



Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

79

I

THE

737

3904

JOURNAL

OF THE

gal
↑

ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

VOL. XIV.



LONDON:

PUBLISHED FOR

The Anthropological Institute of Great Britain and Ireland

BY

TRÜBNER & CO., 57 & 59, LUDGATE HILL.

All Rights Reserved.

1885.

615873
28.55

HARRISON AND SONS,
PRINTERS IN ORDINARY TO HER MAJESTY,
ST. MARTIN'S LANE.

GN
2
R63
v.14

The following paper was then read by the author:—

ACCOUNT of a COLLECTION of HUMAN SKULLS from TORRES STRAITS. By OLDFIELD THOMAS, F.Z.S., M.A.I., Natural History Museum.

[WITH PLATES XIV AND XV.]

THE present fine collection of crania from Torres Straits was obtained in Jervis Island, in the western part of the Straits, by the Rev. S. MacFarlane, a missionary whose name is well known in connection with natural history collecting, and from whom we may yet hope to receive many more accessions to our knowledge of the inhabitants of the region in which he labours. The following is his account of the origin of the collection:—

“The skulls are from the sacred house of the Jervis Islanders, which is situated on an islet close by. They are all the skulls of enemies from the neighbouring Banks, Mulgrave and Dauan Islands, the last named being close to New Guinea. The habit of these skull-hunters being to fall upon an unfortunate man and his wife whilst out fishing, or upon a poor defenceless woman who had gone to her plantation for food, will account for the full proportion of female skulls amongst the collection.

“The natives of Jervis, Banks and Mulgrave Islands are in appearance much like Australians.

“The skulls are preserved by being rubbed with a peculiar kind of earth, obtained from Laibai and New Guinea, from fresh water swamps; it is of a light colour until burnt, when it becomes bright red.”

In all, the collection consists of 49 crania, a number which, even when reduced to 38, owing to some being immature and others of doubtful sex, is still sufficient to give the resulting average measurements and indices a considerable value for the definition of the cranial characters of the low Australioid natives of the Torres Straits Islands.

Of the 49 skulls 7 are young, the basilar suture not having closed; 19 appear to be males, 19 females, and 4 are of doubtful sex. There are also with the crania 82 mandibles, evidently belonging to the same series, but which can in but very few instances, owing to their want of teeth, be referred to their proper crania.

The skulls, as noticed by Mr. MacFarlane, have all been painted a deep vermilion colour, which comes off upon handling in the form of a fine red powder. One, of doubtful sex, has an artificial wooden nose, and several others have evidently but recently lost similar appendages. It is unfortunate that nearly

all have lost the greater part of their teeth, none having incisors, and only 8 out of the 42 adult skulls being available for Professor Flower's dental index, taken on the premolars and molars combined.

On the whole, although differing considerably among themselves, the skulls are markedly Melanesian and even Australian in type, being characterised by their long, narrow, and rather low brain-cases, low orbits, heavy, frowning brow-ridges, short and little prominent nasal-bones, small nasal spines, long palates, large teeth, and considerable prognathism. This last character, in fact, is so strongly marked that their gnathic index much exceeds that of any other race in the world of which it has been recorded. On the other hand, these skulls have comparatively narrow noses, their average nasal index being some 2 or 3 per cent. lower than those of such pure races as the Fijians, Australians or Tasmanians. This difference is perhaps partly due to the slight admixture of Polynesian blood which is known to have taken place in this region. Indeed, one skull, Male No. 19, shows so many strictly Polynesian characters that I have thought it better to exclude it from the general averages, although that it is not a pure Polynesian is shown by its well-marked prognathism, a point in which the Polynesian element seems in no way to have affected any of the skulls.

The majority of the skulls are quite of normal shape, but five of the male skulls, among which is the one of Polynesian type, just referred to, have undergone considerable occipital flattening, probably owing to sleeping on a hard wooden pillow. These distorted crania have been omitted from such averages as refer to the shape and size of the brain case, but have been included in the facial averages and indices.

Wormian bones are both few and small, while epipterics are present on one or both sides of 9 of the 42 adult skulls. The squamosal articulates with the frontal in 4 males, 5 females, 2 of doubtful sex and 1 young, making a total of 12 out of 49. One skull only, Male No. 18, is metopic. Female No. 27 has a well-marked interparietal bone. Inia as a whole are small, especially when contrasted with the heavy and prominent transverse occipital ridges.

Passing to the various cranial measurements and indices in detail, we find first that the *capacity of the brain-case* averages as follows:—

| | | |
|--------------------|--------------------------|--------------------------|
| ♂ (17 individuals) | 1422·5 cubic centimeters | } Both sexes (36) 1335·7 |
| ♀ (19 „) | 1258·0 „ | |

the female average being 88·4 per cent. of that of the males. The extremes are—Maxima, ♂ 1591, ♀ 1447, and Minima ♂ 1245 and ♀ 984. The Polynesian male skull, No. 19, has a

capacity of 1614 c. cm., nearly 200 above the average, and 23 above the highest of the true Melanesian males.

The *cephalic index* shows that the skulls are as a whole markedly dolichocephalic, the averages being—

| | | | |
|--------|------|---|-----------------------|
| ♂ (14) | 68·3 | } | Both sexes (33) 69·4. |
| ♀ (19) | 70·1 | | |

This index is lower than any in Broca's long list,¹ but is surpassed by that of the pure-blooded "Kai-Colo" Fijians, as given by Professor Flower,² who have an index of only 65·6, as recalculated on the glabello-occipital length, to correspond to the present and more usual manner of taking the index.

Male skull No. 1 has an index of 61·9, that of the narrowest headed Fijian being 61·6. The lowest female index is 64·7 in No. 25. On the other hand, the highest normal indices are ♂ 74·0 and ♀ 75·9. The male, more or less Polynesian skull No. 19, has an index of 81·2, and the four skulls showing occipital flattening have indices ranging from 74·9 to 81·8. The actual average greatest breadth is only 127 mm., that of the Fijians being 125·8, and the lowest in Broca's list,³ that of 18 Hottentots, being 130·0.

Altitudinal index:—

| | | | |
|--------|------|---|-----------------------|
| ♂ (14) | 71·1 | } | Both sexes (33) 71·8, |
| ♀ (19) | 72·3 | | |

which is 103·4 p.c. of the average cephalic index.

The *fronto-zygomatic index*,⁴ in which the bi-zygomatic breadth is taken as 100, and the index formed by the stephanic breadth, is as follows:—

| | | | |
|--------|------|---|-----------------------|
| ♂ (13) | 80·7 | } | Both sexes (31) 82·8. |
| ♀ (18) | 84·3 | | |

This represents a highly phænozygous type of skull, since in all skulls with indices below 90, the zygomata may be seen beyond the brain case, when the skull is held out at arm's length. It is interesting to notice the striking difference between the males and females, a difference evidently owing to the greater development in the former of the masticating

¹ "Review d'Anthrop.," vol. i, p. 385, 1872.

² "Journ. Anthrop. Inst.," vol. x, p. 157, 1880.

³ "Bull. Soc. d'Anthrop.," (3) vol. ii, p. 806.

