

BIOMETRIKA

A CONTRIBUTION TO THE CRANIOLOGY OF THE EASTER ISLANDERS.

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THE object of this paper is to put on record a description of the skulls of the Easter Islanders, and to give some indications as to the place of this race within the human stock, postponing a more comprehensive survey of the inhabitants of the South Sea until more material is available.

By good fortune, the author has been enabled to study skulls from Easter Island—or, as it is often but apparently not quite correctly called, Rapanui—in various collections. The largest number was found in the Hunterian Museum of the Royal College of Surgeons in London. These skulls were almost all collected in 1914–15 by Mrs Routledge, whose book contains valuable information about the history and the ethnology of the island. A second collection was that of the Ethnographical Museum in Leiden. These skulls were purchased in 1885 from a man of the name of J. Weisser*. Eleven more skulls from the British Museum (Natural History) were added to these. They were brought home by the late Lord Crawford who in 1903 had obtained them from a native while in Easter Island (see Nicoll, 1908).

My sincerest thanks are due to all those who gave me permission to use the material under their care, Sir Arthur Keith, Professor Juinboll, and Mr Pycraft.

Work on the present paper was carried on at different times in the following places: the Laboratory of the Royal College of Surgeons of England, the Biometric Laboratory of University College, London, the Departments of Anatomy of the University of Leiden and of the University of Illinois in Chicago. My thanks are due to Professors Sir Arthur Keith, Karl Pearson, J. A. J. Barge and O. F. Kampmeier. I further wish to express my gratitude to those persons who have helped me in other ways; Miss Spencer Wilkinson and Miss S. Levin have taken great labour in setting up the table of measurements, and Miss Marion Mason has very kindly undertaken to draw the accompanying illustrations as well as the type contours.

The present series of Easter Island skulls could be compared with another one previously published by Volz. He had skulls which were collected in 1882 by the

* I am indebted to Professor Juinboll for the following letter indicating the source of the material in the collection in Leiden: "In antwoord op bovenaangehaald schrijven kan ik U mededeelen, dat volgens den schedelcatalogus de door U bedoelde schedels zijn aangekocht in November 1885 van J. Weisser (vermoedelijk een handelaar)." See Note p. 269 below.

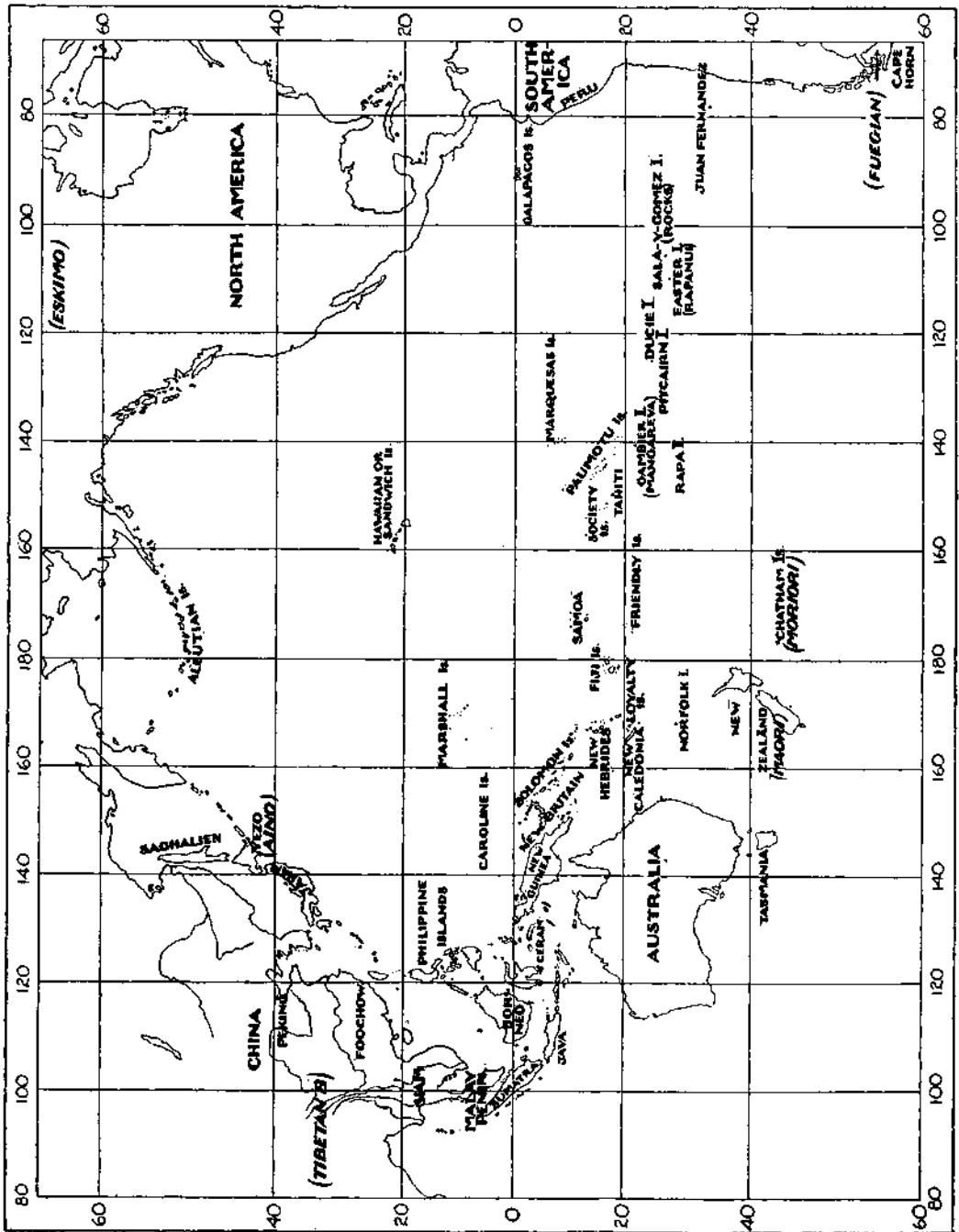
expedition of the *Hyäne*. Part of these skulls had been deposited in Berlin, another part in Dresden. Volz has given measurements of both. Later, Meyer and Jablonowski re-examined the Dresden skulls; their report, an admirably sober piece of work, contains a detailed discussion of the history and prehistory of the island, and gives information as to the technique of measurements which can not be taken from Volz's paper. In regard to a few skulls they differed in the matter of sexing. Meyer and Jablonowski's data have here been accepted.

The name "Easter Island" conjures up problems most of which, however, do not fall within the scope of craniology. Situated as that island is far away from any other in the South Sea, it has always been considered a matter of mystery that natives from other shores ever reached it at all. This sense of mystery has been enhanced by the discovery of a fairly high level of culture. The well-known stone statues with which the island seems to abound and the use of a sort of script have both excited curiosity. Native tradition has it that two sets of settlers reached the island. Ethnologists assert that traits of both Melanesian and Polynesian culture are to be found on the island. The problem whether these two groups came from different racial stocks has claimed the attention of anthropologists who have worked on the inhabitants of this island. "Long Ears" and "Short Ears" seem to have arrived on the island in this chronological order, and seem to have fought each other, until the "Short Ears" definitely ruled the land. The view that the former are of Melanesian and the latter of Polynesian stock is held by Volz and Routledge, but is refuted by Meyer and Jablonowski. What the answer of Biometry is will be seen presently.

It is unnecessary to go into the history of Easter Island; this has been analyzed by Meyer and Jablonowski. Only a few facts are of interest to physical anthropology. Taking together all the accounts of travellers who have visited the island at various times within the last few centuries, there can be little doubt that its population has considerably decreased within that period. The Peruvians raided the island in 1863 and carried off what seems to have been practically the whole population for slave work in the Peruvian mines. Owing to outside pressure part of these unfortunate victims were brought back to their home after a year, but small-pox had been acquired by them in America and took a heavy toll after they had settled down again. It appears further that at some later period when the island was exploited commercially, workmen from Tahiti lived there for some time. These two events—the Peruvian raid and the importation of labour—may have tended to alter the physical type. The skulls to be described here and those which have been described by Volz all seem to have come from natives who were born prior to 1862. Volz's skulls were collected in 1882, those in Leiden prior to 1885. Crawford definitely asserts that his skulls came from the "platforms" of the old stone monuments and the same holds true for those brought home by Mrs Routledge.

The measurements given here are those usually taken in the Biometric Laboratory. The author has already availed himself of another opportunity to express his sincerest thanks to Dr G. M. Morant who very kindly with the

permission of Professor Karl Pearson showed him all the details of the technique. The designation of the measurements, too, follows biometric routine. A few points,



however, may deserve a short note. It was impossible, owing to various circumstances, to take the cranial capacity of the skulls in Leiden. At the College of Surgeons no balance was at hand for this purpose, and the capacities had to be ascertained by repacking the seeds into a graduated cylinder. A *crâne étalon* was available which permitted the comparison of the seed capacity with the true water capacity. This was done several times. The values found for seed were:

May 31	1530 c.c.
June 3	1520
4	1515
6	1520
8	1530

The true capacity of this skull as measured by water was 1470 c.c., which according to my data leads to my personal equation $1522.5 \text{ seed} = 1470 \text{ water}$. This seems to be the same sort of procedure as that followed by Volz whose values agree very closely with those found in London ($a(C) = .16$). Mustard seed was used, and was packed as tightly as possible.

The callipers employed were purchased from Stanley and from Herrmann, their scales agreeing with each other. Some difficulty was encountered in procuring a reliable tape, steel tapes purchased in London differing to the extent of as much as 0.5 cm. for a length of 50 cm. from the scales of the callipers and engine divided ruler. A tape purchased in Holland, and apparently of French make, was found to be accurate.

When measurements had been completed, it was found that the orbital height (O_2) taken by the author was slightly (somewhat less than 1 mm.) smaller than that measurement taken by Morant or Tildesley. Consequently it was taken again. These second readings are given in the tables.

In London the ear-height was taken on a craniophor constructed by Wingate Todd, in Leiden on an old craniophor in the possession of the Museum. The former had a scale and a rod by which the ear-height could be read off directly, but the latter had to be employed together with a "Stativgoniometer" for taking OH . This implies a slight difference in technique: the former OH is taken from the ear-rods, the latter exactly from the auricular points. It is believed that even in longer series this difference will not be more than 0.5 mm. at the most, but it appears preferable to use H' or H for comparative purposes. This has here been done throughout.

Only a few descriptive notes were taken. The states of ossification of sutures were jotted down in some detail, but an attempt at analysis proved most unsatisfactory, for the sequency of closure was found to be rather erratic. They have therefore not been given here. Metopic sutures occurred in skulls 01 and 49. In both cases they did not extend beyond the glabella.

Skulls 15 and 13 showed a *canalis basilaris*.

An epipteric bone was found in 35 (*R*), 40 (*L*), 50 (*L*), 51 (*R*), and 55 (*R*), a fronto-temporal articulation in 32 (*L*) and 45 (*R*). Tympanic exostoses were present in skulls 8, 10, 11, 19, 29 and 39.

The configuration of the lower border of the pyriform aperture was noted in a number of skulls. Of 26 skulls it was described as sharp in 14 and as blunt in 12. In other words percentages of both were sensibly equal. It is the difficulty in interpreting the anterior border of the nasal floor in cases in which the aperture is blunt that makes the measurement NH' appear more exempt from the personal equation of the observer than NH , R or L .

The writer found it possible to take contours only in Leiden. This was on a very small amount of material, but since the Leiden skulls happen to be nearest to the mean values found for all the skulls available for this study, it was thought that an inclusion of these contours would serve a useful purpose. In constructing these type contours, the technique of the Biometric School has again been followed closely*. The only point left out on the sagittal type contours was the Inion. Its definition appeared too ambiguous. The figure in Martin's *Lehrbuch* suggests its position at the upper base of the occipital protuberance, and this would be in accord with Schwalbe's definition. On the other hand, the text of Martin's *Lehrbuch* as well as the discussion of Stefanie Oppenheim place it at the centre of the tuberculum linearum, below the occipital protuberance. In view of these difficulties it was deemed safest to omit this point altogether.

On the other hand, it appeared desirable to introduce into the sagittal contours the Prosthion, which plays such a large rôle in most craniometric papers coming from Germany, and which has also been adopted by other craniologists, among whom Davidson Black may be cited. The present regrettable state of confusion regarding the facial triangle can only be improved upon and reasonable comparison made when both the Alveolar Point and the Prosthion will have been made available for a greater number of series.

Comparison of different series was carried through by the method of the Coefficient of Racial Likeness.

The C.R.L. was used in its abbreviated form:

$$\text{C.R.L.} = \frac{1}{m} \Sigma a - 1 \pm .67449 \sqrt{\frac{2}{m}}.$$

Its standardised value (for $\bar{n}_1 = \bar{n}_2 = 100$) was computed by evaluating the expression

$$\text{C.R.L.'} = 50 \times \frac{\bar{n}_1 + \bar{n}_2}{\bar{n}_1 \cdot \bar{n}_2} \left[\frac{1}{m} \Sigma a - 1 \pm .67449 \sqrt{\frac{2}{m}} \right]$$

When available, the following measurements were used for computation: C , L , B , B' , H' , LB , S , U , Q' , $G'H$, J , NH' , NB , O_1 , Q_2 , G_1 , G_2 , fml , fmb , Pr , $P\angle$, $A\angle$,

[* This is certainly not true in the case of the transverse contour, Fig. 5, where the Biometric School takes M as the midpoint of the lowest horizontal and MA as the perpendicular bisector. A like serious divergence from biometric methods occurs in the author's diagrams, pp. 97—101 of the present volume, Ed.]

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$N\angle$, $O_c I.$, 100 B/L , 100 H'/L , 100 B/H' , 100 $G'H/GB$, 100 NB/NH' , 100 O_2/O_1 , 100 G_2/G_1 , 100 fmb/fml . The standard deviations of the Egyptian "E" series were used throughout. Comparisons have been restricted to male series, for they were larger and appeared therefore more reliable.

The author's interpretation of Volz's measurements in most instances becomes clear upon looking at Table I. NH' was identified from the paper by Meyer and Jablonowski who state expressly that they measured NH' , and whose measurements agree very closely with those given by Volz. Which orbital measurements Volz took remains doubtful, and it was considered safer to leave them out altogether. For there is little room for doubt that the orbit is one of the most dangerous pitfalls in racial comparison! Volz's profile angle was taken to be the Prosthion Angle. His angles of the fundamental facial triangle have been determined by means of drawings

TABLE I.
Means of series of Easter Islanders, all males.

