	112	66	113	55	122	124	16	124	
10. Lugbury	—	—	—	—	112	101	104	94	—	75	93	71	99	62	102	49	111	119	10	121		
11. Do.	140	120	127	106	116	102	109	101	85	104	77	100	71	104	64	108	54	116	124	14	126	
12. Monkton	137	110	127	90	—	—	—	—	—	—	73	90	67	98	62	100	49	112	119	12	120	
13. Do.	140	121	128	106	116	104	108	101	85	102	77	100	72	110	66	113	60	118	125	14	121	
14. Winterbourne	134	123	125	104	114	103	104	99	84	102	73	94	69	102	62	106	52	118	124	17	128	
15. Norton ...	136	119	122	108	—	—	—	—	82	102	76	100	72	108	65	110	55	121	126	14	124	
16. West Kennet	135	122	122	106	113	105	—	—	80	104	76	102	71	108	63	109	54	115	116	15	118	
17. Fyfield ...	132	109	121	97	110	99	98	96	108	79	100	72	100	66	109	59	111	48	120	126	10	126
18. Gatcombe	134	132	123	117	111	112	105	112	84	108	75	103	71	110	67	110	57	118	125	13	122	
19. Wilsford...	141	133	131	113	118	107	107	99	—	76	104	72	112	64	112	64	112	51	125	127	12	126
20. Do. ...	137	110	124	101	109	92	102	86	84	94	71	86	65	94	59	98	50	106	112	5	118	
Average	137	120	125	106	113	102	104	99·5	84	103	75	98	70	106	63	108	54	117	123	13	123·5	

LONG BARROW ♂.—*Norma Lateralis*—continued.

	360°		340°		Lambda.		Occipital Point.		Inion.		Opisthion.		Mastoid Tip.		Occipital Condyle.		Angle of Mandible.		Fronto Malar Suture.		Top Bottom of Orbit.	
	D.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	D.	
1. Cissbury...	122	121	316°	103	297°	92	273°	61	237°	61	206°	18	—	159°	60	75°	86	73°	102	88		
2. Dinnington	125	127	314	124	295	111	276	98	245	46	214	29	195°	—	25	71	86	69	94	84		
3. Do.	122	124	308	116	299	110	270	85	233	41	201	26	183	—	28	71	83	70	92	78		
4. Do.	126	125	315	118	300	111	276	85	238	40	212	26	187	—	26	71	78	67	86	76		
5. Do.	124	125	313	120	290	113	267	89	240	47	210	26	181	165	30	72	78	69	89	80		
6. Rodmarton	126	127	305	112	295	106	270	83	240	36	202	24	—	—	—	—	83	72	102	84		
7. Do.	124	124	311	111	294	104	272	82	241	36	209	30	171	165	17	72	84	70	103	86		
8. Do.	129	127	309	111	297	103	268	74	240	31	210	23	160	172	78	75	86	72	101	84		
9. Do.	124	122	314	114	294	105	—	—	—	—	200	20	—	—	—	71	79	68	92	80		
10. Luggbury	121	123	306	116	291	112	274	96	—	—	200	20	—	—	—	71	86	68	96	84		
11. Do.	126	128	309	113	295	105	277	89	233	43	205	29	194	32	175	56	71	67	90	73		
12. Monkton	121	122	308	110	294	104	275	76	249	45	207	21	—	—	179	56	71	67	90	73		
13. Do.	118	117	312	105	288	94	265	76	227	39	198	22	178	30	170	53	73	70	96	80		
14. Winterbourne	128	126	322	118	298	100	275	79	250	46	201	25	—	—	171	64	70	72	90	76		
15. Norton ...	124	126	307	110	293	103	268	81	243	36	209	18	—	—	169	49	73	70	100	84		
16. West Kennet	120	124	310	113	293	105	270	84	247	44	210	26	194	23	170	56	73	71	99	81		
17. Fyfield ...	127	128	309	119	292	109	274	87	249	39	198	20	—	—	167	45	72	68	99	84		
18. Gatecombe	122	125	306	111	293	104	264	76	230	44	196	26	169	34	169	63	71	80	69	84		
19. Wilsford...	123	124	306	106	288	102	265	82	230	46	204	24	172	30	169	60	72	84	72	100	83	
20. Do. ...	117	120	302	107	286	102	272	92	234	54	206	23	190	26	174	50	69	67	84	74		
Average	123	124	310	113	294	105	271	83	239	43	205	24	181	27	170	57	72	81	69.5	96	81	

LONG BARROW ♂.—*Norma Lateralis*—continued.

—	Antr.		Postr.		Steph-anion.	Upper Templ. Ridge.	Squama.	Parietal Eminence.	Squamo Mastoid Angle.	Asterion.	Width of Ramus.	Emin-entia Artic-ularis.	Lower Molar Point.		Jugal Point.						
	Pterion.																				
	A.	D.	A.	D.									A.	D.		A.	D.	A.	D.	A.	D.
1. Cissbury...	—	49°	—	66	—	57	—	336°	—	—	43	24	128°	69	85°	68					
2. Dinnington	...	...	—	—	—	—	86	101	302°	—	—	24	—	—	83	61					
3. Do.	...	...	—	—	23°	90	96	343	298	36	289	20	—	—	90	58					
4. Do.	...	...	41	60	29	57	100	342	91	300	34	22	—	—	89	53					
5. Do.	...	...	42	66	30	60	—	338	92	313	39	296	40	—	82	60					
6. Rodmarton	...	...	48	62	41	54	99	338	90	305	33	280	56	132	69	83					
7. Do.	...	...	42	68	26	60	100	345	98	294	40	22	—	—	85	60					
8. Do.	...	...	—	—	30	95	100	342	88	297	32	289	50	130	62	64					
9. Do.	...	...	—	—	43	54	97	344	86	—	289	26	136	61	—	—					
10. Lugbury	...	...	—	—	24	68?	82	—	291	32	283	—	—	—	—	—					
11. Do.	...	...	55	64	55	54	—	346	103	309	30	25	136	64	—	53					
12. Monkton	...	...	43	60	29	53	—	344	95	308	29	22	135	56	82	55					
13. Do.	...	...	—	—	29	91	—	332	97	—	281	24	133	64	85	55					
14. Winterbourne	...	...	48	61	39	56	—	—	—	285	44	24	135	59	83	55					
15. Norton ...	...	...	55	60	49	56	—	—	307	28	286	24	129	59	82	55					
16. West Kennet	...	...	49	62	38	56	—	—	—	284	46	19	—	—	82	52					
17. Fyfield ...	...	...	—	—	27	88	—	346	94	292	36	25	126	50	81	60					
18. Gatcombe	...	...	43	63	40	56	94	330	101	310	36	27	134	68	84	61					
19. Wilsford...	...	...	42	72	34	67	95	340	108	306	35	25	141	68	83	62					
20. Do. ...	...	...	—	—	30	65	—	330	88	302	32	20	129	54	—	—					
Average	...	...	46	64	37	57	95	340	95	302	34	23	133	62	83	59					