⁴ Cf., Topinard "Elém. d'Anthrop. Gen." p. 934, 1885, and Garson "Journ. Anthrop. Inst.," vol. xiii, p. 390, 1884. I should have preferred to take this index with the stephanic breadth as a base, the bi-zygomatic breadth forming the index; but M. Topinard has indexed such a large number of skulls, and has obtained such important results, both from this index itself, and from the relation it bears to another obtained by a comparison between the bi-goniaic and bi-zygomatic breadths, that it would now be inadvisable to reverse the method of taking the index.

muscles connected with the zygoma. Some instances in other races of this index, taken by Professor Topinard, are as follows :—

♂ Parisians (117) 90·7 ; Australians (55) 81·3 ; New Caledonians (70) 77·2.
 ♀ " (83) 91·7 ; " (23) 86·8 ; " (10) 79·7.

The *orbits*, as in all the Melanesian races, show very markedly the differences between the sexes, the indices being—

♂ (18) 74·6 } Both sexes (37) 80·2.
 ♀ (19) 85·4 }

In the males the orbits are long and low, and have enormously thickened brow ridges, and their index is exceedingly microsome, being lower by no less than nearly 10 per cent. than the Fijians, and by 2 per cent. than the male Tasmanians recorded in Professor Flower's catalogue.¹ Broca's measurements are taken in such a manner as to slightly *reduce* the resulting indices, but nevertheless no index given by him equals the present, his four lowest being—9 Guanches of Teneriffe 76·5, 5 Tasmanians 78·3, 10 Australians 78·8, and 22 New Caledonians 78·9.²

In the females the orbits are comparatively high and rounded, though some of the skulls have indices as low as many of the males. Their average index (85·4) shows an increase of no less than 10·8 per cent. on that of the males, a fact necessitating a modification of Broca's statement that the female index never surpasses that of the males by more than 4·3 per cent., and showing, at least in the lower races, that characters founded on the orbital index are almost worthless unless sex is taken account of. The sexual difference in the case of Professor Flower's Fijians was 6·5 per cent.

Passing to the highly important *nasal index* we find it a follows :—

♂ (18) 53·4 } Both sexes 53·9.
 ♀ (19) 54·5 }

This index, perhaps owing to an admixture of Polynesian blood, is decidedly lower on the average than is usual among pure Melanesian races. The breadth of the nose among the present series varies, however, more than any other character, some, *e.g.*, Male No. 1, attaining the high index of 62·3, and Female No. 34, 62·5, while others are as low as 47·1 (♂ No. 18) and 45·8 (♀ No. 20), not to speak of the more distinctly Polynesian skull ♂ No. 19, which has an index of only 40·0. The females are, as a whole, in this character as in many of the others, both more uniform and more markedly Melanesian than the males. Throughout the series the form of the lower margin of the nasal aperture is of the low simian type described by Professor Flower as occurring in the Fijians, and so characteristic

¹ Cat. Coll. Surg., vol. i, p. 255, 1879.

² C. R. Ass. Franç. Lilli., p. 693, 1874.

of the lowest races of man. Without exception, the ridge present in the white races at the lower edge of the opening is quite effaced, and the floor of the nasal chamber passes insensibly into the anterior surface of the alveolar process. On this account I have been quite unable to take with any satisfaction the usual measurement "height of alveolus," owing to the impossibility of finding the upper measuring point. In fact, in many of the skulls the measurement would be rather the *length* of alveolus, owing to the extreme forward projection of the jaws. From the useful measurement "Naso-alveolar height of face," however, the alveolar height can be approximately calculated by subtracting from it the height of the nose.

The *nasal bones* are short, rounded in front, and broad below. Their breadth at the nasion is very variable, being in some nearly as much as at their lower edge, and in others only four or five millimetres. One skull, ♂ No. 1, has nasals only 13 mm. in length along the suture, the rest averaging from 17 to 20. The nasal spine is always feebly developed, either Nos. 1 or 2 of Broca's scale scarcely ever equalling No. 3.

Naso-malar index.—

The relative anterior projection of the nasion and central line of the face as compared to the external margin of the orbit has always been recognised as an important racial character, although but few attempts have been made to estimate it accurately. For this purpose Professor Flower has invented the "naso-malar angle,"¹ which would express the relation most satisfactorily if it could always be taken with accuracy and in the same manner by different observers; but unfortunately this is not the case, as with the utmost care different measurements of the very same skull vary very considerably, owing to slight differences in the manner of holding the goniometer and the difficulty of always placing its limb on the same spots on the malars.

I purpose now, therefore, as has been done in several other cases lately, to substitute for this angle, which necessitates the use of a goniometer, a numerical index, which will, I believe, show with very considerable accuracy the projection of the nasion beyond the malars, and will at the same time obviate the use of another instrument in addition to the ordinary sliding compass and measuring tape.

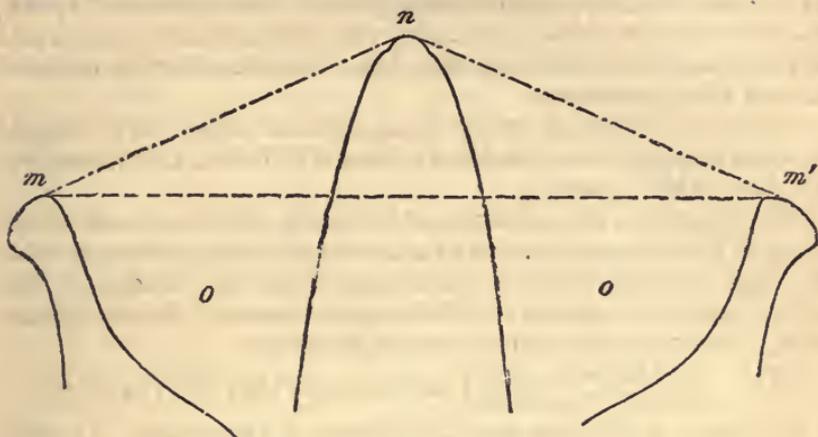
The basis of the index is as follows:—

If a horizontal section of a skull be made in the plane of the nasion, we obtain three points—*n* the nasion (or more often the point described below²), and *m* and *m'*, the most posterior points on the anterior surface of the outer edge of

¹ "Journ. Anthropol. Inst.," vol. ix, p. 117 and vol. x, p. 160.

² The most posterior point on the bridge of the nose, generally from 2 to 4 mm. below the actual nasion.

the orbits, whose relations are somewhat as in this figure, and it is the prominence forward of *n* in front of the line *m m'* which



DIAGRAMMATIC HORIZONTAL SECTION OF A SKULL IN THE PLANE OF THE NASION.
n, nasion. *m n m'*, naso-malar line. *m m'*, bi-malar line.

we wish to estimate. By measuring therefore the line *m n m'*, which might be called the *naso-malar line*, and comparing it to the length of the line *m m'* (the *bi-malar line*), the latter being taken as 100, we obtain an index which expresses the projection very accurately, and which is easily taken with precision. The exact method used is described below.¹

The following are some examples of this "naso-malar" index:—

| | | | |
|-------------------------------------|-------|----|---------------------|
| 7 Gorillas | 103.0 | .. | (Range 101.7—103.8) |
| 9 Mongols | 105.9 | .. | (" 105.1—106.9) |
| 9 Timor Laut Malays | 107.4 | .. | (" 104.4—109.5) |
| 5 Andamanese | 107.5 | .. | (" 105.5—108.6) |
| 25 West African Negroes | 108.5 | .. | (" 106.1—113.3) |
| 35 Torres Straits Islanders | 108.7 | .. | (" 106.1—112.0) |
| 16 Caucasians | 111.1 | .. | (" 109.1—114.2) |