	Volz	R. C. S. London	E. M. Leiden
<i>C</i>	1451.7 (18)	1472.8 (18)	—
<i>L</i>	188.2 (18)	192.3 (36)	189.4 (13)
<i>F</i>	—	190.3 (36)	188.7 (13)
<i>B</i>	135.7 (18)	132.6 (25)	133.4 (13)
<i>H'</i>	143.5 (18)	143.4 (28)	141.5 (12)
<i>H</i>	142.6 (18)	144.9 (29)	142.9 (12)
<i>OH</i>	123.3 (18)	124.2 (31)	122.4 (13)
<i>Br. OH</i>	—	123.4 (31)	121.4 (13)
<i>LB</i>	110.8 (18)	111.2 (29)	109.1 (11)
<i>B'</i>	92.7 (18)	93.8 (32)	92.9 (12)
<i>U</i>	512.1 (17)	519.4 (28)	516.1 (12)
<i>S</i>	372.1 (17)	384.1 (26)	378.0 (12)
<i>Q'</i>	—	326.3 (25)	322.2 (12)
<i>fml</i>	35.3 (17)	36.2 (21)	36.6 (11)
<i>fmb</i>	30.5 (17)	30.2 (23)	31.2 (11)
<i>G'H</i>	69.9 (15)	70.6 (26)	67.6 (11)
<i>J</i>	134.3 (17)	135.3 (21)	133.4 (10)
<i>NH'</i>	52.1 (16)	51.5 (29)	48.9 (12)
<i>NB</i>	27.4 (17)	27.5 (29)	26.8 (12)
<i>O₁R</i>	—	43.4 (27)	42.6 (10)
<i>O₂R</i>	—	34.4 (28)	34.1 (10)
<i>G₁</i>	—	52.3 (21)	48.3 (8)
<i>G₂</i>	—	40.3 (15)	40.4 (3)
<i>P\angle</i>	—	88.2 (26)	90.8 (11)
<i>Pr. P\angle</i>	85.3 (15)	85.3 (25)	87.7 (11)
<i>N\angle</i>	68.4 (14)	66.5 (23)	64.2 (11)
<i>A\angle</i>	74.3 (14)	75.6 (23)	78.6 (11)
<i>B\angle</i>	37.4 (14)	37.8 (23)	37.1 (11)
<i>O_c I.</i>	—	59.2 (25)	60.3 (13)
100 B/L	72.2 (18)	69.0 (25)	70.4 (13)
100 H'/L	76.3 (18)	74.6 (28)	74.7 (12)
100 B/H'	94.6 (18)	92.4 (23)	94.2 (12)
100 $G'H/GB$	70.9 (15)	71.8 (24)	71.0 (10)
100 NB/NH'	52.8 (16)	53.4 (27)	54.9 (12)
100 O_2/O_1	—	79.4 (27)	81.3 (10)
100 G_2/G_1	—	77.2 (14)	84.6 (3)
100 fmb/fml	86.5 (17)	83.5 (20)	85.6 (11)

from the original measurements of the component lengths. The indices $100 B/L$, $100 H'/L$, $100 B/H'$ and $100 (B - H')/L$ were calculated from his data. It has already been mentioned that Meyer and Jablonowski's sexing for the Easter Island skulls was accepted. The following numbers of Volz's list were then used:

♂: 1785, 151, 154, 147, 1786, 145, 1773, 148, 1784, 143, 137, 156, 139, 1787, 1783, 1767, 133, 142.

♀: 1781, 1776, 1765, 141, 134, 1771, 135, 1779, 138, 1775, 1788, 1774, 136, 1782, 155, 1769, 140.

Juv.: 144, 1772, 153, 146, 1777, 1778, 1770, 150, 1766, 152, 1780, 157.

Volz has given altogether three lengths of the skulls he measured: Gerade Länge, Grösste Länge, and Glabellarlänge. It is not clear to the writer what Volz meant by these terms, the greatest value of the three (the last two were of equal value for quite a number of skulls) was taken as equivalent to the biometric L .

The sexing of the material here put on record has been done by appreciation, since no records were available. There were only a few skulls which gave rise to serious doubts, but a definite decision was made in every case, sometimes after measuring L , B , and H' and assigning "marks" to the skull in question in the manner explained by Morant for the British Neolithic skulls. The means thus arrived at for the two sexes show differences of a magnitude usually found, and hence the sexing, although possibly wrong in some particular instances, can, it is thought, be considered substantially correct.

As has already been stated, the first problem to be answered was whether or not the population could be considered homogeneous. For this purpose, the series from the different institutions were taken separately and compared by means of the C.R.L. The means obtained are given in Table I, and the C.R.L.'s deduced from them in Table II. Only very few measurements showed significant differences ($\alpha > 5$). It will

TABLE II.

C. R. L.'s between groups of Male Easter Islanders.

	Volz	R. C. S.	Leiden
Volz All Characters Indices & Angles	— —	$1.40 \pm .19$ (23)* $2.13 \pm .30$ (9)	$1.33 \pm .20$ (22)† $2.42 \pm .30$ (9)
R. C. S. All Characters Indices & Angles	$1.40 \pm .19$ (23) $2.13 \pm .30$ (9)	— —	$.81 \pm .18$ (27)‡ $.95 \pm .27$ (11)
Leiden All Characters Indices & Angles	$1.33 \pm .20$ (22) $2.42 \pm .30$ (9)	$.81 \pm .18$ (27) $.95 \pm .27$ (11)	— —

* $\alpha > 5$: $\alpha(L) = 6.11$, $\alpha(S) = 9.46$, $\alpha(100 B/L) = 14.92$.

† $\alpha > 5$: $\alpha(NH') = 6.24$, $\alpha(NL) = 9.92$, $\alpha(AL) = 9.52$.

‡ $\alpha > 5$: $\alpha(NH') = 6.73$, $\alpha(AL) = 5.59$.

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be observed that only the Leiden, the College of Surgeons and Volz's series were thus compared, the few skulls from the British Museum having been left out, because their small number did not seem to permit the application of this method.

TABLE III.

Means for Easter Island Crania.

A. Absolute Measurements.

B. Indices and Angles.

	Males	Females
<i>C</i>	1462.2 (36)	1304.8 (26)
<i>L</i>	190.6 (72)	179.6 (42)
<i>F</i>	189.7 (54)	180.4 (25)
<i>B</i>	133.3 (60)	129.6 (37)
<i>H'</i>	142.9 (62)	137.3 (40)
<i>H</i>	143.8 (59)	137.9 (33)
<i>OH</i>	123.6 (62)	118.9 (33)
<i>Br. OH</i>	122.8 (44)	—
<i>LB</i>	110.5 (62)	103.1 (40)
<i>B'</i>	93.2 (67)	90.7 (37)
<i>U</i>	516.0 (61)	493.0 (38)
<i>GUU</i>	527.1 (42)	499.5 (21)
<i>Q</i>	325.0 (37)	314.0 (15)
<i>Br. Q</i>	319.5 (42)	308.0 (21)
<i>S₁'</i>	115.5 (53)	110.3 (25)
<i>S₂'</i>	114.4 (52)	110.9 (25)
<i>S₃'</i>	100.5 (43)	98.7 (21)
<i>S₁</i>	133.3 (52)	126.3 (42)
<i>S₂</i>	127.5 (51)	121.2 (42)
<i>S₃</i>	121.7 (43)	116.3 (38)
<i>S</i>	378.9 (59)	362.6 (33)
<i>fml</i>	35.9 (53)	34.1 (32)
<i>fmb</i>	30.5 (55)	29.5 (37)
<i>G'H</i>	69.6 (55)	62.9 (30)
<i>J</i>	134.3 (52)	124.3 (28)
<i>GB</i>	98.0 (59)	91.7 (27)
<i>GL</i>	102.5 (54)	98.5 (31)
<i>PH</i>	17.8 (28)	15.6 (11)
<i>NHR</i>	53.2 (47)	48.4 (20)
<i>NHL</i>	53.1 (45)	48.5 (20)
<i>NH'</i>	50.9 (60)	46.5 (36)
<i>NB</i>	27.3 (61)	25.2 (35)
<i>SC</i>	7.8 (44)	8.1 (22)
<i>SS</i>	3.1 (44)	2.5 (21)
<i>DC</i>	22.5 (45)	22.1 (20)
<i>DS</i>	9.5 (45)	8.3 (20)
<i>DA</i>	31.9 (40)	30.0 (17)
<i>O₁R</i>	43.3 (41)	41.6 (21)
<i>O₁'R</i>	39.9 (32)	38.5 (17)
<i>Lacr. O₁R</i>	39.3 (38)	37.9 (18)
<i>O₂R</i>	34.4 (42)	33.7 (22)
<i>O₁L</i>	43.3 (44)	41.2 (19)
<i>O₁'L</i>	39.7 (34)	37.7 (14)
<i>Lacr. O₁L</i>	39.2 (40)	37.0 (16)
<i>O₂L</i>	34.6 (44)	33.9 (19)
<i>G₁</i>	50.6 (32)	47.2 (14)
<i>G₁'</i>	46.6 (34)	43.8 (13)
<i>G₂</i>	39.7 (21)	36.9 (9)
<i>EH</i>	11.8 (18)	8.9 (7)

	Males	Females	Juv.
<i>P L</i>	89° 0 (37)	90° 0 (14)	89° 3 (6)
<i>Pr. P L</i>	85° 8 (51)	85° 5 (27)	87° 3 (16)
<i>N L</i>	66° 4 (51)	67° 7 (30)	68° 3 (15)
<i>A L</i>	76° 1 (51)	76° 2 (30)	76° 5 (15)
<i>B L</i>	37° 5 (51)	36° 1 (30)	35° 2 (15)
<i>Occ. I.</i>	59° 5 (42)	60° 5 (21)	59° 2 (8)
<i>100 B/L</i>	70.1 (60)	72.3 (37)	74.9 (20)
<i>100 H'/L</i>	75.1 (62)	76.5 (40)	75.6 (19)
<i>100 B/H'</i>	93.2 (56)	94.5 (37)	99.0 (19)
<i>100 (B - H')/L</i>	-5.2 (56)	-4.3 (37)	-0.7 (19)
<i>100 G'H/GB</i>	71.2 (53)	69.1 (23)	67.0 (17)
<i>100 NB/NH'</i>	53.6 (58)	54.2 (35)	52.8 (18)
<i>100 O₂/O₁R</i>	79.9 (41)	81.1 (21)	84.6 (7)
<i>100 O₂/O₁L</i>	80.0 (42)	82.5 (19)	84.8 (7)
<i>100 O₂/O₁'R</i>	86.6 (32)	88.1 (17)	91.2 (7)
<i>100 G₂/G₁</i>	78.9 (20)	80.0 (9)	78.3 (5)
<i>100 NB/NHR</i>	51.0 (44)	52.5 (19)	53.5 (7)
<i>100 DS/DC</i>	42.1 (44)	38.4 (19)	40.9 (8)
<i>100 SS/SC</i>	40.0 (44)	30.6 (21)	28.2 (7)
<i>100 EH/G₂</i>	29.3 (18)	24.0 (7)	21.4 (6)
<i>100 fmb/fml</i>	85.3 (52)	85.7 (30)	82.7 (7)

The numerical values given in Table II justified pooling. To the measurements of these series were added the values obtained from the skulls in the British Museum. The female series were also pooled, the results being given in Table III.

In order to furnish some additional evidence, the variabilities of a few characters (L , B , H' , $100 B/L$) were found for the whole male series. They are presented in Table IV, together with the corresponding values of three other series. In none of the three absolute measurements is there a significant difference between the "E" series and the Easter Islanders, although it must be admitted that there is strong evidence for a significant difference in the case of the cephalic index. The figures are: $\Delta_{\sigma} = .7 \pm .218$; $\Delta_v = 1.26 \pm .306$. Δ_v is clearly significant in the accepted sense of the term; a short calculation shows that a difference for σ of the same sign and as great as, or greater than, the one observed would only be expected in one out of 67 trials.

TABLE IV.

Variability of Easter Island Crania, Compared with Some Other Races (Males).

	Easter Islanders	Egyptians: "E" Series *	English: Farrington St†	Eskimos‡
$L \begin{cases} \sigma \\ v \end{cases}$	$6.10 \pm .34$ mm. $3.20 \pm .18$	$5.72 \pm .09$ mm. $3.09 \pm .05$	$6.46 \pm .26$ mm. $3.42 \pm .12$	$5.81 \pm .20$ mm. $3.08 \pm .11$
$B \begin{cases} \sigma \\ v \end{cases}$	$4.74 \pm .29$ mm. $3.56 \pm .22$	$4.76 \pm .08$ mm. $3.43 \pm .03$	$5.90 \pm .24$ mm. $4.14 \pm .17$	$4.52 \pm .16$ mm. $3.36 \pm .12$
$H' \begin{cases} \sigma \\ v \end{cases}$	$4.61 \pm .28$ mm. $3.23 \pm .20$	$5.03 \pm .08$ mm.† $3.75 \pm .06$ †	$5.06 \pm .22$ mm. $3.90 \pm .17$	$4.79 \pm .17$ mm. $3.43 \pm .12$
$100 B/L \begin{cases} \sigma \\ v \end{cases}$	$3.38 \pm .21$ $4.83 \pm .30$	$2.68 \pm .06$ $3.57 \pm .06$	$3.48 \pm .14$ $4.64 \pm .19$	$3.00 \pm .10$ $4.21 \pm .15$

The type thus established is peculiar in many ways, and it may be well to discuss some of its more salient features. Many of the peculiarities are brought out when computing the C.R.L. The values of the function α for some of those C.R.L.'s to be given later will therefore here be alluded to.

In other instances, however, the interracial variabilities will perhaps be of greater value for elucidating the place of the Easter Islanders among the races of mankind. We are still widely ignorant of such variabilities. In a few cases it has here been attempted to estimate them on an admittedly slender basis, for our knowledge of the human races is still far from being complete. A large number of series are available for Europe and Egypt (see Morant, *Biometrika*, Vols. xvii, xx^B), and there are a few for Asia, Malaysia and Oceania (Morant, *Biometrika*, Vol. xvi.; v. Bonin, *Biometrika*, Vol. xxiii. pp. 52—113, and others), but in proportion to their area Africa and America are less well known from a craniological point of view. In order to avoid giving Europe an undue weight, only one representative of each of the groups

* Pearson and Davin: *Biometrika*, Vol. xvi. 1924, p. 338.

† For H instead of H' .

‡ Beatrix G. E. Hooke: *Biometrika*, Vol. xviii. 1926, p. 40.

§ G. M. Morant, *Annals of Eugenics*, Vol. i. 1925—26, p. 263.

established by Morant has been included, and the attempt has been made to apply the same principle to the rest of the world. But it is readily admitted that the choice made—which will become evident from the subsequent tables—has been somewhat haphazard. The interracial variabilities may finally be found to be quite different from the values given here!

The brain-box of the Easter Islanders is fairly large, and the absolute value for the capacity does not differ much from that found for the Maori and Moriori, nor from the value given for the Ainos, but it is still significantly smaller than that for the Anglo-Saxons or the British Neolithic type ($\alpha(C) = 8.49$, and 5.76 , resp.). All the more astonishing is the shape of the brain-box. It is long, but not extremely so. Thus the British Neolithic type has a significantly greater length ($\alpha(L) = 8.94$).