¹ First make a pencil dot on the most posterior point on the front surface of the outer edge of each orbit, this point being usually from 2 to 4 mm. below the fronto-malar suture. Then for the first or "naso-malar" breadth take with a steel tape the distance from one dot to the other *over* the bridge of the nose, the tape being allowed to pass naturally over the lowest and most posterior point of the central nasal line, without reference to whether it is actually over the nasion itself, or, as occurs in most skulls, over the nasal bones a few millimetres below the nasion. For the second, or "bi-malar breadth," measure with the sliding compasses the distance between the same two points in a direct line, taking great care that the two measurements are from exactly the same points, the actual position of the points being of comparatively small importance. The index is then obtained from the two measurements in the usual way, the formula being
$$\frac{\text{Naso-malar line} \times 100}{\text{Bi-malar line.}}$$

This index can also be easily obtained in the living subject, with a very near approach to accuracy, the bi-malar breadth being taken in the same way as on the skull, while for the naso-malar line it is only necessary to measure with compasses the distance from either of the outer edges of the orbit to a spot in

From this table, based though it is on rather insufficient materials, may be plainly seen the comparative flatness of face in the pure Mongols, approaching that of the anthropoid apes; the close relation of the African to the Melanesian negroes, and the long interval which separates the Caucasians in this respect from all the lower races.

Individual skulls or races having indices below 107·5, might be called *platyopic* or flat faced; from 107·5 to 110·0, *mesopic*; and above 110·0, *pro-opic*.

With regard to the influence of sex upon the index, one finds, as might have been expected in a low race like the present, that the males have a slightly higher index than the females, owing to the greater thickness of their nasal bones. Of the Torres Straits Islanders the indices are as follows:—

| | | | |
|--------|------------------------|---|---|
| ♂ (17) | 108·9 (106·8 to 111·9) | } | Both sexes (35) 108·7 (106·1 to 112·0). |
| ♀ (18) | 108·5 (106·1 to 112·0) | | |

A difference of 0·4 per cent. in favour of the males. In the same way the greater thickness of the nasal bones is possibly the chief cause of the slightly higher index (by 0·2 per cent.) of the Melanesian as compared to the African negroes, the essential relations of the cheek bones to the central line of the face appearing to be about the same in both.

The form of the *palate* is naturally of a remarkably low and simian type, the maxillary index, taken in the manner recommended by Professor Flower,¹ from the relative *external* length and width of the jaw, being only

| | | | |
|--------|-------|---|------------------------|
| ♂ (18) | 105·6 | } | Both sexes (33) 105·4, |
| ♀ (15) | 105·1 | | |

which is no less than 6 per cent. below that of the Fijians, 12 below that of the English, and 19 below that of the Esquimaux referred to by Professor Flower. Three skulls (2 ♂ and 1 ♀) have indices below 100, one of them, No. 1, having the extraordinary index of 92·9, no other below 97 having ever yet been recorded. Five skulls (1 ♂ and 4 ♀) have the length and width equal, and in all the palates are, judging by the eye, of a remarkably long and hypsiloid form.

Passing to the highly important character of *gnathism*, or the position of the upper jaw in relation to the cranium, we find that the present race is, so far as is known at present, considerably the most prognathous in the whole world, the *gnathic index*² being

| | | | |
|--------|-------|---|------------------------|
| ♂ (18) | 106·5 | } | Both sexes (37) 107·1. |
| ♀ (19) | 107·7 | | |

the centre of the bridge of the nose, and to double the result. Six living English males measured in this way have an average of 114·4, which is just about what one would expect to result were the index taken on their skulls.

¹ "Journ. Anthropol. Inst.," vol. x, p. 161.

² Flower, "Journ. Anthropol. Inst.," vol. ix, p. 119, and vol. x, p. 163.

That these figures represent a most extraordinary degree of prognathism will be seen by examining the list given in Professor Flower's catalogue of the skulls in the College of Surgeons (p. 255) where the highest indices are:—

9 Fijians, 103·2; 11 Tasmanians, 103·3; 58 "other Melaneseans," 103·4; 51 Australians, 103·6; and 36 African negroes, 104·4; so that the index of no other race approaches within nearly 3 per cent. of that of these Torres Straits Islanders, while those of the five groups mentioned are all within 1·2 per cent. of each other. The present series being a fairly large and representative one, half males and half females, the two last indices show that prognathism and extreme length of palate are by far the most striking characteristics of these Islanders. No less than 6 individual gnathic indices exceed 110·0, the highest male being No. 9, 112·1, and the highest female No. 38, 113·2. These two indices are only exceeded by that of one male African negro in the large collection of the College of Surgeons (No. 1228—114·8), and are not equalled by any of the Melaneseans in the same collection.

Following out for the present race a suggestion made by Professor Flower ("Journ. Anthropol. Inst." vol. x, p. 165), I have placed at the bottom of Table 2 all the measurements, both male and female, reduced to terms of their respective "cranio-facial axes," formed by the basi-nasal line, No. 21 of the tables of measurements. These are so arranged as to be easily comparable with one another and with the terms deduced by Professor Flower from the Fijian and Andamanese skulls described by him. The resulting numbers show in a remarkably clear manner the variations in size and form between the several series, the differences in height, length, proportion of nose and projection of jaw between the Torres Straits Islanders and the other races mentioned being especially noticeable. In fact, all the proportions of the skulls seem to be most fully brought out by this excellent method of investigation, which it is to be hoped will be utilized in future by all authors giving measurements of series of skulls; we shall thus gradually obtain many sets of numbers showing, in the simplest and most satisfactory way, the various cranial proportions of their respective races.

Of individual skulls, one only particularly claims our attention, namely ♂ No. 1, which has already been referred to as presenting exceptionally low characters, and which has therefore been figured in Plates XIV and XV. In most human skulls the different characters are present in varying degrees, their general average characterizing the race, but in this skull all the marks of degredism are present in an exaggerated degree. It is exceedingly dolichocephalic (61·9), flat sided, with a very prominent occipital

region; the forehead is low and receding, the brow ridges are enormously thick and overhanging, almost excelling the largest No. 4, in Broca's scale of glabellæ; the orbits are remarkably broad and low (index 67·5, the lowest in the College of Surgeons catalogue being 71·4 in a Tasmanian), chiefly owing, of course, to the downward development of the brow ridges; the nasal bones are unusually short and little prominent, the nasal aperture is low and broad (index 62·2), and its lower margin is produced into two broad rounded channels, leading forward nearly horizontally towards the alveolar surface. The nasal spine is reduced to Broca's No. 1, which is almost *nil*. The jaw itself is massive, and produced horizontally forward, the gnathic index being 111·1, and that showing the shape of the palate 92·9. The teeth are unfortunately all gone, with the exception of the right first premolar, but their alveoli show what their size and strength must have been. No lower jaw can be found among the series to fit the cranium.

For these various reasons, therefore, this skull may be taken as a type of the lowest and most simian human cranium likely to occur at the present day, and one whose like it may become more and more impossible to obtain in the future owing to the steady admixture of all these lower negroid races with people springing from the higher Caucasian and Mongoloid stocks.

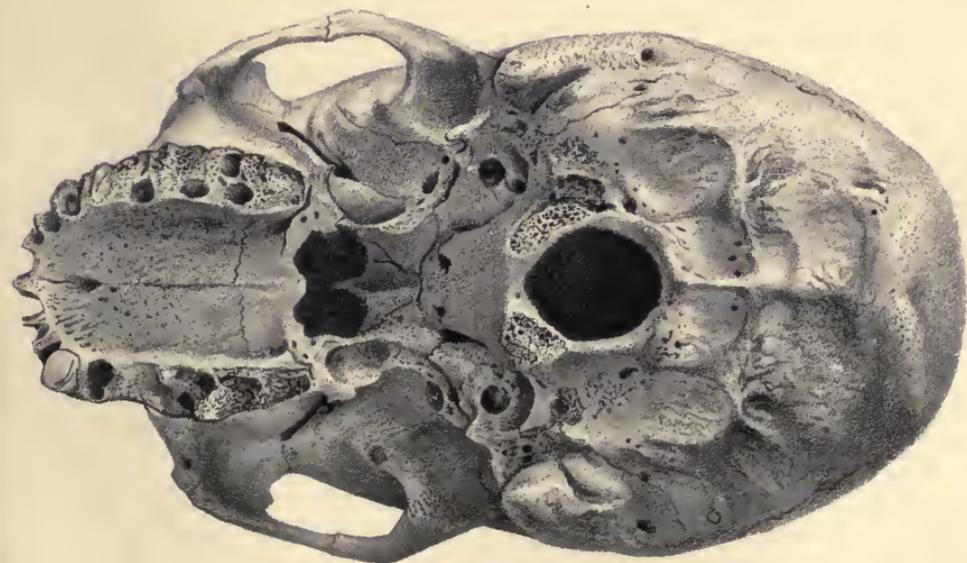
Notes to the tables of measurements and indices.

| | |
|--------------|--|
| Measurements | Nos. 1 to 7, 9 to 11, 16 to 20, 23 to 26, 28 to 30, 33 and 34 are taken according to Broca's "Instructions Craniologiques," 1875. |
| " | Nos. 8, 12 to 15, 21, 22, 31, 32, 35 to 37, according to Flower ("Journ. Anthrop. Inst." Vol. IX, p. 132; Vol. X, p. 172; Vol. XIV, p. 183, and Cat. Coll. Surg. Vol. I, p. xvii, 1879). |
| Indices | Nos. 1 to 4 and 7. Broca, l.c. |
| " | 5 to 8. See above. |
| " | 6, and 9 to 11. Flower, l.c. |

The capacity has been taken with shot by Broca's method as revised by Topinard ("Rev. d'Anthrop." 1882, p. 394), using, however, the cylindrical rammer recommended by Dr. Garson, instead of the conical pointed rammer of Broca.

Explanation of Plates XIV and XV.

Skull of Male Torres Straits Islander, No. 1

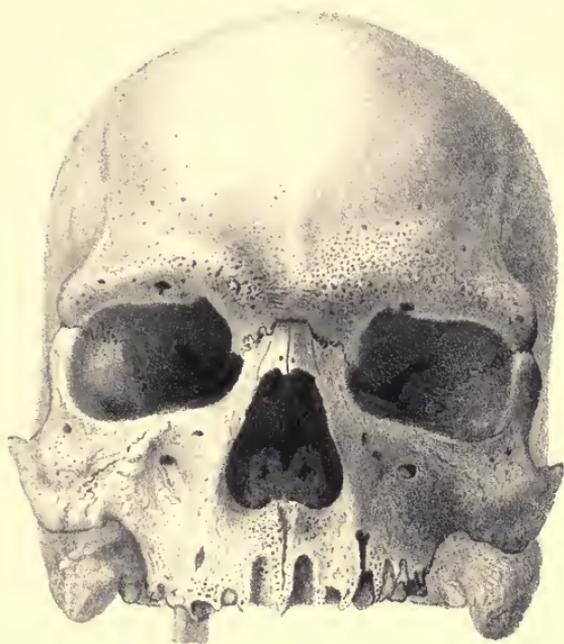


J. Smit del et lith.

1/2 NAT. SIZE.

Mintern Bros. imp.

CRANIUM OF TORRES STRAITS ISLANDER.
MALE NO. 1.



½ NAT. SIZE.

J. Smit del et lith.

Mintern Bros. imp.

CRANIUM OF TORRES STRAITS ISLANDER.
MALE NO. 1.

DISCUSSION.

Mr. C. ROBERTS said that an observation which Mr. Thomas had made, to the effect that the female skulls were more distinctly Melanesian and of more uniform type than the male ones, confirmed an opinion which he had long held and endeavoured to develop,¹ namely, that the racial type is more distinctly marked and more persistent in the female than in the male. The speaker was led to form this opinion from noticing that measurements of the living form had a narrower range of variation in women than men. Observations of stature, span of arms, &c., were more closely grouped round the mean, and there were fewer giants and dwarfs among women than among men. In studying the skeleton, anthropologists had been attracted by such conspicuous features as great size, roughness, goring or hollowing of the surface of the bones—characters which were due to physiological conditions of a temporary nature, such as the attachment of muscles employed in various occupations, which were common to many different races, and therefore were exceptional features which ought to be eliminated in our endeavours to arrive at the central or typical form of a race. Not only in the human race but throughout the animal world the female would appear to be the preserver of the type, while the male introduces the variation or modifications of the type with new conditions of life.

Professor THANE and Dr. GARSON also joined in the discussion, and the author replied.

¹ See *Lancet*, 1880. "Nature's Place in the determination of the Sexes, and the hereditary transmission and the acquisition of Physical and Mental qualities."

TABLE I.
MEASUREMENTS, ♂.