TABLE V.

Male Compound Indices and Length of Base for Some Races.

(Cf. Figures 1 and 2.)

Race	$100(B - H^2)/L$	LB
Easter Islanders ...	-5.2	110.5
Loyalty Islanders*	-5.2	104.2
New Caledonians*	-3.9	103.5
Veddahs ...	-2.7	98.1
Badari Egyptians ...	-1.3	99.3
Australians ...	-1.0	102.1
Naqada Egyptians ...	-0.6	101.4
Nepalese ...	-0.2	98.0
Northern Chinese...	0.6	99.0
Tagals ...	0.9	100.7
Ainos ...	0.9	105.4
Maoi ...	1.3	103.9
British Neolithic ...	1.8	103.3
Fuegians ...	2.1	106.0
Dayaks ...	2.2	99.4
Gaboon Negroes ...	2.6	100.3
Moriori ...	2.9	105.6
Tasmanians ...	2.9	98.8
Tibetan B ...	3.5	99.2
Andamanese ...	3.9	92.6
Java B.-B. ...	4.0	97.2
Greeks ...	4.0	101.0
Burmese A... ..	4.4	98.5
Tibetan A ...	4.5	95.7
Aëtas ...	4.6	98.3
Farrington Street (English)	6.7	100.1
Basques ...	6.8	99.6
English Bronze Age ...	8.1	102.9
Telengetes ...	12.3	99.8
Interracial Mean ...	+2.1	100.8
„ S. D. ...	3.8	3.5

* After Sarasin, F.: *Anthropologie der Neu Caledonier und Loyalty Insulaner*, Wiesbaden, 1916—22. All other values have been given in the present and previous issues of *Biometrika*.

On the other hand, the Easter Island skull is very narrow, the value for $\alpha(B)$ being significant for all the races used in this paper. This, however, is compensated for, if such an expression be permitted*, by an unusual height of the skull. It appears to be the highest known. Another striking peculiarity is the extreme length of the base of the skull; the mean for LB is again higher than that for any other race thus far measured.

It is not proposed to enter into a discussion of the cephalic index or the indices $100 H'/L$ and $100 B/H'$; that should be postponed until a really representative

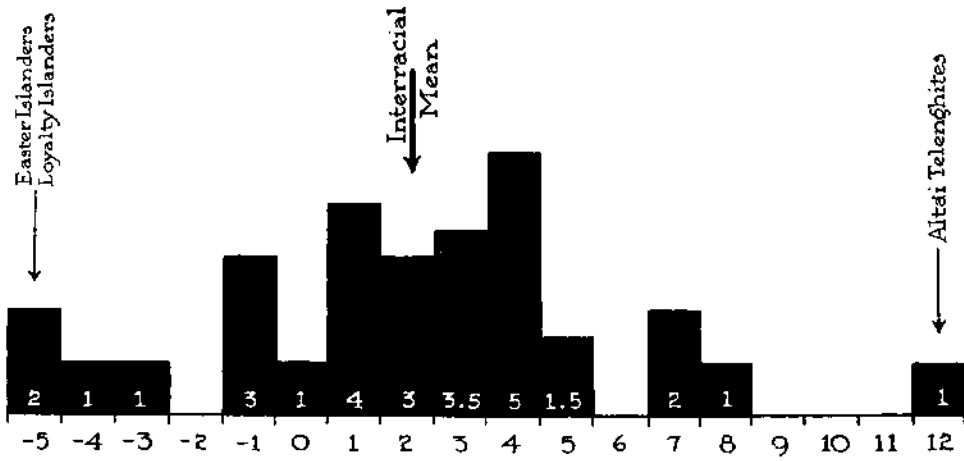


FIG. 1. Interracial Distribution of Index $100 (B-H')/L (\sigma=3.8\pm.3)$

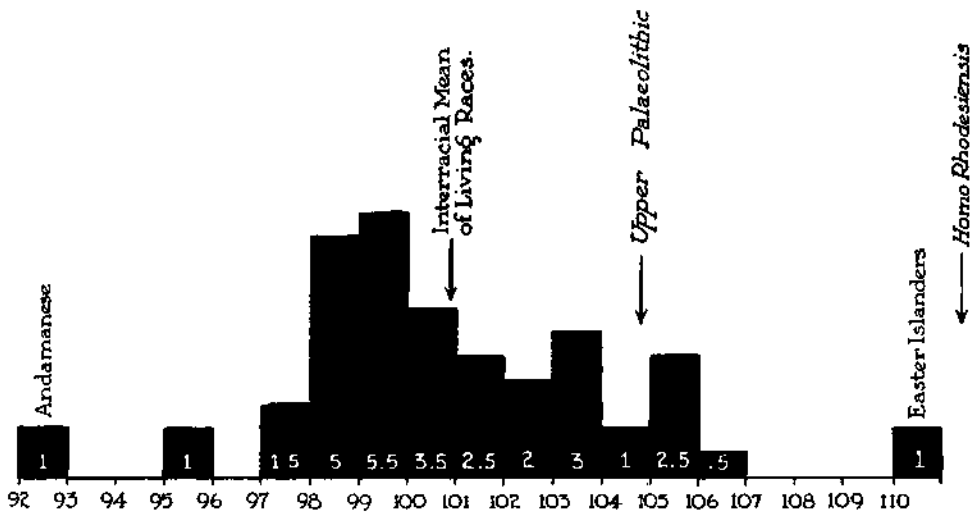


FIG. 2. Interracial Distribution of $LB (\sigma \text{ means})$

* This phrasing would imply that not the linear dimensions of the skulls but the capacity was directly selected.

sample of the whole of the human races is available. It may not be amiss, however, to make a few remarks about the index $100(B - H')/L$ and about the measurement LB . Their values for a number of races will be found in Table V. The provisional interracial means and standard deviations of $100(B - H')/L$ and LB are given at the foot of the table, an inspection of the entries showing that the Easter Islanders stand for these two characters right at one end of the range of distribution. Incidentally it may be remarked that the extension of the range for LB thus given somewhat alters the place for the Rhodesian skull which now becomes less far removed from modern man. The accompanying histogram (Fig. 2) is intended to illustrate this point.

It is noteworthy that the occipital index differs but little from that of races which are generally spoken of as being "higher," the difference in that character between the Anglo-Saxons for example and the Easter Islanders being insignificant ($\alpha(Oc. I.) = 2.96$). Turning next to the face, there is also very little difference between various races in the measurements $G'H$ and J . Profound differences on the other hand are to be observed in the shape of the nasal aperture. The nose of the Easter Islanders is absolutely as well as relatively broad, and the nasal index consequently high.

Whereas the orbits show no outstanding feature, the palate is somewhat short, although not shorter for instance than those of the Anglo-Saxons or the Kham Tibetans.

The profile angle is large. Here, the Easter Islanders are more in line with the Anglo-Saxons than with fringe races.

Following up the work of Lüthy, the study of the profile may be extended by taking the profile angle of the nasal roof into consideration ($NRP\angle$ of Table VI). Lüthy provided means for a number of races, most of which were based on more than 20 skulls. His angle of the nasal roof is the acute angle which the line NL (in the usual notation of the Biometric School) forms with the Frankfurt horizontal, and which can easily be found from the tables usually given in *Biometrika* for the median sagittal contours as the complement to the angle γNL . Unfortunately Lüthy has given the $Pr. P\angle$ and not the $P\angle$ to the Alveolar Point.

For an attempt to find a correction to be applied to the $P\angle$ for converting it into the $Pr. P\angle$, the following values are available:

	$P\angle$	$Pr. P\angle$	Difference
Dayaks ...	84°·7	82°·7	2°·0
Java B.-B. ...	84°·9	81°·1	3°·8
Tagals ...	87°·0	84°·2	2°·8
Aëtas ...	87°·5	85°·0	2°·5
Andamanese ...	85°·0	81°·8	3°·2

Taking the mean of these and applying it as the sought correction seemed unreliable. A rough calculation led to a mean difference of $2^{\circ}9 \pm 0^{\circ}26$; and there was nothing

else to be done but to leave out a number of series! All that could safely be gathered together are given in Table VI, largely based on Lüthy's unsexed series. Working from the interracial means, the coefficient of correlation between the two angles has been worked out. It is quite insignificant, but the interracial standard deviations are interesting. It appears from these values given at the foot of Table VI that

TABLE VI.

Profile Angle of Face and of Nasal Roof for some Races.

Measured in Degrees.

	1. Pr. P \angle	2. NRP \angle	1-2
Australians	76.8	61.6	15.2
Papuans	77.2	60.1	17.1
Cameroon	78.1	64.1	14.0
N.E. Africans	78.3	64.1	14.2
Java B.-B.* δ	81.1	66.9	14.2
Tamils	81.7	57.9	23.8
Burmese	82.0	66.8	15.2
Batak	82.1	67.9	14.2
Singhalese	82.1	59.0	23.1
Northern Chinese† δ	83.4	64.4	19.0
Egyptians	83.7	55.6	28.1
Tagals* δ	84.2	71.7	12.5
Veddahs	84.3	62.0	22.3
Aëtas* δ	85.0	68.5	16.5
Farrington Street‡ δ	85.8	55.2	30.6
Easter Islanders δ	85.8	72.7	13.1
Bündner	87.0	53.2	33.8
Interracial Mean	82.27	63.04	19.23
„ S.D.	3.03	5.55	6.40

Most of these values are taken from Lüthy, *loc. cit.*, and are from unsexed material.

the profile angle of the nasal roof is a useful character for racial comparisons. This confirms Lüthy's opinion though he based his judgment on the intraracial standard deviations. But as these were worked out from a mixed material of both male and female skulls, they appear hardly sufficiently reliable. Our own material, consisting as it did of only 12 skulls, is entirely insufficient for this purpose.

It seemed of interest to compare the Easter Islanders with other races in regard to the proportion of the facial area to the brain-box. This was done in the way shown by Morant, by forming an index from the area of the fundamental triangle of the face and the square of the sagittal arc *S*—in other words by computing the

* After von Bonin: "Kraniologie von Ostasien," *Biometrika*, Vol. xxiii. pp. 52—113.

† After Davidson Black: "A Study of the Kansu and Honan...Skull, etc.," *Palaeontologica Sinica*, Series D, Vol. vi. fasc. i, 1928.

‡ After Hooke, *Biometrika*, Vol. xviii., taken from type contours.

value of the expression $100 A/S^2$. The results are given in Table VII. It is not yet clear how much can be deduced from these values. Obviously, this index fails to arrange the races in anything approaching an intelligible order. On the other hand, the interracial variability is not low (a rough computation by slide-rule led to an interracial standard deviation of about .13, which gives a v of between 5 and 6), and it might be well worth while to follow up this matter further.

TABLE VII.

Area of Facial Triangle and Length of Sagittal Arc (Male Crania).

	<i>A</i>	<i>S</i>	$100 A/S^2$
Veddahs	2788	363.1	2.11
English Bronze Age ...	3215	376.6	2.12
Andamanese	2658	349.0	2.18
British Neolithic	3299	389.0	2.18
Upper Palaeolithic ...	3450	398.3	2.18
Basques	3098	375.2	2.20
Badari Egyptians	3053	372.0	2.21
Farringdon Street (English)	3185	378.8	2.22
Congo Negroes	2917	361.8	2.23
Naqada Egyptians	3224	372.6	2.32
Loyalty Islanders	3492	386.9	2.33
Australians	3236	371.0	2.35
Aëtas	3126	360.0	2.41
Greeks	3258	367.2	2.42
Easter Islanders	3477	378.9	2.42
New Caledonians	3432	374.4	2.45
Telengetes	3302	357.1	2.59
Mean			2.29

Values taken from previously published tables in *Biometrika* and *Annals of Eugenics*, except for New Caledonians and Loyalty Islanders, which were taken from Sarasin, *loc. cit.*, Table IV.

In several instances the Easter Islanders were found to be well near one end of the range of interracial distribution for a given character. Such a type may justly be called a specialized one. It can then be asserted that the Easter Islanders are a specialized—but by no means a primitive—type in regard to two things at least, the configuration of their brain-box [$100 (B-H')/L$ and LB] and their facial profile, as revealed by the profile angle of the nasal roof. How far they deviate in these respects from other races in the South Sea cannot yet be said. It would appear that the inhabitants of the Fiji Islands which have been studied and observations concerning which have been published by Flower are somewhat similar to them. Howsoever that may be, the specialization observed in a given insular type would well fit in with a theory of evolution recently advanced by Pearson (1930). A small group may be supposed to have landed on the island; inbreeding has by

necessity gone on since then and the result should be an aberrant type such as we meet with, provided the original settlers did not happen to represent the exact racial mean of the stock they hailed from!

It is interesting to compare the shape of the male skulls with that of the female and juvenile skulls, figures for which are also included in Table III. It becomes clear then that in regard to the shape of the brain-box at least the males are further removed from the interracial mean and the juveniles are closer to it than the females. It may also be noteworthy that the $N\angle$ becomes smaller as one goes from juveniles to females and males. The values given for various races by Morant (1927, p. 335) should be consulted. It is seen then that most South Sea Islanders have a very large $N\angle$, and it would appear that the comparatively small value for the Easter Islanders might be considered as a secondary change.

Easter Island being situated far removed from the centre of dispersion of the human race, the question arises whether its inhabitants show any relation to other fringe races who are generally considered as remnants of formerly widespread populations, pushed into "corners" by subsequent waves of emigration arising near the centre of dispersal. C.R.L.'s between a number of primitive races and the Easter Islanders have been computed and are given in Table VIII. The values for the

TABLE VIII.

C.R.L.'s between Easter Islanders (49.7) and Fringe Races (Males).

Race	All Characters	No. of Characters	Indices and Angles	No. of Characters	Reduced value for all Characters
Mori (33.9) ...	26.16 ± .17	30	35.98 ± .26	12	64.90 ± .42
Maori (43.0) ...	21.46 ± .19	25	36.44 ± .36	7	46.54 ± .41
Tibetan B (14.5) ...	15.01 ± .17	31	17.04 ± .28	12	66.85 ± .76
Eskimos (186.7) ...	50.14 ± .19	26	65.66 ± .30	10	63.88 ± .24
Ainos (79.6) ...	37.74 ± .19	25	63.06 ± .32	9	61.67 ± .31

C.R.L.'s between Easter Islanders and European Races.

Upper Palaeolithic (10.9)	17.43 ± .23	16	11.10 ± .38	5	97.49 ± 1.3
British Neolithic (34.5)	27.79 ± .19	24	28.73 ± .32	8	68.22 ± .47
Anglo-Saxons (35.3)	25.94 ± .17	31	36.63 ± .26	12	62.83 ± .41

Maori, Mori, and Ainos are taken from Morant (1922-23), the values for the Eskimos have been given by the same author in his paper on the Chancelade skull (1925-26). In a few instances the number of individuals on which the averages were based were not to be found in this paper, they were ascertained from the original memoir by Fürst and Hansen.