| No. | 1. Capacity. | 2. Length (glabello-occipital). | 2a. Length (ophryo-occipital). | 3. Breadth. | 4. Height. | 5. Stephanic breadth. | 6. Min. Frontal breadth. | 7. Bi-asteric breadth. | 8. Bi-auricular breadth. | Horizontal circumference. | | 11. Transverse vertical circumference. | Transverse arcs. | | | |
|---------------|----------------|---------------------------------|--------------------------------|---------------|---------------|-----------------------|--------------------------|------------------------|--------------------------|---------------------------|---------------|--|------------------|----------------|---------------|----------------|
| | | | | | | | | | | 9. Pre-auricular. | 10. Total. | | 12. Frontal. | 13. Bregmatic. | 14. Parietal. | 15. Occipital. |
| 1 | 1465 | 202 | 198 | 125 | 131 | 105 | 94 | 114 | 112 | 243 | 527 | 415 | 279 | 293 | 313 | 292 |
| 2 | 1517 | 200 | 195 | 139 | 142 | 113 | 102 | 114 | 123 | 252 | 539 | 443 | 298 | 311 | 331 | 288 |
| 3 | 1591 | 197 | 195 | 133 | 142 | 113 | 101 | — | 118 | 242 | 533 | 433 | 283 | 294 | 325 | 298 |
| 4 | 1414 | 195 | 191 | 134 | 131 | 112 | 97 | 108 | 124 | 255 | 526 | 424 | 290 | 288 | 301 | 273 |
| 5 | 1454 | 195 | 191 | 132 | 126 | 109 | 97 | 110 | 116 | 240 | 518 | 423 | 289 | 299 | 313 | 277 |
| 6 | 1522 | 193 | 188 | 138 | 143 | 109 | 97 | 113 | 125 | 248 | 520 | 440 | 287 | 308 | 328 | 287 |
| 7 | — | 192 | 190 | 132 | 139 | 113 | 100 | 112 | 121 | 257 | 530 | 438 | 292 | 298 | 304 | 264 |
| 8 | 1439 | 192 | 189 | 129 | 135 | 109 | 101 | 103 | 121 | 247 | 518 | 425 | 290 | 295 | 313 | 267 |
| 9 | 1343 | 189 | 187 | 124 | 134 | 103 | 94 | 110 | 118 | 238 | 505 | 414 | 273 | 280 | 297 | 257 |
| 10 | 1303 | 188 | 186 | 121 | 133 | 103 | 94 | 104 | 107 | 231 | 503 | 405 | 277 | 285 | 301 | 275 |
| 11 | 1245 | 187 | 184 | 126 | 133 | 103 | 93 | 108 | 117 | 238 | 500 | 428 | 279 | 283 | 293 | 257 |
| 12 | 1367 | 181 | 177 | 134 | 136 | 111 | 96 | 108 | 122 | 235 | 503 | 422 | 280 | 293 | 314 | 263 |
| 13 | 1418 | 179 | 176 | 129 | 138 | 113 | 97 | 112 | 119 | 227 | 497 | 426 | 279 | 295 | 309 | 272 |
| 14 | 1362 | 178 | 176 | 125 | 132 | 106 | 95 | 109 | 116 | 234 | 495 | 413 | 277 | 281 | 296 | 262 |
| 15* | 1591 | 187 | 180 | 140 | 145 | 121 | 106 | 111 | 122 | 256 | 519 | 460 | 294 | 320 | 336 | 274 |
| 16* | 1427 | 177 | 174 | 141 | 137 | 115 | 100 | 113 | 120 | 238 | 508 | 442 | 295 | 318 | 330 | 278 |
| 17* | 1412 | 171 | 170 | 137 | 140 | 115 | 104 | 118 | 124 | 239 | 499 | 435 | 284 | 297 | 315 | 260 |
| 18* | 1313 | 170 | 170 | 139 | 137 | 110 | 101 | 117 | 125 | 235 | 496 | 437 | 293 | 297 | 318 | 255 |
| 19† | 1614 | 181 | 178 | 147 | 140 | 120 | 101 | 117 | 131 | 247 | 523 | 453 | 292 | 318 | 340 | 278 |
| Average ♂ | 1422·5 (17) | 190·6 (14) | 187·4 (14) | 130·0 (14) | 135·4 (14) | 108·7 (14) | 98·3 (18) | 109·6 (13) | 118·5 (14) | 241·9 (14) | 515·3 (14) | 424·9 (14) | 285·5 (18) | 293·1 (14) | 309·9 (14) | 273·0 (14) |
| Average ♂ & ♀ | 1335·7 (36) | 184·3 (33) | 181·8 (33) | 127·8 (33) | 132·1 (33) | 106·7 (33) | 96·0 (37) | 106·7 (32) | 114·8 (33) | 232·3 (33) | 500·8 (33) | 412·4 (33) | 277·4 (37) | 286·0 (33) | 305·4 (33) | 266·5 (33) |

* Excluded from cranial averages.

† Excluded from all averages.

14

TABLE I—continued.
MEASUREMENTS, &c.

| Longitudinal arcs. | | | Foramen magnum. | | 21. Basi-nasal length. | 22. Basi-alveolar length. | 23. Bi-zygomatic breadth. | 24. Bi-jugal breadth. | 25. Inter-orbital width. | 26. Height of face (ophryo-alveolar). | 27. Height of face (naso-alveolar). | 28. Height of malar. | 29. Auriculo-orbital length. | 30. Greatest maxillary breadth. | Orbit. | | Nose. | | Palate. | | 37. Length of pre-molar and molar series. |
|--------------------|---------------|----------------|-----------------|------------|------------------------|---------------------------|---------------------------|-----------------------|--------------------------|---------------------------------------|-------------------------------------|----------------------|------------------------------|---------------------------------|-------------|------------|-------------|------------|-------------|------------|---|
| 16. Frontal. | 17. Parietal. | 18. Occipital. | 19. Length. | 20. Width. | | | | | | | | | | | 31. Height. | 32. Width. | 33. Height. | 34. Width. | 35. Length. | 36. Width. | |
| 135 | 120 | 141 | 37 | 27 | 108 | 120 | 131 | 118 | 29 | 97 | 71 | 26 | 65 | 92 | 27 | 40 | 45 | 28 | 70 | 65 | ... |
| 129 | 132 | 136 | 36 | 27 | 110 | 115 | 138 | 124 | 27 | 103 | 76 | 29 | 75 | 106 | 31 | 42 | 51 | 25 | 66 | 71 | 48 |
| 126 | 145 | 121 | 42 | 29 | 107 | 110 | ... | ... | 26 | 90 | 68 | 26 | 66 | 97 | 31 | 40 | 47 | 24 | 60 | 67 | ... |
| 135 | 125 | 119 | 41 | 30 | 103 | 111 | 143 | 124 | 22 | 95 | 70 | 29 | 70 | 105 | 31 | 42 | 51 | 27 | 64 | 66 | ... |
| 132 | 137 | 112 | 40 | 32 | 100 | 109 | 131 | 118 | 24 | 96 | 72 | 26 | 71 | 93 | 34 | 40 | 46 | 23 | 64 | 62 | ... |
| 128 | 137 | 117 | 39 | ... | 109 | 115 | 141 | 124 | 28 | 101 | 73 | 28 | 73 | 105 | 33 | 41 | 49 | 27 | 62 | 65 | ... |
| 134 | 136 | 117 | 36 | 31 | 107 | 111 | 138 | 128 | 28 | 107 | 76 | 29 | 65 | 110 | 31 | 42 | 52 | 30 | (c)66 | 71 | ... |
| 134 | 135 | 123 | 35 | 30 | 100 | 108 | 137 | ... | 24 | 101 | 74 | 28 | 69 | ... | 32 | 41 | 48 | 26 | 61 | 68 | 43·4 |
| 129 | 134 | 120 | 37 | 29 | 99 | 111 | 136 | 122 | 25 | 100 | 73 | 30 | 70 | 95 | 32 | 41 | 47 | 25 | 65 | 67 | ... |
| 126 | 135 | 118 | 35 | 28 | 99 | 103 | 125 | 113 | 21 | 96 | 70 | 22 | 69 | 92 | 34 | 40 | 49 | 25 | 60 | 68 | 46 |
| 130 | 125 | 114 | 37 | 29 | 100 | 107 | 129 | 111 | 22 | 97 | 70 | 28 | 70 | 96 | 30 | 39 | 46 | 24 | 60 | 64 | ... |
| 128 | 126 | 113 | 37 | 31 | 101 | 109 | 134 | 115 | 24 | 97 | 72 | 28 | 68 | 99 | 34 | 39 | 50 | 24 | 63 | 64 | ... |
| 123 | 132 | 150 | ... | ... | 102 | 106 | 135 | 121 | 24 | 88 | 66 | 27 | 68 | 95 | 31 | 40 | 45 | 25 | 61 | 69 | ... |
| 123 | 123 | 104 | 39 | 31 | 102 | 106 | 128 | 113 | 25 | 103 | 74 | 25 | 64 | 91 | 36 | 40 | 50 | 25 | 63 | 68 | 44 |
| 139 | 134 | 117 | 35 | 29 | 104 | 115 | 138 | 120 | 26 | 98 | 72 | 26 | 71 | 109 | 30 | 39 | 49 | 26 | 66 | 69 | 42·5 |
| 126 | 121 | 115 | 38 | 33 | 106 | 114 | 137 | 124 | 25 | 94 | 69 | 22 | 71 | 98 | 34 | 42 | 46 | 25 | 66 | 66 | ... |
| 119 | 125 | 112 | 35 | 31 | 103 | 103 | 136 | 120 | 27 | 89 | 65 | 26 | 66 | 98 | 32 | 40 | 45 | 24 | 59 | 65 | ... |
| 123 | 115 | 113 | 35 | 30 | 102 | 110 | 141 | 123 | 23 | 98 | 76 | 27 | 67 | 100 | 33 | 41 | 51 | 24 | 64 | 67 | ... |
| 134 | 131 | 113 | 37 | 33 | 105 | 113 | 139 | 120 | 22 | 98 | 77 | 27 | 72 | 100 | 36 | 40 | 55 | 22 | 63 | 67 | 47·7 |
| 128·8 | 130·7 | 118·4 | 37·3 | 29·8 | 103·4 | 110·2 | 135·2 | 119·9 | 25·0 | 97·2 | 71·5 | 26·2 | 68·9 | 97·8 | 32·0 | 40·5 | 48·2 | 25·7 | 63·2 | 66·8 | 45·4 |
| (18) | (18) | (17) | (17) | (16) | (18) | (18) | (17) | (16) | (18) | (18) | (18) | (18) | (18) | (17) | (18) | (18) | (18) | (18) | (18) | (18) | (5) |
| 126·9 | 128·4 | 115·7 | 35·6 | 28·9 | 100·5 | 107·5 | 129·8 | 114·6 | 24·3 | 93·3 | 68·8 | 24·7 | 67·3 | 95·3 | 32·2 | 39·1 | 46·6 | 25·0 | 61·1 | 64·4 | 44·9 |
| (37) | (37) | (36) | (36) | (35) | (37) | (35) | (35) | (35) | (37) | (35) | (35) | (37) | (37) | (36) | (37) | (37) | (37) | (37) | (34) | (33) | (7) |