The Easter Islanders are almost equally remote from all the fringe races here considered. It should be mentioned, however, that in the case of the Eskimos the

nasal characters *NB* and $100\text{ }NB/NH'$ contribute almost half of the total value of the C.R.L. Even allowing for this, the value would remain too high to form a basis for the assertion of any close relationship.

Next to the fringe races, the C.R.L. has been computed for the Upper Palaeolithic race, the means of which have become known through Morant's work (1930) and for the British Neolithic and the Anglo-Saxons (1926). These races have been chosen here because the opinion has been frequently expressed (by de Quatrefages and others) that there is a racial affinity between the "Caucasian" race, to which Morant's group "D" (1928) perhaps conforms best, and that inhabiting the South Sea. There is no justification for this view as far as the Easter Islanders and the two races of group "D" here used are concerned.

TABLE IX.

Mean Measurements of 12 Male Easter Islanders, Transverse Contours.

	<i>MA</i>	1	2	3	4	5	6
<i>R</i>	121.2	55.8	57.8	60.2	62.8	63.4	62.8
<i>L</i>		61.2	63.4	65.2	67.4	68.1	67.2

	7	8	9	10	$A\frac{1}{2}$	<i>ZRy</i>	<i>ZRx</i>
<i>R</i>	61.2	57.2	48.7	33.9	17.3	58.4	3.8
<i>L</i>	65.9	62.4	54.2	39.1	21.7	64.4	4.4

TABLE X.

Mean Measurements of 12 Male Easter Islanders, Horizontal Contours.

	<i>FO</i>	$F\frac{1}{2}$	$F\frac{1}{4}$	2	$2\frac{1}{2}$	3	4	5
<i>R</i>	187.2	23.6	36.4	47.8	46.3	48.2	54.0	60.1
<i>L</i>		24.3	35.3	47.4	46.4	48.1	53.3	61.0

	6	7	8	9	10	$O\frac{1}{2}$	<i>Ty</i>	<i>Tx</i>
<i>R</i>	64.3	65.3	62.4	55.5	43.2	25.2	49.0	20.0
<i>L</i>	65.9	66.5	62.9	55.7	42.8	24.8	49.0	20.4

A hint might be added as regards the type contours. As has already been stated the type contours of the Easter Islanders have been derived solely from the Leiden skulls, and are therefore not strictly representative of the whole series. Even so a comparison with the Anglo-Saxons, the contours of which have been given by Morant (1926), is interesting in several ways. Superposing them so that the Frankfurt horizontal and the point *N* coincide, the brain-boxes of the two races look very dissimilar, whereas the Alveolar Points almost cover each other. If, however, the

contours be turned in such a way as to bring N and β respectively together, much of the difference in the pattern of the brain-box disappears. It should be noted in the first place that now the glabella-inion line—which can be made out even in the Easter Islanders contours—shows practically no difference in its location in the two races, circles indicating the positions of its end points would overlap. Furthermore, the outlines of the brain-boxes cover each other for practically the whole part between the nasion and the vertex. On the other hand, the position of the Alveolar Point now shows marked differences, emphasizing the peculiar "drawn in" face of the Easter Islanders. Two points seem to emerge from these somewhat casual observations: there appears to be a greater variety in the moulding of the occipital region

TABLE XI.

Mean Measurements of 12 Male Easter Islanders, Median Sagittal Contours.

$N\gamma$	181.2	Lambda:	x from γ	10.5
Ordinates above $N\gamma$: 0 = N	39.3		y	45.4
$N\frac{1}{4}$	50.4	Suborbital point:	x from N	9.2
1	67.7		y	24.9
2	81.0	Auricular point:	x from N	92.6
3	88.9		y	25.1
4	93.0	Opisthion:	x from N	131.8
5	95.8		y	46.1
6	96.3	Basion:	from γ	96.7
7	91.3		from N	107.2
8	80.6	Alveolar point:	from $Bas.$	98.8
9	60.4		from N	67.2
$\gamma\frac{1}{4}$	34.4	Sp.:	x from N	71.0
$\gamma\frac{1}{2}$	28.4		y	34.9
Ordinates below $N\gamma$: 1	54.2	N. S.:	x from N	2.1
2	52.3		y	50.5
P'	52.4	Prosthion:	x from N	3.4
8	39.9		y	63.8
9	27.5	Frontal Arc:	x from N	50.2
$\gamma\frac{1}{4}$	20.4		y	27.2
$\gamma\frac{1}{2}$	14.1	Occipital Arc:	x from λ	49.6
Vertex:	x from N		y	28.8
	97.8	Palate P :	x from Alv. P	34.9
Bregma:	x from N		y	14.6
	97.1	Nose:	$\angle LN\gamma$	107° 3
	67.4		NL'	16.0
	91.9		NL	16.7
Glabella:	x from N			
	5.3			
	y			
Occipital point:	x from γ			
	1.3			
	y			
	9.6			

than in that of the frontal part of the skull, thus vindicating once more the usefulness of the occipital index of Pearson. In the second place, the writer ventures to think that a renewed study of the orientation of the skull might reward the labour involved.

Turning next to the horizontal contours, the frontal part is very much alike in both races. The general pattern of the outline is also identical in both cases, the Easter Islanders show, just as all other modern races, the greatest breadth at the seventh ordinate. The fact that the Easter Islanders show an asymmetry of the skull reverse to that seen in the Anglo-Saxons may be noticed in passing.

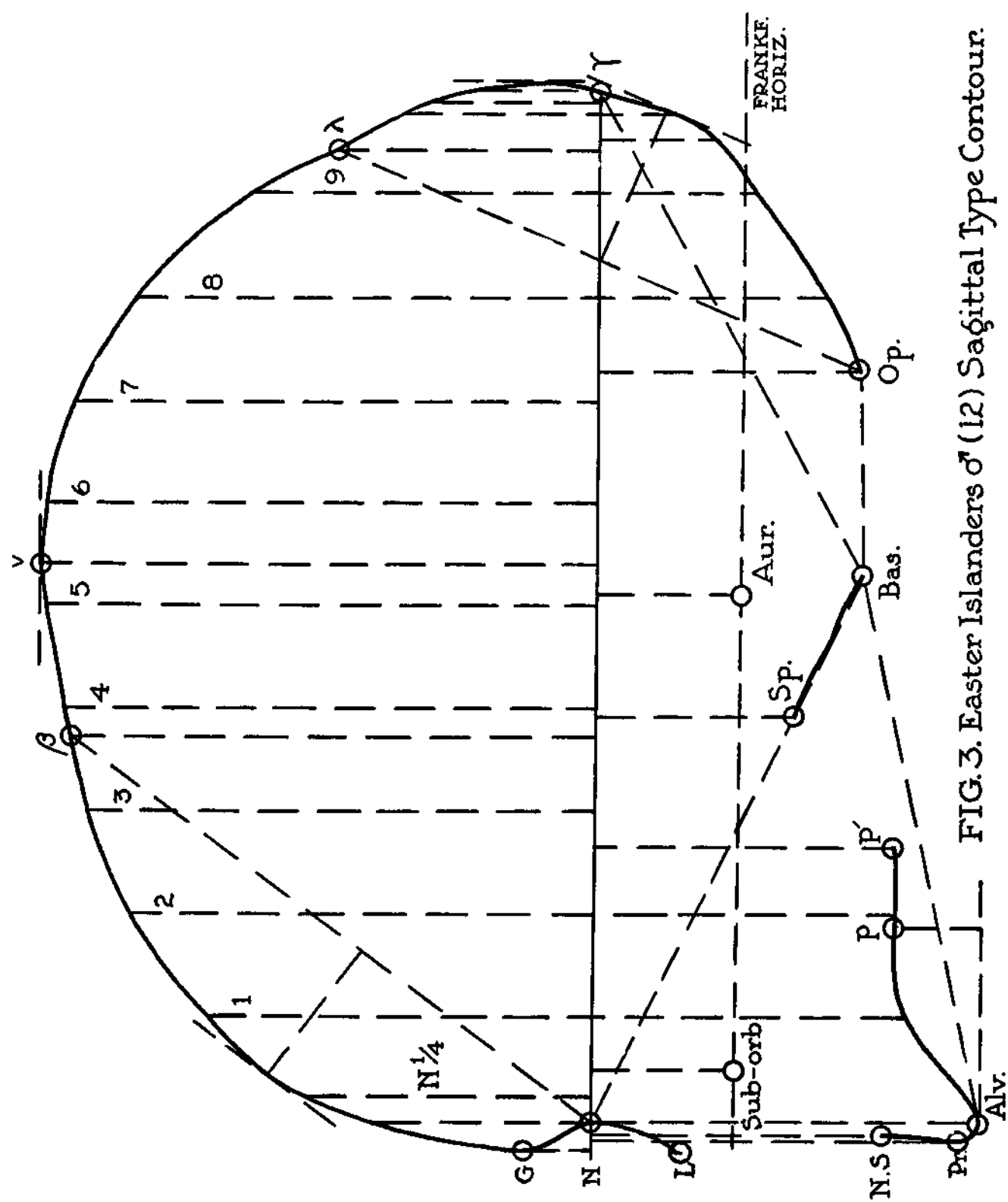
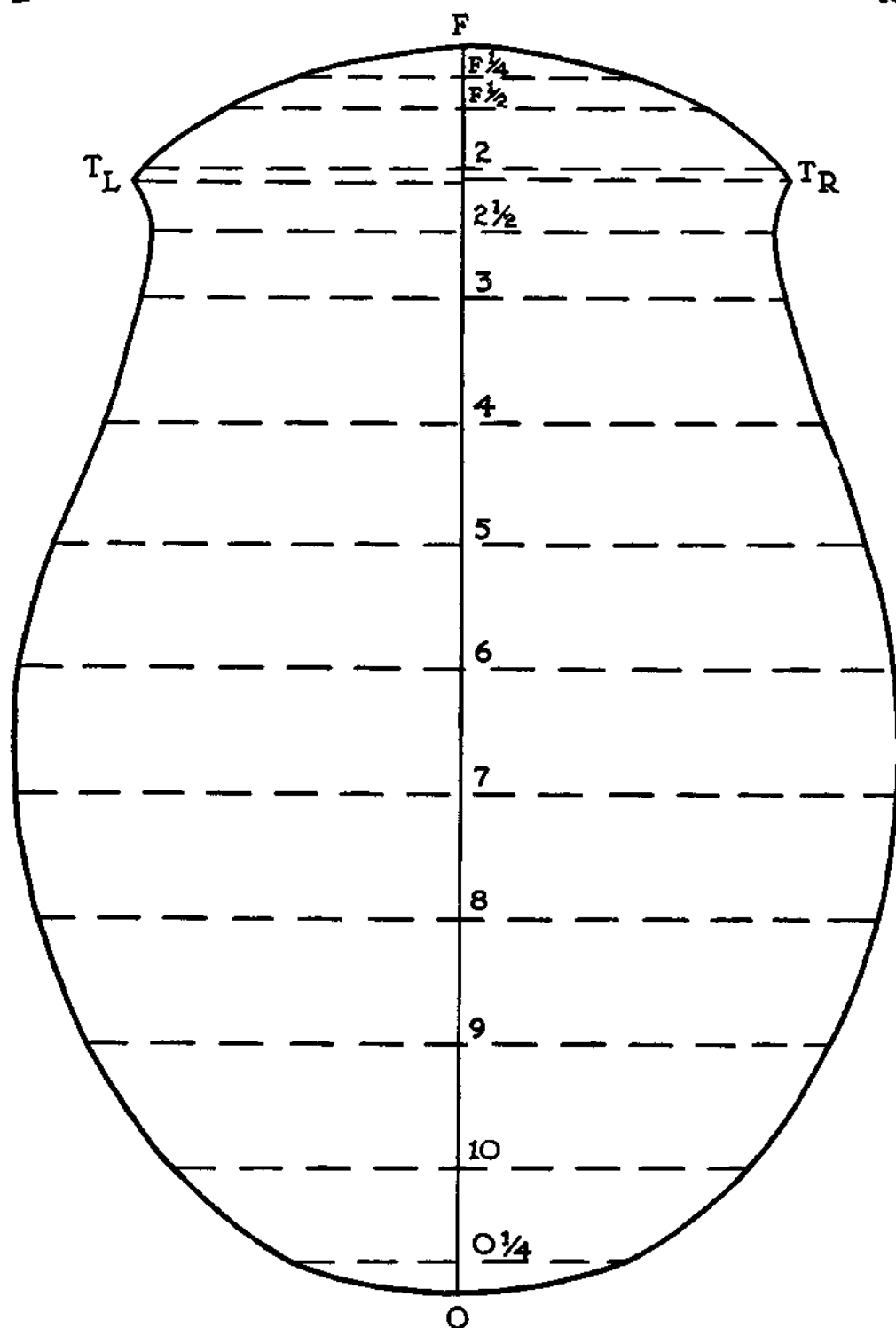


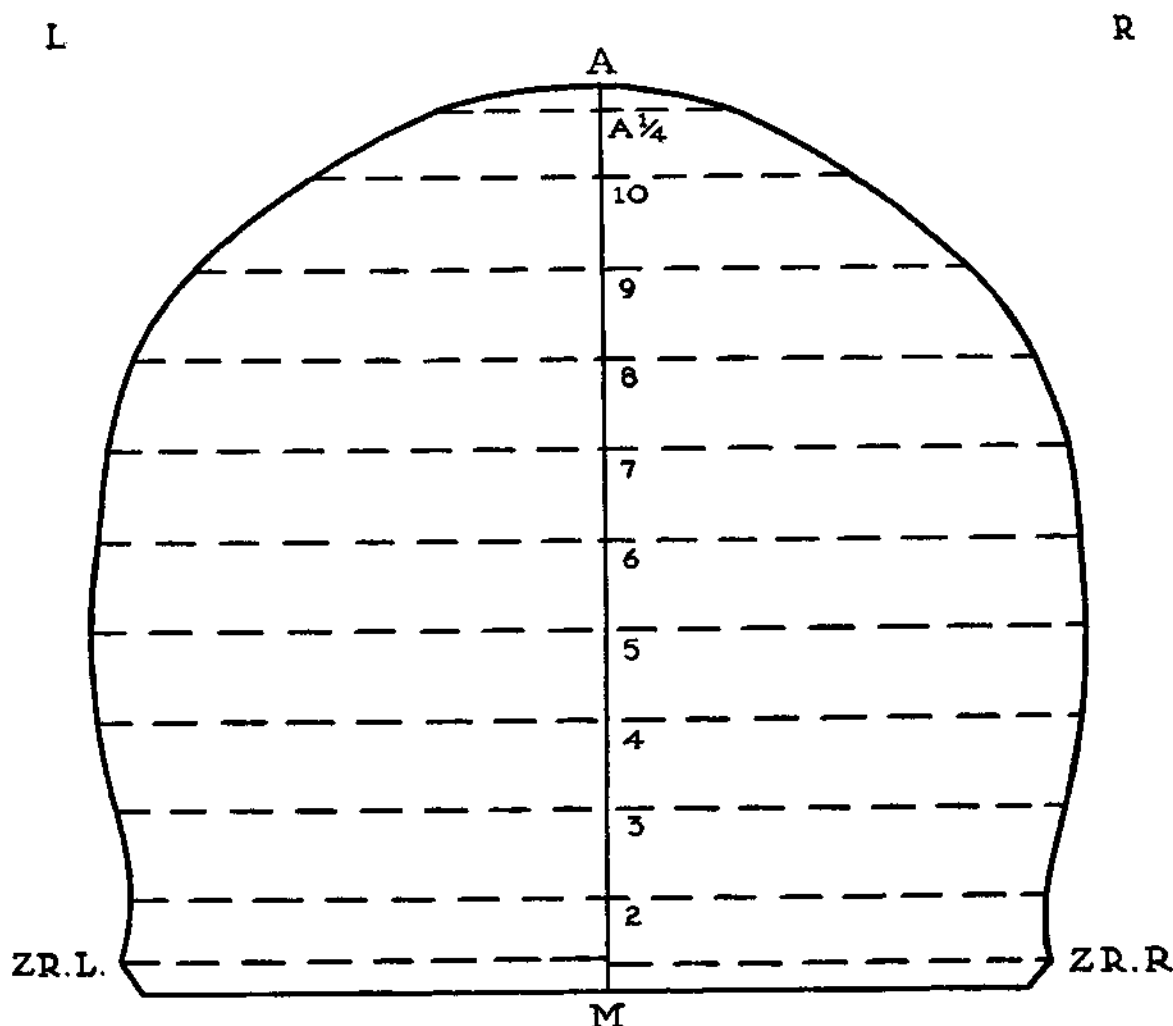
FIG. 3. Easter Islanders ♂ (12) Sagittal Type Contour.

L

R



Easter Islanders ♂ (12) Horizontal Type Contour.
FIG. 4.



Easter Islanders ♂ (12) Transverse Type Contour.
FIG. 5.

This character appears again in the transverse contour. Here it should be noticed in the first place that in spite of the great narrowness of the skull, the outline is again conforming to the pattern usually found in modern races: the greatest width is at about the fifth ordinate, and the narrowing near the zygomatic ridges is well pronounced.

To sum up the following conclusions may be stated:

1. There is no statistical reason to doubt the homogeneity of the craniological material coming from Easter Island.

2. In several respects the type defined in this paper appears to be far removed from the interracial mean, thus justifying its description as a specialized race.

3. There is no racial affinity to any of the fringe races which have been described thus far.

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For further references the reader may consult the Foreign Office publication:

Handbooks prepared under the direction of the Historical Section of the Foreign Office: No. 141—142, *Malpelo, Cocos and Easter Island*.

P.S. While crossing the Atlantic on my way back to America I came across a book in the ship's library: Schulze-Maizier: *Die Osterinsel* (Insel-Verlag, Leipzig, no date). Evidently intended for a wide public, it is popular science at its best. It appears from this book that Weisser was paymaster under Captain-Lieutenant Geiseler on board the "Hyäne," and not a dealer as the letter from Professor Juinboll cited in the footnote, p. 249, suggests. It follows that the skulls now in Leiden must have been collected at the same time as those reported on by Volz.

Note to Table VIII.

By G. M. MORANT, D.Sc.

It is stated in the opening paragraph of this paper that the writer intends to postpone a survey of the craniology of the South Sea Islands until more material will be available, but, until this is forthcoming, it appears to be hazardous to stress the suggestion that the type of the Easter Islanders is a peculiarly specialised one. The lowest reduced coefficient of racial likeness given is $46.54 \pm .41$ with the Maori. There appears to be no other cranial series available, except the Andamanese, having its lowest reduced coefficient greater than 23, and there is generally no difficulty in finding one or more values less than 10. It seemed worth while to make comparisons between the Easter Islanders and some other series not dealt with in Table VIII. Some values found for male means are given in the table below.

The Loyalty Islanders appear to resemble the Easter Islanders far more closely than the latter do any of the types with which they are compared in Table VIII. The only marked differences between the two types are for the profile angle—the Loyalty Islanders being prognathous—and *LB*. If material were available for other islands of the Pacific nearer to Easter Island, it is extremely probable that still closer connections would be found.

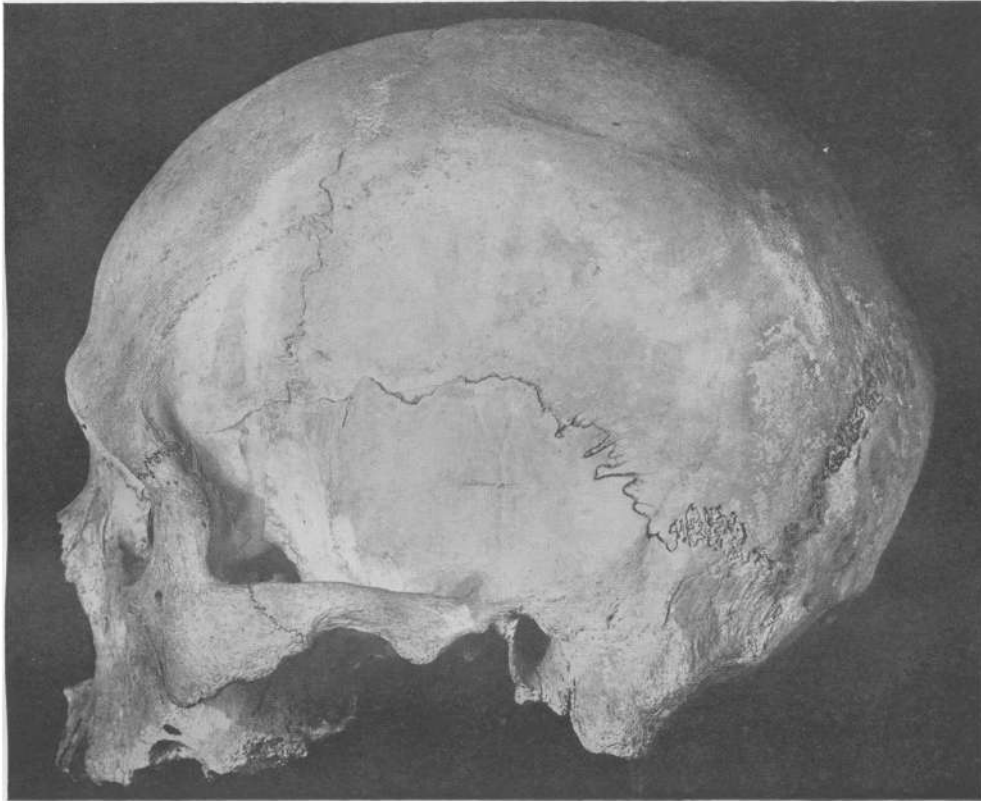
	Crude Coefficients with Easter Islanders (50.3—51.4)				Reduced coefficients
	All Characters	No. of Characters	Indices and Angles	No. of Characters	
Loyalty Islanders* ... (33.8)	$9.19 \pm .22$	18	$14.40 \pm .39$	6	$22.04 \pm .54$
Patagonians: Ancient† (48.7)	$15.62 \pm .19$	25	$17.32 \pm .36$	7	$31.57 \pm .39$
New Caledonians* ... (89.5)	$28.85 \pm .22$	18	$47.62 \pm .39$	6	$42.64 \pm .33$
Fuegians‡ ... (33.7)	$30.42 \pm .19$	26	$40.50 \pm .30$	10	$73.23 \pm .45$
Patagonians: Modern† (35.6)	$33.64 \pm .19$	25	$46.24 \pm .36$	7	$80.68 \pm .46$

It is interesting to note that the coefficient between the male Fuegian (36.7) and Modern Patagonian (35.5) series is as low as $4.01 \pm .21$ for 20 characters, and this leads to a reduced value of $11.14 \pm .59$. The only α 's greater than 10 are for *J* (24.40), $100 H'/L$ (12.33) and *C* (10.21), while it is the Patagonian type which has a bizygomatic breadth (148.0) which is apparently the largest male mean yet recorded.

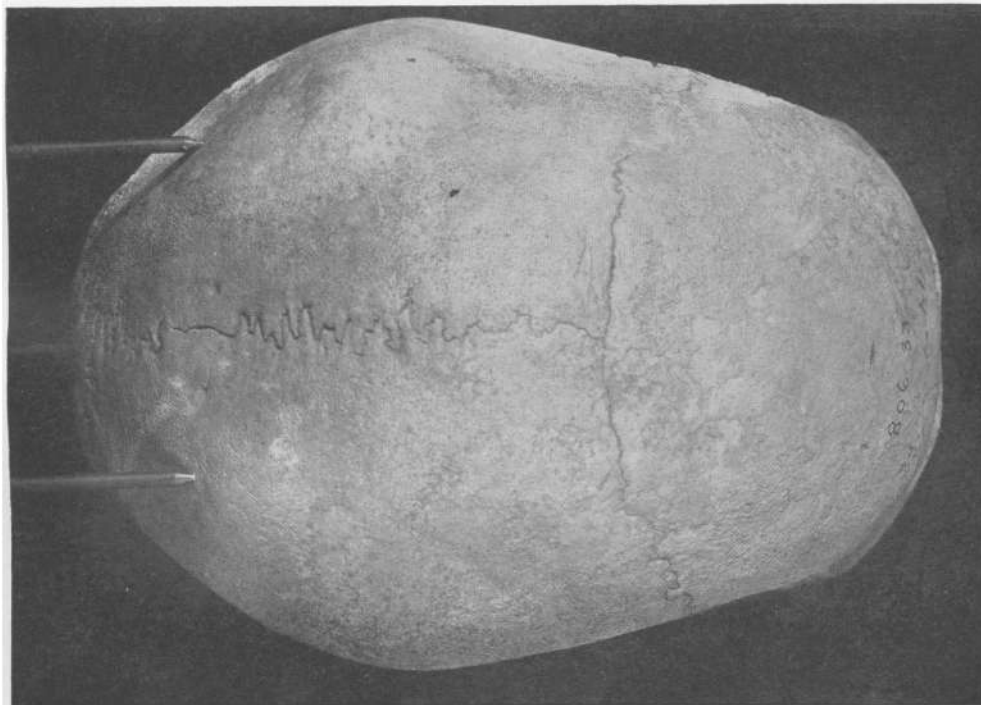
* Sarasin, F., *Anthropologie der Neu Caledonier und Loyalty Insulaner*, Wiesbaden, 1916—22.

† Marelli, "Contribución a la Craneología de la Primitivas Poblaciones de la Patagonia (Observaciones morfobiométricas)," *Anales del Museo Nacional de Historia Natural de Buenos Aires*, t. xxvi. pp. 31—91, 1913. All deformed skulls were excluded in re-computing the means.

‡ Unpublished pooled means.

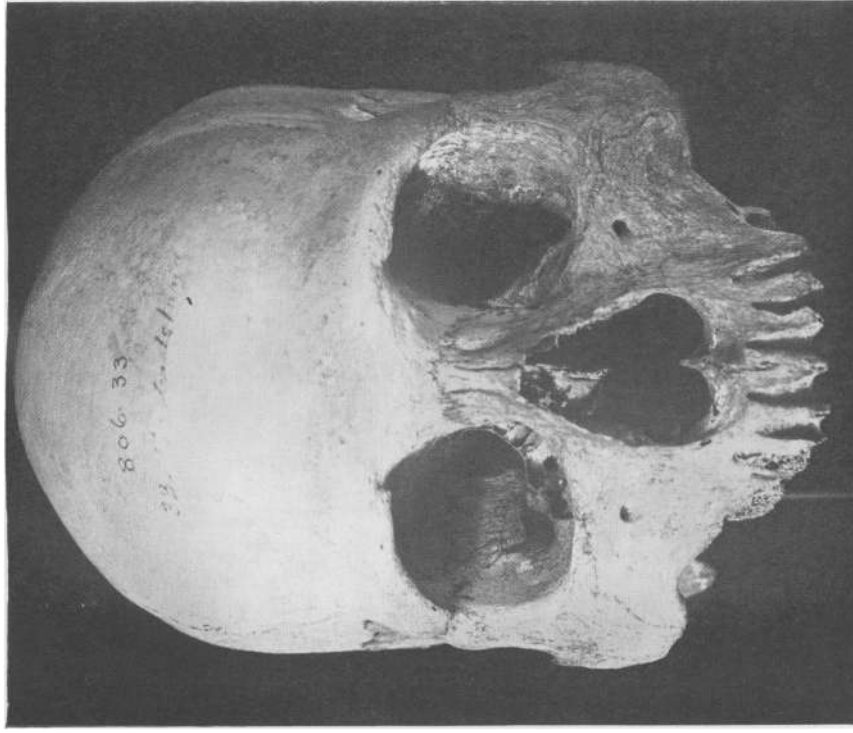


A. *Norma lateralis* (left profile) (circa 0.6 natural size).

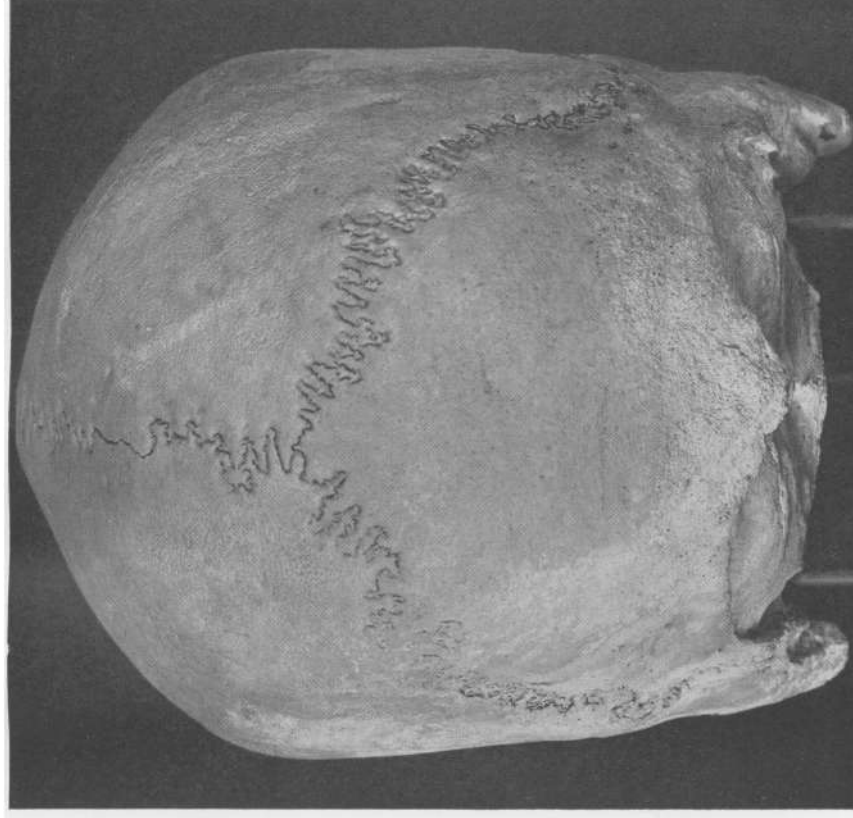


B. *Norma verticalis* (circa 0.6 natural size).

Normal Male Easter Island Skull (R. C. S. No. 806. 33)