TABLE II.
MEASUREMENTS, ♀.

| No. | 1. Capacity. | 2. Length (glabell-o-occipital). | 2a. Length (ophryo-occipital). | 3. Breadth. | 4. Height. | 5. Stephanic breadth. | 6. Min. frontal breadth. | 7. Bi-asteric breadth. | 8. Bi-auricular breadth. | Horizontal circumference. | | 11. Transverse vertical circumference. | Transverse arcs | | | |
|----------------------------------|----------------------|----------------------------------|--------------------------------|----------------|----------------|-----------------------|--------------------------|------------------------|--------------------------|---------------------------|----------------|--|-----------------|----------------|----------------|----------------|
| | | | | | | | | | | 9. Pre-auricular. | 10. Total. | | 12. Frontal. | 13. Bregmatic. | 14. Parietal. | 15. Occipital. |
| 20 | 1447 | 191 | 190 | 130 | 127 | 113 | 100 | 109 | 117 | 240 | 524 | 415 | 283 | 289 | 317 | 288 |
| 21 | 1348 | 189 | 188 | 126 | 131 | 106 | 91 | 105 | 109 | 226 | 505 | 407 | 275 | 285 | 307 | 268 |
| 22 | 1322 | 188 | 187 | 123 | 123 | 103 | 94 | 109 | 113 | 228 | 505 | 403 | 272 | 278 | 298 | 273 |
| 23 | 1439 | 185 | 184 | 136 | 131 | 112 | 97 | 110 | 117 | 236 | 515 | 415 | 283 | 293 | 322 | 281 |
| 24 | 1256 | 185 | 183 | 130 | 128 | 106 | 93 | 104 | 113 | 224 | 502 | 412 | 271 | 286 | 305 | 274 |
| 25 | 1217 | 184 | 182 | 119 | 130 | 105 | 93 | 97 | 107 | 223 | 490 | 407 | 269 | 283 | 300 | 263 |
| 26 | 1279 | 184 | 177 | 136 | 128 | 106 | 93 | 106 | 122 | 215 | 498 | 403 | 264 | 279 | 308 | 267 |
| 27 | 1312 | 183 | 182 | 134 | 132 | 106 | 98 | 110 | 110 | 233 | 497 | 415 | 279 | 290 | 317 | 272 |
| 28 | 1320 | 183 | 182 | 122 | 138 | 109 | 96 | 105 | 115 | 233 | 498 | 410 | 274 | 280 | 297 | 265 |
| 29 | 1422 | 182 | 180 | 130 | 134 | 110 | 100 | 108 | 116 | 242 | 502 | 420 | 285 | 294 | 305 | 261 |
| 30 | 1273 | 181 | 178 | 123 | 135 | 100 | 92 | 100 | 114 | 234 | 489 | 406 | 271 | 281 | 296 | 253 |
| 31 | 1202 | 180 | 177 | 123 | 129 | 101 | 90 | 100 | 108 | 220 | 484 | 399 | 261 | 281 | 307 | 266 |
| 32 | 1317 | 177 | 176 | 122 | 132 | 109 | 100 | 107 | 109 | 222 | 485 | 407 | 272 | 284 | 305 | 263 |
| 33 | 1182 | 174 | 173 | 123 | 129 | 105 | 93 | 100 | 107 | 217 | 477 | 385 | 260 | 270 | 288 | 255 |
| 34 | 1107 | 172 | 170 | 120 | 126 | 100 | 90 | 106 | 114 | 222 | 469 | 392 | 255 | 261 | 284 | 251 |
| 35 | 1128 | 171 | 170 | 129 | 128 | 108 | 93 | 100 | 111 | 223 | 478 | 405 | 276 | 288 | 305 | 247 |
| 36 | 984 | 171 | 169 | 116 | 126 | 93 | 83 | 104 | 105 | 211 | 462 | 384 | 252 | 267 | 284 | 251 |
| 37 | 1185 | 170 | 167 | 129 | 125 | 105 | 96 | 102 | 115 | 225 | 474 | 402 | 272 | 281 | 298 | 247 |
| 38 | 1162 | 163 | 163 | 123 | 123 | 102 | 91 | 107 | 109 | 204 | 460 | 387 | 251 | 266 | 297 | 246 |
| Average (♀) | 1258.0 (19) | 179.6 (19) | 177.8 (19) | 125.8 (19) | 129.7 (19) | 105.2 (19) | 93.8 (19) | 104.7 (19) | 112.2 (19) | 225.2 (19) | 490.2 (19) | 403.2 (19) | 269.7 (19) | 280.8 (19) | 302.1 (19) | 261.6 (19) |
| B.N. (No. 21) reduced to 0 | ♂ 1375.7 ♀ 1287.6 | 184.3 183.7 | 181.2 181.9 | 125.7 128.8 | 130.9 132.8 | 105.1 107.7 | 95.1 96.0 | 106.0 107.2 | 114.6 114.8 | 233.9 230.5 | 498.4 501.7 | 410.9 412.7 | 276.1 276.0 | 283.5 287.2 | 299.7 309.2 | 264.2 267.8 |

TABLE II—continued.
MEASUREMENTS, ♀.