C. *Norma facialis* (circa 0·7 natural size).



D. *Norma occipitalis* (circa 0·65 natural size).

Normal Male Easter Island Skull (R. C. S. No. 806. 33)

	<i>C</i>	<i>L</i>	<i>F</i>	<i>B</i>	<i>H'</i>	<i>H</i>	<i>OH</i>	<i>Breg- matic OH</i>	<i>LB</i>	<i>B'</i>	<i>U</i>	<i>Gla- bella U</i>
R.C.S. 806-00	1340	188	188	130	137	136	118.5	117	106	91.6	511	519
01	1355	183	183.5	128	142.5	143	125	124	108	86.2	501	506
02	—	204.5	204	—	—	—	—	—	—	95.0	—	—
06	—	189	186.5	—	—	—	—	—	—	—	—	—
08	1530	194	189	130.5	—	145	125	126.5	112.5	95.5	517	530
10	1365	179.5	178	141	140	141	125.5	124.5	113	99.0	508	517
11	1470	184	181	139.5	138.5	140	124.5	123	101	100.2	514	529
15	1525	190	189	128	148.5	151	130	127	108	95.5	514	519
16	1680	195.5	192	140	147	147	129.5	129.5	117	93.0	535	544
17	—	191	186	—	—	—	120	121.5	—	93.2	—	—
19	1375	201	200	131.5	146	146.5	126	126	114	99.3	534	545
21	—	191.5	190	—	—	—	—	—	—	97.0	—	—
26	—	193.5	191	132.5	144	144	125.5	125.5	113.5	91.0	520	536
27	—	187	186	—	136	136.5	116.5	117	108	87.0	503?	511?
28	1560	189	186	133	145	149	127	123	110	96.0	512	523
29	—	197	193	136.5	144.5	145	126	125	110	97.8	536	546
30	—	189	188.5	125	—	—	—	—	—	88.0	—	—
31	1555	193	190	139	144	147.5	125.5	123	112	91.6	525	534
32	1240	182.5	181	129	137.5	138.5	117	116	106.5	90.0	495	505
33	1435	191	188	133.5	143	144	126	125.5	109.5	95.0	517	526
34	—	187	185.5	—	—	—	—	—	—	94.8	—	—
35	—	196	194	127.5	139	140.5	118	117	118	94.0	514	535
36	—	193	193	—	138	139	121	120.5	106	—	—	—
37	1460	192.5	191.5	133.5	145	146.5	124	124	108	94.0	530	535
38	—	189	188	—	142	142	120	120	109	—	—	—
39	—	200	196	—	145	147	127	126	116	92.0	525	533
40	1600	206	200	133.5	148	149.5	127.5	126	116	89.3	536	557
41	—	193.5	194	—	—	—	119	120	—	93.0	520	—
45	1485	190	188.5	136	145	148	126.5	124	110	90.7	513	530
46	—	200	199.5	131	147	148.5	132.5	132	111	91.0	533	541
47	1425	190	188.5	125	143	149	128.5	125	112	92.8	512	519
50	—	192	189	134.5	146.5	150	126.5	125	112	94.0	523	535
51	1525	199	198	128	144.5	146.5	119	120.5	111	93.0	529	538
52	—	201.5	198	136.5	153.5	155.5	129	127.5	117	—	534	555
53	—	184	182	—	141	141	120.5	120.5	115	94.6	501	511
56	1585	197	195	133	144.5	145.5	123.5	122.5	115	105.0	530	538
Leiden	192	—	189	188.5	133	140.5	141	121	121	107.5	94.2	517
196	—	197	196	133.5	147	147.5	128	126.5	117.5	—	—	—
198	—	181	181	132.5	138.5	139.5	120.5	120	104.5	92.2	503	506
199	—	188	188	136	—	—	119	121	—	95.0	513	520
201	—	198	196.5	140	145	146	128	126.5	112.0	90.8	536	545
202	—	193	194	130.5	140.5	139	124.5	124	103.7	94.6	525	529
203	—	191	193	134.5	136.5	141	121	118.5	—	98.5	530	530
204	—	181.5	180	126	139	145	126	122	105.0	86.6	495	502
205	—	191	190	134.5	146	150	120.5	117.5	118.5	91.5	521	532
207	—	183.5	183	126	135.5	134	112	113	106.2	89.0	495	506
208	—	190.5	186.5	134.5	141	142.5	123	120.5	111.8	92.1	519	525
209	—	188	186	142	154	156	131.5	130	111.1	98.9	523	531
210	—	191	190	131.5	134.5	133.5	116	117.5	102.0	91.2	516	524
B.M.	1	—	193	190.5	128	153	—	—	111.8	90.4	516	531
3	—	184	184	124.5	137.5	—	—	—	108.0	90.5	503	510
6	—	186	186.5	124	138.5	—	—	—	108.2	92.2	505	510
9	—	196.5	192.5	130.5	—	—	—	—	—	92.0	—	—
10	—	188	189	—	133.5	—	—	—	106.5	93.0	—	—

<i>B'</i>	<i>U</i>	<i>Gla-</i> <i>bella</i> <i>U</i>	<i>Q'</i>	<i>Breg-</i> <i>matic</i> <i>Q'</i>	<i>S</i> ₁ '	<i>S</i> ₂ '	<i>S</i> ₃ '	<i>S</i> ₄	<i>S</i> ₅	<i>S</i> ₆	<i>S</i>	<i>fml</i>	<i>fmb</i>	<i>G'H</i>	<i>J</i>	<i>GB</i>	<i>G</i>
91-6	511	519	313	306	108-2	121-4	96-0	126	136	114-5	376-5	35-0	27-0	65-6	131	98-2	101-8
86-2	501	506	323	315	114-0	105-4	99-6	133-5	115	117-5	366	36-5	29-4	68-0	124	88-0	104-2
95-0	—	—	—	—	122-2	124-2	—	146	138	—	—	—	—	73-3	—	97-9	—
—	—	—	—	—	115-0	128-2	—	131-5	143	—	—	—	—	—	—	—	—
95-5	517	530	321	321	116-4	116-8	99-0	134-5	129	118	381-5	39-0	32-9	73-4	143	105-0	107-2
99-0	508	517	336	329	113-6	102-6	103-0	129	115	120	364	29-5	24-5	—	136-5	102-3	—
100-2	514	529	329	326	122-5	111-0	93-6	139	124-5	113-5	379	34-0	28-8	76-0	135	100-0	93-2
95-5	514	519	329	322	114-3	121-0	100-0	130	137	119	386	—	32-0	66-1	135	94-3	99-2
93-0	535	544	346	341	126-0	110-0	97-5	146	121-5	117	384-5	38-3	32-4	73-3	136	97-0	101-2
93-2	—	—	—	311	120-6	115-0	—	137-5	128	—	—	—	—	—	—	—	—
99-3	534	545	—	—	111-0	122-0	100-0	129-5	135	127	391-5	—	30-4	74-9	137	101-8	111-2
97-0	—	—	—	—	117-5	122-7	—	137	134	—	—	—	—	—	—	—	—
91-0	520	536	326?	322?	113-8	109-2	—	129	119	—	—	—	29-6	72-7	—	94-2	109-2
87-0	503?	511?	—	—	111-0	108-4	101-2	129	—	122	—	—	—	64-2	—	94-2	106-2
96-0	512	523	325	316	108-5	124-7	94-3	120-5	144	113	378	37-4	31-3	—	132	95-1	—
97-8	536	546	332	328	118-0	—	—	138	—	—	395?	—	—	74-0	140-5	102-0	108-2
88-0	—	—	—	318	115-0	111-0	106-5	132-5	123	130	385	—	—	—	—	—	—
91-6	525	534	335	329	111-6	115-2	100-8	125	131	124	381	39-0	30-0	74-0	—	90-0	107-2
90-0	495	505	310	303	109-5	110-0	95-0	125	120	115	360	35-0	28-2	65-8	133	100-0	103-2
95-0	517	526	330	325	120-0	111-7	104-3	139	122	126	387	36-1	30-1	73-0	129-5	99-7	109-2
94-8	—	—	—	—	112-4	—	—	129	—	—	—	—	—	63-0	—	—	—
94-0	514	535	310	307	115-0	101-0	103-0	132	110	134	377	—	—	71-8	—	105-4	106-2
—	—	—	—	—	114-5	119-0	95-0	136	133	116	385	38-0	30-1	67-0	—	101-7	101-2
94-0	530	535	330	326	119-4	117-5	93-8	140	130	115	385	35-9	28-9	—	136	98-0	—
—	—	—	—	—	116-2	112-0	97-6	134	124	118	376	38-7	—	—	—	—	—
92-0	525	533	328	325	122-0	121-0	94-0	141	141	116	398	35-4	32-5	—	134	95-6	—
89-3	536	557	328	325	122-5	114-6	109-0	143	126	134	403	37-9	33-1	69-0	139-5	108-6	104-2
93-0	520	—	307	310	118-3	113-0	—	—	124	—	—	—	—	74-5	133	97-6	—
90-7	533	530	333	325	116-0	104-0	112-0	132	114	135	381	35-2	30-1	70-8	136-5	100-0	111-2
91-0	533	541	338	334	120-4	128-3	103-0	140	145	123	408	39-5	28-5	—	—	—	—
92-8	512	519	328	321	113-0	109-2	103-0	135	124	124	383	37-3	33-0	70-5	135	99-4	101-2
94-0	523	535	332	325	116-0	121-0	—	133	138	—	—	—	—	70-0	—	—	—
93-0	529	538	311	311	114-7	127-0	104-0	136	143	126	405	34-5	28-2	69-0	131	100-2	101-2
—	534	555	336	327	123-0	116-8	109-5	142	130	137	409	35-7	32-9	70-6	141	105-0	111-2
94-6	501	511	—	—	110-2	106-3	100-6	125	115	122	362	33-1	30-7	71-1	—	95-4	101-2
105-0	530	538	322	319	119-8	97-0	—	139	104	—	—	—	—	73-4	142	98-2	101-2
94-2	517	520	328	326	112-0	117-6	99-7	130	132-5	122	384-5	34-2	29-0	61-6	129	92-3	101-2
—	—	—	—	—	119-9	117-2	100-2	138	127	120	385	40-3	36-1	73-2	—	—	—
92-2	503	506	324	320	110-0	106-2	106-3	126	116	129	371	33-4	30-3	70-0	131	89-3	101-2
95-0	513	520	319	316	118-0	111-0	88-4	141	122	112	374	—	—	—	—	93-0	—
90-8	536	545	341	338	123-5	111-5	105-2	144	125	131	400	40-0	32-8	68-3	136	100-7	91-2
94-6	525	529	326	322	116-9	124-3	104-5	134	139	124	397	36-2	31-6	61-7	132	89-0	91-2
98-5	530	530	315	308	—	122-5	106-0	—	138	128-5	—	30-8	27-3	—	—	—	—
86-6	495	502	323	318	111-5	110-4	95-0	127	126	108	362	40-4	30-9	69-8	131	97-4	91-2
91-5	521	532	317	316	107-5	120-0	87-5	123	140	104	367	—	—	77-0	142	102-0	101-2
89-0	495	506	298	302	116-3	106-7	90-7	134	117-5	107	358-5	35-0	32-0	66-5	128	95-0	101-2
92-1	519	525	324	317	111-2	105-4	104-7	127	117	127-5	371-5	37-0	30-2	66-2	138	99-2	101-2
98-9	523	531	339	337	114-5	118-0	104-8	130	133	120	383	38-6	34-0	68-5	138-5	92-5	91-2
91-2	516	524	312	310	112-0	113-2	105-8	130	124	129	383	36-4	29-5	60-8	128	102-4	91-2
90-4	516	531	—	325	123-8	107-2	116-6	142	115	140	397	35-8	30-0	66-5	132-5	100-0	101-2
90-5	503	510	—	292	105-0	111-8	99-3	119-5	124-5	120	364	35-5	32-5	67-0	127-5	94-8	91-2
92-2	505	510	—	307?	112-3	118-1	92-3	129-5	132	110	371-5	34-0	31-0	—	—	—	—
92-0	—	—	—	—	115-2	122-5	—	132	138	—	—	—	—	—	—	—	—
93-0	—	—	—	—	111-0	108-0	99-2	129	120	126	375	34-0	29-9	65-0	131	95-2	101-2