| Lengitudinal arcs. | | | Foramen magnum. | | 21. Basi-nasal length. | 22. Basi-alveolar length. | 23. Bi-zygomatic breadth. | 24. Bi-jugal breadth. | 25. Inter-orbital width. | 26. Height of face (ophryo-alveolar). | | 27. Height of face (nasi-alveolar). | | 28. Height of malar. | 29. Auriculo-orbital length. | 30. Greatest maxillary breadth. | Orbit. | | Nose. | | Palate. | | 37. Length of premaxilar and molar series. |
|--------------------|---------------|----------------|-----------------|------------|------------------------|---------------------------|---------------------------|-----------------------|--------------------------|---------------------------------------|-------------|-------------------------------------|------------|----------------------|------------------------------|---------------------------------|-------------|------------|-------------|------------|---------|-----|--|
| 16. Frontal. | 17. Parietal. | 18. Occipital. | 19. Length. | 20. Width. | | | | | | 26. Height. | 27. Height. | 31. Height. | 32. Width. | | | | 33. Height. | 34. Width. | 35. Length. | 36. Width. | | | |
| 134 | 130 | 123 | 38 | 30 | 97 | 108 | 132 | 113 | 26 | 92 | 71 | 28 | 66 | 91 | 33 | 36 | 43 | 22 | 59 | 63 | ... | ... | |
| 129 | 133 | 120 | 32 | 27 | 99 | 104 | 125 | 108 | 22 | 91 | 67 | 25 | 68 | 91 | 33 | 36 | 45 | 24 | 59 | 59 | 42 | ... | |
| 127 | 133 | 118 | 30 | 31 | 103 | 109 | 125 | 111 | 23 | 89 | 67 | 24 | 67 | 94 | 31 | 38 | 44 | 26 | 57 | 63 | ... | ... | |
| 128 | 133 | 121 | 34 | 30 | 98 | 104 | 129 | 113 | 23 | 87 | 66 | 25 | 69 | 93 | 33 | 38 | 50 | 24 | 57 | 64 | ... | ... | |
| 130 | 126 | 119 | 34 | 29 | 97 | 105 | 127 | 111 | 24 | 89 | 63 | 22 | 64 | 97 | 30 | 36 | 44 | 22 | 61 | ... | ... | ... | |
| 127 | 133 | 111 | 33 | 26 | 98 | 105 | 123 | 109 | 23 | 91 | 66 | 23 | 66 | 91 | 32 | 39 | 44 | 25 | 58 | 59 | ... | ... | |
| 135 | 126 | 110 | 38 | 29 | 102 | ... | ... | 118 | 25 | ... | ... | 22 | 66 | 105 | 34 | 39 | 43 | 27 | ... | ... | ... | ... | |
| 124 | 120 | 125 | 32 | 26 | 103 | 113 | 122 | 108 | 28 | 89 | 69 | 24 | 67 | 90 | 31 | 39 | 43 | 25 | 62 | 61 | ... | ... | |
| 124 | 127 | 124 | 35 | 29 | 101 | ... | 130 | 116 | 25 | ... | ... | 21 | 67 | 96 | 32 | 40 | 45 | 25 | ... | ... | ... | ... | |
| 123 | 132 | 106 | 38 | 30 | 103 | 106 | 131 | 116 | 25 | 93 | 71 | 26 | 66 | 97 | 35 | 41 | 40 | 26 | 57 | 63 | ... | ... | |
| 128 | 127 | 103 | 35 | 27 | 104 | 108 | 127 | 113 | 26 | 98 | 71 | 25 | 67 | 99 | 36 | 38 | 50 | 24 | 60 | 64 | ... | ... | |
| 126 | 134 | 113 | 32 | 27 | 92 | 102 | 120 | 102 | 21 | 86 | 63 | 24 | 62 | 88 | 30 | 37 | 43 | 24 | 59 | 59 | ... | ... | |
| 123 | 121 | 123 | 33 | 26 | 93 | 101 | 123 | 109 | 25 | 89 | 64 | 22 | 65 | 93 | 34 | 37 | 42 | 24 | 58 | 62 | ... | ... | |
| 119 | 129 | 105 | 34 | 28 | 93 | 96 | 118 | 108 | 24 | 87 | 65 | 20 | 60 | 86 | 30 | 37 | 46 | 24 | 54 | 57 | ... | ... | |
| 119 | 111 | 110 | 35 | 28 | 98 | 107 | 120 | 104 | 22 | 97 | 71 | 22 | 66 | 89 | 33 | 37 | 47 | 24 | 62 | 62 | 45 | ... | |
| 124 | 129 | 99 | 32 | 26 | 94 | 102 | 125 | 110 | 25 | 75 | 55 | 19 | 68 | 91 | 29 | 37 | 40 | 25 | ... | ... | ... | ... | |
| 123 | 117 | 106 | 32 | 27 | 93 | 102 | 120 | 109 | 21 | 90 | 65 | 27 | 67 | 92 | 32 | 37 | 46 | 23 | 59 | 61 | ... | ... | |
| 122 | 110 | 110 | 34 | 29 | 97 | 104 | 123 | 110 | 23 | 89 | 63 | 22 | 64 | 98 | 35 | 39 | 42 | 26 | 61 | 61 | ... | ... | |
| 111 | 127 | 106 | 36 | 23 | 91 | 103 | 120 | 105 | 19 | 83 | 64 | 20 | 63 | 86 | 32 | 37 | 40 | 24 | 57 | 60 | ... | ... | |
| 125.1 | 126.2 | 113.3 | 34.1 | 23.1 | 97.7 | 104.6 | 124.7 | 110.2 | 23.7 | 89.1 | 65.9 | 23.2 | 65.7 | 93.0 | 32.4 | 37.8 | 45.1 | 24.4 | 58.6 | 61.5 | 43.5 | ... | |
| (19) | (19) | (19) | (19) | (19) | (19) | (17) | (18) | (19) | (19) | (17) | (17) | (19) | (19) | (19) | (19) | (19) | (19) | (19) | (16) | (15) | (2) | ... | |
| 121.6 | 126.4 | 114.5 | 36.7 | 23.8 | 100.0 | 106.6 | 130.8 | 116.0 | 24.2 | 94.4 | 69.1 | 25.3 | 66.6 | 94.6 | 30.9 | 39.2 | 46.6 | 24.9 | 61.1 | 64.6 | 43.9 | ... | |
| 128.0 | 129.2 | 115.9 | 34.9 | 28.8 | 100.0 | 107.1 | 127.6 | 112.8 | 24.3 | 91.2 | 67.5 | 23.7 | 67.2 | 95.2 | 33.2 | 38.7 | 46.2 | 25.0 | 59.9 | 62.9 | 44.5 | ... | |

TABLE III.
INDICES ♂.