TABLE XII. *Individual Measurements of Male Easter Island Skulls.*

PH	J	GB	GL	PH	NHR	NHL	NH'	NB	SO	SS	DO	DS	DA	O ₁ R	O ₁ 'R	Lacr. O ₁ R	O ₂ R	O ₁ L	O ₂ L
5-6	131	98.2	101.0	17.3	49.0	49.0	47.6	24.0	8.5	3.1	21.2	8.0	28	40.9	38.2	38.2	35.0	40.9	37.0
8-0	124	88.0	104.8	20.4	51.0	51.0	46.8	26.0	7.0	1.5	17.8	8.0	28	41.2	38.3	38.3	36.2	41.9	38.6
3-3	—	97.9	—	21.0	54.5	54.1	53.0	26.8	10.0	2.9	23.5	11.4	34	43.2	39.1	38.5	32.7	45.0	40.0
—	—	—	—	—	54.1	—	—	26.1	6.2	2.2	21.0	8.9	29.5	—	—	—	—	43.1	40.0
3-4	143	105.0	107.0	15.7	59.2	59.0	57.7	29.0	7.0	3.5	25.0	10.4	35	45.0	40.9	40.9	36.3	43.7	41.0
5-0	130.5	102.3	—	—	55.0	55.0	53.0	27.8	8.0	4.9	24.3	10.4	35.5	45.5	42.2	42.2	34.1	43.5	39.0
5-1	135	100.0	93.6	18.3	57.5	57.9	57.0	30.0	10.8	4.2	26.3	9.1	34	42.1	39.9	38.5	33.0	42.1	38.0
3-3	135	94.3	99.8	15.4	53.3	54.5	49.6	26.9	7.0	3.1	23.1	9.1	30.5	44.5	38.9	38.9	35.3	43.0	39.0
—	136	97.0	101.3	15.1	60.3	60.3	56.8	27.0	8.8	3.2	21.8	10.2	31	43.6	40.0	40.0	35.0	42.3	39.0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4-9	137	101.8	111.0	19.9	55.5	54.0	52.9	28.8	9.0	2.7	25.0	9.2	32.5	43.8	40.1	40.1	31.5	44.0	41.0
2-7	—	94.2	109.0	—	53.0	53.3	51.0	31.0	7.9	4.4	24.0	11.1	37	44.2	40.0	40.0	32.2	—	—
4-2	—	94.2	100.3	14.8	50.5	50.4	48.5	24.8	8.4	2.5	22.5	8.9	33	40.9	38.6	38.6	33.9	42.0	38.0
—	132	95.1	—	—	52.8	51.3	48.9	25.3	9.2	3.6	21.3	9.7	31	42.3	38.9	38.9	33.0	41.0	38.0
4-0	140.5	102.0	108.3	17.7	57.4	54.5	53.5	27.8	8.8	3.7	25.0	13.0	38	43.6	40.1	40.1	35.9	43.3	38.0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4-0	—	90.0	107.5	19.7	58.1	58.1	53.0	27.0	9.0	4.0	26.5	10.3	35.5	44.6	37.9	37.9	34.6	44.3	40.0
5-8	133	100.0	105.2	14.8	51.5	—	50.2	29.0	7.5	3.3	23.0	10.8	33	43.0	38.4	38.4	34.0	42.5	39.0
3-0	129.5	99.7	105.6	17.0	58.9	57.2	54.0	29.3	7.5	3.2	22.0?	12.5?	37?	44.0	—	38.5?	34.9	43.0	—
3-0	—	—	—	—	49.0	49.5	—	—	—	—	—	—	—	—	—	—	—	—	—
1-8	—	105.4	109.5	16.0	57.3	57.9	54.8	29.5	9.0	4.0	21.3	8.0	28	46.5	44.0	42.1	35.2	—	—
7-0	—	101.7	104.2	20.0	47.0	47.0	45.4	—	7.0	3.4	20.3	8.4	29	41.0	38.1	38.1	33.6	40.9	37.0
—	136	98.0	—	—	50.0	48.8	48.3	28.3	8.7	3.8	24.2	9.6	34.5	42.5	39.2	39.2	31.5	42.3	40.0
—	—	—	—	—	56.1	56.1	53.2	27.0	8.0	2.6	22.1	10.2	35.5	—	—	—	33.6	43.3	39.0
—	134	95.6	—	—	55.0	52.3	53.6	26.3	8.3	3.2	25.0	8.0	30	44.0	40.1	38.3	33.6	45.1	42.0
9-0	139.5	108.6	109.8	18.0	52.0	52.0	49.2	28.0	7.2	3.2	23.1	11.9	36	45.0	39.8	39.8	34.9	44.7	41.0
4-5	133	97.6	—	—	58.0	60.0	—	27.5	6.0	3.5	—	—	—	—	—	—	—	—	—
0-8	136.5	100.0	113.2	20.9	50.9	51.0	49.2	27.1	3.9	2.0?	23.0	9.7	32.5	45.0	41.0	41.0	35.8	45.0	40.0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0-5	135	99.4	108.2	18.4	53.2	54.6	50.5	26.5	4.5	1.5?	21.0	10.9	32	43.1	38.3	38.3	38.0	43.6	39.0
0-0	—	—	98.4	17.1	52.1	52.9	50.5	—	7.1	2.5	23.3	8.2	31	—	—	—	—	44.5	41.0
9-0	131	100.2	108.7	20.9	51.1	50.9	47.8	30.4	5.6	3.0?	22.0	9.0	32.5	40.0	37.4	37.0	32.5	40.6	37.0
0-6	141	105.0	111.0	18.1	56.3	56.0	52.5	28.3	8.0	3.8	24.2	11.8	37	45.2	41.0	40.9	36.1	45.5	42.0
1-1	—	95.4	102.5	17.8	54.5	54.5	50.9	27.0	8.2	2.6	22.4	8.9	30.5	43.6	41.8	40.2	34.0	44.5	41.0
3-4	142	98.2	103.5	21.2	50.7	56.8	54.5	26.3	9.1	2.5	23.3	10.0	32.5	44.5	42.0	40.4	37.3	47.0	40.0
1-6	129	92.3	100.0	—	49.7	48.0	45.0	27.6	9.9	3.5	22.1	8.2	29	41.0	—	37.0	33.5	41.0	—
3-2	—	—	104.4	16.2	58.0	58.0	55.3	28.2	8.7	4.4	25.3	9.6	31	—	—	—	—	44.6	—
0-0	131	89.3	101.3	—	48.5	50.0	48.2	29.0	6.8	2.6	21.8	6.8	26	42.0	39.0	—	35.0	42.5	39.0
—	—	93.0	—	—	47.1	45.0	44.4	25.3	—	—	—	—	—	—	—	—	—	—	—
8-3	136	100.7	96.0	—	54.0	55.8	51.0	28.4	7.2	1.0	24.0	7.0	31.5	42.5	—	—	32.1	42.2	—
1-7	132	89.0	98.4	16.5	48.7	46.0	44.2	25.6	7.4	2.3	21.3	8.8	29	41.4	38.8	38.8	33.8	41.4	38.0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	45.1	—
9-8	131	97.4	97.6	—	55.6	54.5	51.5	26.3	7.0	2.2	21.6	7.0	28.5	43.2	—	40.0	34.8	43.7	41.0
7-0	142	102.0	107.8	—	59.8	59.8	55.0	30.0	9.0	5.8	—	—	—	45.4	—	—	35.2	45.4	—
0-5	128	95.0	99.8	—	48.5	50.0	48.4?	26.1	6.9	2.5	21.0	10.1	29	42.7	—	38.8	34.5	42.5	—
0-2	138	99.2	103.0	19.0	51.3	50.9	46.6	26.1	—	—	23.2	10.9	32	43.8	—	39.6	33.5	44.1	—
0-8	138.5	92.5	99.0	18.2	53.5	54.3	50.0	25.7	—	—	21.0	9.0	28	41.2	—	37.5	34.0	41.5	39.0
0-8	128	102.4	95.0	13.2	47.7	47.7	47.5	23.0	9.0	2.0	22.0	8.0	26.5	42.3	—	39.2	35.0	44.8	—
0-5	132.5	100.0	102.3	—	51.7	51.8	48.6	27.0	7.1	3.5	19.8	9.0	—	45.5	41.8	40.1	34.8	46.5	41.0
7-0	127.5	94.8	96.0	—	47.2	47.9	46.0	24.6	7.0	2.1	18.9	12.3	—	43.6	40.2	39.0	34.8	42.5	39.0
—	—	—	—	—	—	—	—	—	—	—	21.6	9.0	—	45.0	41.6	40.3	34.6	—	—
—	—	—	—	—	—	—	—	—	7.2	3.2	21.0	7.0	—	—	—	—	—	—	—
0-0	131	95.2	101.2	—	48.8	48.8	46.5	25.0	7.8	3.1	19.8	8.6	—	42.6	40.4	40.4	36.3	43.0	39.0