| No. | 1. Cephalic. | 2. Altitudinal. | 3. Frontal. | 4. Stephanic. | 5. Fronto-zygomatic. | 6. Orbital. | 7. Nasal. | 8. Naso-malar. | 9. Maxillary. | 10. Gnathic. | 11. Dental. |
|------------------------|--------------|-----------------|--------------|---------------|----------------------|--------------|--------------|----------------|---------------|---------------|-------------|
| 1 | 61·9 | 64·9 | 75·2 | 89·5 | 80·1 | 67·5 | 62·2 | 109·4 | 92·9 | 111·1 | ... |
| 2 | 69·5 | 71 | 73·4 | 90·3 | 81·9 | 73·8 | 49 | 109·2 | 107·6 | 104·5 | 43·6 |
| 3 | 67·5 | 72·1 | 75·9 | 89·4 | ... | 77·5 | 51·1 | 109·8 | 111·7 | 102·8 | ... |
| 4 | 68·7 | 67·2 | 72·4 | 86·6 | 77·6 | 73·8 | 52·9 | 109·6 | 103·1 | 107·8 | ... |
| 5 | 67·7 | 64·6 | 73·5 | 89 | 83·2 | 85 | 60·9 | 107·8 | 96·9 | 109 | ... |
| 6 | 71·5 | 74·1 | 70·3 | 89 | 77·3 | 80·5 | 55·1 | 109·3 | 104·9 | 105·5 | ... |
| 7 | 68·8 | 72·4 | 75·8 | 88·5 | 81·9 | 73·8 | 57·7 | 111·9 | 107·6 | 103·7 | ... |
| 8 | 67·2 | 70·3 | 78·3 | 92·7 | 79·6 | 78 | 54·2 | ... | 111·5 | 108 | 43·4 |
| 9 | 65·6 | 70·9 | 75·8 | 91·3 | 75·7 | 78 | 53·2 | 107·6 | 103·1 | 112·1 | ... |
| 10 | 64·4 | 70·7 | 77·7 | 91·3 | 82·4 | 85 | 51 | 108·1 | 113·3 | 104 | 46·5 |
| 11 | 67·4 | 71·1 | 73·8 | 90·3 | 79·8 | 76·9 | 52·2 | 108·2 | 106·7 | 107 | ... |
| 12 | 74 | 75·1 | 71·6 | 86·5 | 82·8 | 87·2 | 48 | 106·8 | 101·6 | 107·9 | ... |
| 13 | 72·1 | 77·1 | 75·2 | 85·8 | 83·7 | 77·5 | 55·6 | 107·9 | 113·1 | 103·9 | ... |
| 14 | 70·2 | 74·2 | 76 | 89·6 | 82·8 | 90 | 50 | 108·7 | 107·9 | 103·9 | 43·1 |
| 15* | 74·9 | 77·5 | 75·7 | 87·6 | 87·7 | 76·9 | 53·1 | 108·6 | 104·6 | 110·6 | 40·9 |
| 16* | 79·7 | 77·4 | 70·9 | 86·9 | 83·9 | 81 | 54·3 | 111·4 | 100 | 107·5 | ... |
| 17* | 80·1 | 81·9 | 75·9 | 90·4 | 84·6 | 80 | 53·3 | 107·5 | 110·2 | 100 | ... |
| 18* | 81·8 | 80·6 | 72·7 | 91·8 | 78 | 80·5 | 47·1 | 109·7 | 104·7 | 107·8 | ... |
| 19† | 81·2 | 77·3 | 68·7 | 84·2 | 86·3 | 90 | 40 | 106·9 | 106·3 | 107·6 | 45·4 |
| Average ... | 68·3 (14) | 71·1 (14) | 74·6 (14) | 89·3 (14) | 80·7 (13) | 74·6 (18) | 53·4 (18) | 108·9 (17) | 105·6 (18) | 106·5 (18) | 43·5 (5) |
| Average ♂ and ♀ ... | 69·4 (33) | 71·8 (33) | 74·6 (33) | 89·2 (33) | 82·8 (31) | 80·2 (37) | 53·9 (37) | 108·7 (35) | 105·4 (33) | 107·1 (35) | 43·7 (7) |

* Excluded from averages of indices Nos. 1 to 5, which are based on cranial measurements.

† Excluded from averages of all indices.

TABLE III—continued.

INDICES ♀,

| No. | 1. Cephalic. | 2. Altitudinal. | 3. Frontal. | 4. Stephanic. | 5. Fronto-zygomatic. | 6. Orbital. | 7. Nasal. | 8. Naso-malar. | 9. Maxillary. | 10. Gnathic. | 11. Dental. |
|---------|--------------|-----------------|--------------|---------------|----------------------|--------------|--------------|----------------|---------------|---------------|-------------|
| 20 | 68·1 | 66·5 | 76·9 | 88·5 | 85·6 | 91·7 | 45·8 | 109·2 | 106·8 | 111·3 | ... |
| 21 | 66·7 | 69·3 | 72·2 | 85·8 | 84·8 | 91·7 | 53·3 | 107·3 | 100 | 105·1 | 42·4 |
| 22 | 65·4 | 68·1 | 76·4 | 91·3 | 82·4 | 81·6 | 59·1 | 110·3 | 110·5 | 105·8 | ... |
| 23 | 73·5 | 70·8 | 71·3 | 86·6 | 86·8 | 86·8 | 48 | 106·1 | 112·3 | 106·1 | ... |
| 24 | 70·3 | 69·2 | 71·5 | 87·7 | 82·8 | 83·3 | 50 | 107·3 | ... | 108·2 | ... |
| 25 | 64·7 | 70·7 | 78·2 | 88·6 | 85·4 | 82 | 56·8 | 108·2 | 101·7 | 107·1 | ... |
| 26 | 73·9 | 69·6 | 68·4 | 87·7 | ... | 87·2 | 56·3 | 109·8 | ... | ... | ... |
| 27 | 73·2 | 72·1 | 73·1 | 92·4 | 86·9 | 79·5 | 58·1 | 112 | 98·4 | 109·7 | ... |
| 28 | 66·7 | 75·4 | 78·7 | 88·1 | 83·8 | 80 | 55·6 | 107·7 | ... | ... | ... |
| 29 | 71·4 | 73·6 | 76·9 | 90·9 | 84 | 85·4 | 53·1 | 108·8 | 119·3 | 102·9 | ... |
| 30 | 68 | 74·6 | 74·8 | 92 | 78·7 | 92·3 | 48 | 110·9 | 106·7 | 103·8 | ... |
| 31 | 68·3 | 71·7 | 73·1 | 89·1 | 84·2 | 81·1 | 55·8 | 109·5 | 100 | 110·9 | ... |
| 32 | 68·9 | 74·6 | 82 | 91·7 | 88·6 | 89·5 | 57·1 | 107·1 | 106·9 | 108·6 | ... |
| 33 | 70·7 | 74·1 | 75·6 | 88·6 | 89 | 81·1 | 52·2 | 106·3 | 105·6 | 103·2 | ... |
| 34 | 69·8 | 73·3 | 75 | 90 | 83·3 | 89·2 | 51·1 | 110·5 | 100 | 109·2 | 45·9 |
| 35 | 75·4 | 74·9 | 72·1 | 86·1 | 86·4 | 78·4 | 62·5 | 107·1 | ... | 108·5 | ... |
| 36 | 67·8 | 73·7 | 71·6 | 89·2 | 77·5 | 86·5 | 50 | 106·3 | 103·6 | 109·7 | ... |
| 37 | 75·9 | 73·5 | 74·4 | 91·4 | 82 | 89·7 | 61·9 | 108·2 | 100 | 107·2 | ... |
| 38 | 75·5 | 78·5 | 74 | 89·2 | 85 | 86·5 | 60 | ... | 105·3 | 113·2 | ... |
| Average | ... (19) | 72·3 (19) | 74·5 (19) | 89·2 (19) | 84·3 (18) | 85·4 (19) | 54·5 (19) | 108·5 (18) | 105·1 (15) | 107·7 (17) | 44·1 (2) |