<i>Lacr.</i> <i>O₁R</i>	<i>O₂R</i>	<i>O₁L</i>	<i>O₁L</i>	<i>Lacr.</i> <i>O₁L</i>	<i>O₂L</i>	<i>G₁</i>	<i>G₁'</i>	<i>G₂</i>	<i>EH</i>	<i>Alveolar</i> <i>P</i> ∠	<i>Pro-</i> <i>s-</i> <i>thion</i> <i>P</i> ∠	<i>N</i> ∠	<i>A</i> ∠	<i>B</i> ∠	<i>Occ. I.</i>	100 <i>B</i> <i>L</i>	100 <i>H'</i> <i>L</i>	100 <i>B</i> <i>H'</i>
38°2 38°3 38°5 — 40°9 42°2 38°5 38°9 40°0 — 40°1 — 38°6 38°9 40°1 — 37°9 38°4 38°5?	35°0 36°2 32°7 — 36°3 34°1 33°0 35°3 35°0 — 31°5 — 32°2 33°9 33°0 35°9 — 34°6 34°0 34°9	40°9 41°9 45°0 43°1 40°9 43°7 43°5 42°1 43°0 42°3 — — 42°0 41°0 43°3 — 44°3 42°5 34°9	37°0 38°6 40°2 40°1 41°0 41°0 39°9 38°4 39°4 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 —	37°0 38°6 38°9 40°1 41°0 40°1 39°9 38°2 38°9 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 36°6	35°1 35°3 — 33°8 37°4 34°0 33°0 36°3 34°5 — 31°5 — 33°1 34°1 33°1 34°6 — 34°3 33°4 35°3	50°0 49°0 57°5 — 51°0 — — 45°5 49°3 — 57°9 — — 47°3 50°0 52°8 — 55°4 51°7 —	46°2 44°8 53°0 — 47°4 — — 43°5 43°1 — 52°0 — — 42°9 46°0 48°0 — 51°0 48°5 —	41°2 — 42°1 — 39°8 — 39°8 — 37°2 — 39°0 — — 35°4 38°0 43°0 — — — —	15°1 — 12°3 — 12°0 — 14°9 — 10°2 — 10°0 — 10°4 8°6 11°7 — — — —	86°9 86°0 — — 86°1 — 92°8 88°2 100°1 — 87°3 85°3 68°4 — 89°2 89°0 91°0 86°3 — 86°2 82°8 88°0	84°0 83°8 — — 83°7 — 90°6 86°0 98°0 — 85°3 85°1 86°0 84°0 — 86°3 86°0 81°5 — 84°3 80°0 86°0	67°4 68°8 — — 66°5 — 61°9 64°8 59°0 — 68°4 67°7 65°6 68°9 71°4 — 67°0 70°9 67°4 — 73°8 73°0 73°1	75°8 74°1 — — 74°6 — 72°4 78°4 82°8 — 72°8 74°2 78°9 71°4 — 73°8 73°0 73°1	36°8 37°1 — — 38°9 — 45°7 30°8 38°2 — 38°8 38°1 35°5 39°7 — 39°2 36°1 39°5	60°5 61°7 — — 60°6 63°2 59°1 60°8 60°0 — 56°2 — 59°6 60°2 66°1 — 58°1 59°2 59°4	69°1 69°9 — — 68°8 78°5 75°8 67°4 71°6 — 65°4 — 68°5 70°4 69°3 — 72°0 70°7 69°9	72°9 77°9 — — 68°8 78°0 75°3 78°2 75°2 — 72°6 — 74°4 72°7 76°7 73°4 — 74°6 75°3 74°9	94° 89° — — — 100° 100° 86° 95° — 90° — 92° 91° 94° — 96° 93° 93°
— 40°9 38°5 38°9 40°0 — 40°1 — 38°6 38°9 40°1 — 37°9 38°4 38°5?	35°0 36°2 32°7 — 36°3 34°1 33°0 35°3 35°0 — 31°5 — 32°2 33°9 33°0 35°9 — 34°6 34°0 34°9	40°9 41°9 45°0 43°1 40°9 43°7 43°5 42°1 43°0 42°3 — — 42°0 41°0 43°3 — 44°3 42°5 34°9	37°0 38°6 40°2 40°1 41°0 41°0 39°9 38°4 39°4 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 —	37°0 38°6 38°9 40°1 41°0 40°1 39°9 38°2 38°9 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 36°6	35°1 35°3 — 33°8 37°4 34°0 33°0 36°3 34°5 — 31°5 — 33°1 34°1 33°1 34°6 — 34°3 33°4 35°3	50°0 49°0 57°5 — 51°0 — — 45°5 49°3 — 57°9 — — 47°3 50°0 52°8 — 55°4 51°7 —	46°2 44°8 53°0 — 47°4 — — 43°5 43°1 — 52°0 — — 42°9 46°0 48°0 — 51°0 48°5 —	41°2 — 42°1 — 39°8 — 39°8 — 37°2 — 39°0 — — 35°4 38°0 43°0 — — — —	15°1 — 12°3 — 12°0 — 14°9 — 10°2 — 10°0 — 10°4 8°6 11°7 — — — —	86°9 86°0 — — 86°1 — 92°8 88°2 100°1 — 87°3 85°3 68°4 — 89°2 89°0 91°0 86°3 — 86°2 82°8 88°0	84°0 83°8 — — 83°7 — 90°6 86°0 98°0 — 85°3 85°1 86°0 84°0 — 86°3 86°0 81°5 — 84°3 80°0 86°0	67°4 68°8 — — 66°5 — 61°9 64°8 59°0 — 68°4 67°7 65°6 68°9 71°4 — 67°0 70°9 67°4 — 73°8 73°0 73°1	75°8 74°1 — — 74°6 — 72°4 78°4 82°8 — 72°8 74°2 78°9 71°4 — 73°8 73°0 73°1	36°8 37°1 — — 38°9 — 45°7 30°8 38°2 — 38°8 38°1 35°5 39°7 — 39°2 36°1 39°5	60°5 61°7 — — 60°6 63°2 59°1 60°8 60°0 — 56°2 — 59°6 60°2 66°1 — 58°1 59°2 59°4	69°1 69°9 — — 68°8 78°5 75°8 67°4 71°6 — 65°4 — 68°5 70°4 69°3 — 72°0 70°7 69°9	72°9 77°9 — — 68°8 78°0 75°3 78°2 75°2 — 72°6 — 74°4 72°7 76°7 73°4 — 74°6 75°3 74°9	94° 89° — — — 100° 100° 86° 95° — 90° — 92° 91° 94° — 96° 93° 93°
— 40°9 38°5 38°9 40°0 — 40°1 — 38°6 38°9 40°1 — 37°9 38°4 38°5?	35°0 36°2 32°7 — 36°3 34°1 33°0 35°3 35°0 — 31°5 — 32°2 33°9 33°0 35°9 — 34°6 34°0 34°9	40°9 41°9 45°0 43°1 40°9 43°7 43°5 42°1 43°0 42°3 — — 42°0 41°0 43°3 — 44°3 42°5 34°9	37°0 38°6 40°2 40°1 41°0 41°0 39°9 38°4 39°4 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 —	37°0 38°6 38°9 40°1 41°0 40°1 39°9 38°2 38°9 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 36°6	35°1 35°3 — 33°8 37°4 34°0 33°0 36°3 34°5 — 31°5 — 33°1 34°1 33°1 34°6 — 34°3 33°4 35°3	50°0 49°0 57°5 — 51°0 — — 45°5 49°3 — 57°9 — — 47°3 50°0 52°8 — 55°4 51°7 —	46°2 44°8 53°0 — 47°4 — — 43°5 43°1 — 52°0 — — 42°9 46°0 48°0 — 51°0 48°5 —	41°2 — 42°1 — 39°8 — 39°8 — 37°2 — 39°0 — — 35°4 38°0 43°0 — — — —	15°1 — 12°3 — 12°0 — 14°9 — 10°2 — 10°0 — 10°4 8°6 11°7 — — — —	86°9 86°0 — — 86°1 — 92°8 88°2 100°1 — 87°3 85°3 68°4 — 89°2 89°0 91°0 86°3 — 86°2 82°8 88°0	84°0 83°8 — — 83°7 — 90°6 86°0 98°0 — 85°3 85°1 86°0 84°0 — 86°3 86°0 81°5 — 84°3 80°0 86°0	67°4 68°8 — — 66°5 — 61°9 64°8 59°0 — 68°4 67°7 65°6 68°9 71°4 — 67°0 70°9 67°4 — 73°8 73°0 73°1	75°8 74°1 — — 74°6 — 72°4 78°4 82°8 — 72°8 74°2 78°9 71°4 — 73°8 73°0 73°1	36°8 37°1 — — 38°9 — 45°7 30°8 38°2 — 38°8 38°1 35°5 39°7 — 39°2 36°1 39°5	60°5 61°7 — — 60°6 63°2 59°1 60°8 60°0 — 56°2 — 59°6 60°2 66°1 — 58°1 59°2 59°4	69°1 69°9 — — 68°8 78°5 75°8 67°4 71°6 — 65°4 — 68°5 70°4 69°3 — 72°0 70°7 69°9	72°9 77°9 — — 68°8 78°0 75°3 78°2 75°2 — 72°6 — 74°4 72°7 76°7 73°4 — 74°6 75°3 74°9	94° 89° — — — 100° 100° 86° 95° — 90° — 92° 91° 94° — 96° 93° 93°
— 40°9 38°5 38°9 40°0 — 40°1 — 38°6 38°9 40°1 — 37°9 38°4 38°5?	35°0 36°2 32°7 — 36°3 34°1 33°0 35°3 35°0 — 31°5 — 32°2 33°9 33°0 35°9 — 34°6 34°0 34°9	40°9 41°9 45°0 43°1 40°9 43°7 43°5 42°1 43°0 42°3 — — 42°0 41°0 43°3 — 44°3 42°5 34°9	37°0 38°6 40°2 40°1 41°0 41°0 39°9 38°4 39°4 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 —	37°0 38°6 38°9 40°1 41°0 40°1 39°9 38°2 38°9 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 36°6	35°1 35°3 — 33°8 37°4 34°0 33°0 36°3 34°5 — 31°5 — 33°1 34°1 33°1 34°6 — 34°3 33°4 35°3	50°0 49°0 57°5 — 51°0 — — 45°5 49°3 — 57°9 — — 47°3 50°0 52°8 — 55°4 51°7 —	46°2 44°8 53°0 — 47°4 — — 43°5 43°1 — 52°0 — — 42°9 46°0 48°0 — 51°0 48°5 —	41°2 — 42°1 — 39°8 — 39°8 — 37°2 — 39°0 — — 35°4 38°0 43°0 — — — —	15°1 — 12°3 — 12°0 — 14°9 — 10°2 — 10°0 — 10°4 8°6 11°7 — — — —	86°9 86°0 — — 86°1 — 92°8 88°2 100°1 — 87°3 85°3 68°4 — 89°2 89°0 91°0 86°3 — 86°2 82°8 88°0	84°0 83°8 — — 83°7 — 90°6 86°0 98°0 — 85°3 85°1 86°0 84°0 — 86°3 86°0 81°5 — 84°3 80°0 86°0	67°4 68°8 — — 66°5 — 61°9 64°8 59°0 — 68°4 67°7 65°6 68°9 71°4 — 67°0 70°9 67°4 — 73°8 73°0 73°1	75°8 74°1 — — 74°6 — 72°4 78°4 82°8 — 72°8 74°2 78°9 71°4 — 73°8 73°0 73°1	36°8 37°1 — — 38°9 — 45°7 30°8 38°2 — 38°8 38°1 35°5 39°7 — 39°2 36°1 39°5	60°5 61°7 — — 60°6 63°2 59°1 60°8 60°0 — 56°2 — 59°6 60°2 66°1 — 58°1 59°2 59°4	69°1 69°9 — — 68°8 78°5 75°8 67°4 71°6 — 65°4 — 68°5 70°4 69°3 — 72°0 70°7 69°9	72°9 77°9 — — 68°8 78°0 75°3 78°2 75°2 — 72°6 — 74°4 72°7 76°7 73°4 — 74°6 75°3 74°9	94° 89° — — — 100° 100° 86° 95° — 90° — 92° 91° 94° — 96° 93° 93°
— 40°9 38°5 38°9 40°0 — 40°1 — 38°6 38°9 40°1 — 37°9 38°4 38°5?	35°0 36°2 32°7 — 36°3 34°1 33°0 35°3 35°0 — 31°5 — 32°2 33°9 33°0 35°9 — 34°6 34°0 34°9	40°9 41°9 45°0 43°1 40°9 43°7 43°5 42°1 43°0 42°3 — — 42°0 41°0 43°3 — 44°3 42°5 34°9	37°0 38°6 40°2 40°1 41°0 41°0 39°9 38°4 39°4 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 —	37°0 38°6 38°9 40°1 41°0 40°1 39°9 38°2 38°9 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 36°6	35°1 35°3 — 33°8 37°4 34°0 33°0 36°3 34°5 — 31°5 — 33°1 34°1 33°1 34°6 — 34°3 33°4 35°3	50°0 49°0 57°5 — 51°0 — — 45°5 49°3 — 57°9 — — 47°3 50°0 52°8 — 55°4 51°7 —	46°2 44°8 53°0 — 47°4 — — 43°5 43°1 — 52°0 — — 42°9 46°0 48°0 — 51°0 48°5 —	41°2 — 42°1 — 39°8 — 39°8 — 37°2 — 39°0 — — 35°4 38°0 43°0 — — — —	15°1 — 12°3 — 12°0 — 14°9 — 10°2 — 10°0 — 10°4 8°6 11°7 — — — —	86°9 86°0 — — 86°1 — 92°8 88°2 100°1 — 87°3 85°3 68°4 — 89°2 89°0 91°0 86°3 — 86°2 82°8 88°0	84°0 83°8 — — 83°7 — 90°6 86°0 98°0 — 85°3 85°1 86°0 84°0 — 86°3 86°0 81°5 — 84°3 80°0 86°0	67°4 68°8 — — 66°5 — 61°9 64°8 59°0 — 68°4 67°7 65°6 68°9 71°4 — 67°0 70°9 67°4 — 73°8 73°0 73°1	75°8 74°1 — — 74°6 — 72°4 78°4 82°8 — 72°8 74°2 78°9 71°4 — 73°8 73°0 73°1	36°8 37°1 — — 38°9 — 45°7 30°8 38°2 — 38°8 38°1 35°5 39°7 — 39°2 36°1 39°5	60°5 61°7 — — 60°6 63°2 59°1 60°8 60°0 — 56°2 — 59°6 60°2 66°1 — 58°1 59°2 59°4	69°1 69°9 — — 68°8 78°5 75°8 67°4 71°6 — 65°4 — 68°5 70°4 69°3 — 72°0 70°7 69°9	72°9 77°9 — — 68°8 78°0 75°3 78°2 75°2 — 72°6 — 74°4 72°7 76°7 73°4 — 74°6 75°3 74°9	94° 89° — — — 100° 100° 86° 95° — 90° — 92° 91° 94° — 96° 93° 93°
— 40°9 38°5 38°9 40°0 — 40°1 — 38°6 38°9 40°1 — 37°9 38°4 38°5?	35°0 36°2 32°7 — 36°3 34°1 33°0 35°3 35°0 — 31°5 — 32°2 33°9 33°0 35°9 — 34°6 34°0 34°9	40°9 41°9 45°0 43°1 40°9 43°7 43°5 42°1 43°0 42°3 — — 42°0 41°0 43°3 — 44°3 42°5 34°9	37°0 38°6 40°2 40°1 41°0 41°0 39°9 38°4 39°4 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 —	37°0 38°6 38°9 40°1 41°0 40°1 39°9 38°2 38°9 39°5 — — 38°0 38°2 38°9 — 40°1 39°0 36°6	35°1 35°3 — 33°8 37°4 34°0 33°0 36°3 34°5 — 31°5 — 33°1 34°1 33°1 34°6 — 34°3 33°4 35°3	50°0 49°0 57°5 — 51°0 — — 45°5 49°3 — 57°9 — — 47°3 50°0 52°8 — 55°4 51°7 —	46°2 44°8 53°0 — 47°4 — — 43°5 43°1 — 52°0 — — 42°9 46°0 48°0 — 51°0 48°5 —	41°2 — 42°1 — 39°8 — 39°8 — 37°2 — 39°0 — — 35°4 38°0 43°0 — — — —	15°1 — 12°3 — 12°0 — 14°9 — 10°2 — 10°0 — 10°4 8°6 11°7 — — — —	86°9 86°0 — — 86°1 — 92°8 88°2 100°1 — 87°3 85°3 68°4 — 89°2 89°0 91°0 86°3 — 86°2 82°8 88°0	84°0 83°8 — — 83°7 — 90°6 86°0 98°0 — 85°3 85°1 86°0 84°0 — 86°3 86°0 81°5 — 84°3 80°0 86°0	67°4 68°8 — — 66°5 — 61°9 64°8 59°0 — 68°4 67°7 65°6 68°9 71°4 — 67°0 70°9 67°4 — 73°8 73°0 73°1	75°8 74°1 — — 74°6 — 72°4 78°4 82°8 — 72°8 74°2 78°9 71°4 — 73°8 73°0 73°1	36°8 37°1 — — 38°9 — 45°7 30°8 38°2 — 38°8 38°1 35°5 39°7 — 39°2 36°1 39°5	60°5 61°7 — — 60°6 63°2 59°1 60°8 60°0			

6. I.	100 $\frac{B}{L}$	100 $\frac{H'}{L}$	100 $\frac{B}{H'}$	100 $\frac{(B-H')}{L}$	100 $\frac{G'H}{GB}$	100 $\frac{NB}{NH'}$	100 $\frac{NB}{NH'} R$	100 $\frac{O_2}{O_1} R$	100 $\frac{O_2}{O_1} L$	100 $\frac{O_2}{O_1} R$	100 $\frac{G_2}{G_1}$	100 $\frac{DS}{DU}$	100 $\frac{SS}{SC}$	100 $\frac{EH}{E_a}$	100 $\frac{fmb}{fml}$
50.5	69.1	72.9	94.9	- 3.7	66.8	50.4	49.0	85.6	85.8	91.6	82.4	37.7	36.5	36.7	77.1
51.7	69.9	77.9	89.8	- 7.9	77.3	55.6	51.0	87.9	84.8	94.5	—	44.9	21.4	—	80.5
—	—	—	—	—	74.9	50.6	49.2	75.7	—	83.6	73.2	48.5	29.0	29.3	—
—	—	—	—	—	—	—	48.2	—	78.4	—	—	42.4	35.5	—	—
50.6	68.8	—	—	—	60.9	50.2	49.0	80.7	85.6	88.8	78.0	41.6	50.0	30.2	84.4
53.2	78.5	78.0	100.7	+ 0.6	—	52.5	50.5	74.9	78.2	80.8	—	42.8	61.3	—	83.1
59.1	75.8	75.3	100.7	+ 0.5	76.0	52.6	52.2	78.4	78.4	82.7	—	34.6	38.9	37.4	84.7
50.8	67.4	78.2	86.2	- 10.8	70.1	54.2	50.5	79.3	84.4	90.7	—	39.4	44.3	—	—
50.0	71.6	75.2	95.2	- 3.6	75.6	47.5	44.8	80.3	81.6	87.5	75.5	46.8	36.4	27.4	84.6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
56.2	65.4	72.6	90.1	- 7.2	73.6	54.4	51.9	71.9	71.6	78.6	67.4	36.8	30.0	25.6	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	68.5	74.4	92.0	- 5.9	77.2	60.8	58.5	72.9	—	80.5	—	46.3	55.7	—	—
59.6	—	72.7	—	—	68.2	51.1	49.1	82.9	81.2	87.8	74.8	39.6	29.8	29.4	—
50.2	70.4	76.7	91.7	- 6.3	—	51.7	47.9	78.0	80.7	84.8	76.0	45.5	39.1	22.6	83.7
—	69.3	73.4	94.5	- 4.1	72.5	52.0	48.4	82.3	79.9	89.5	81.4	52.0	42.0	27.2	—
58.6	66.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
58.1	72.0	74.6	96.5	- 2.6	82.2	50.9	46.5	77.6	77.4	91.3	—	38.9	44.4	—	76.9
59.2	70.7	75.3	93.8	- 4.6	65.8	57.8	56.3	79.1	78.6	88.5	—	47.0	44.0	—	80.6
59.4	69.9	74.9	93.4	- 5.0	73.2	54.3	49.7	79.3	82.1	—	—	—	42.7	—	83.4
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55.2	65.1	70.9	91.7	- 5.9	68.1	53.8	51.5	75.9	—	80.0	—	37.6	44.4	—	—
58.6	—	71.5	—	—	65.9	—	—	82.0	—	88.2	72.6	41.4	48.6	35.7	79.2
58.3	69.4	75.3	92.1	- 6.0	—	58.6	56.6	74.1	73.3	80.4	—	39.7	43.7	—	80.5
59.4	—	75.1	—	—	—	50.8	48.1	—	78.5	—	—	46.2	32.5	—	—
57.8	—	72.5	—	—	—	49.1	47.8	76.4	77.6	83.8	—	34.8	38.6	—	91.8
58.1	64.8	71.8	90.2	- 7.0	63.5	56.9	53.8	77.6	78.1	87.7	88.5	51.5	44.4	32.3	87.3
—	—	—	—	—	76.3	—	47.4	—	—	—	—	58.3	—	—	—
59.6	71.6	76.3	93.8	- 4.7	70.8	55.1	53.2	79.6	77.8	87.3	79.0	42.2	51.3 ?	29.2	85.5
60.5	65.5	73.5	89.1	- 8.0	—	—	—	—	87.9	—	—	—	—	—	72.2
59.7	65.8	75.3	87.4	- 9.5	70.9	52.5	49.8	88.2	87.2	99.2	73.9	51.9	33.3 ?	30.6	88.5
—	70.1	76.3	91.8	- 6.3	—	—	—	—	88.8	—	—	35.2	35.2	—	—
59.2	64.3	72.6	88.6	- 8.3	69.0	63.6	59.5	81.3	80.0	86.9	80.4	40.9	53.6 ?	27.0	81.7
57.0	67.7	76.2	88.9	- 8.4	67.2	53.9	50.3	79.9	81.3	86.8	—	48.8	47.5	—	92.2
59.1	—	76.6	—	—	74.5	53.0	49.5	78.0	77.1	81.3	77.3	39.7	31.7	28.6	92.7
—	67.5	73.4	92.0	- 5.8	74.7	48.3	46.4	83.8	79.8	88.8	—	43.1	27.5	—	—
58.4	70.4	74.3	94.7	- 4.0	66.7	61.3	55.5	81.7	82.9	—	—	37.1	35.4	—	84.8
60.2	67.8	74.6	90.8	- 6.9	—	51.0	48.6	—	75.6	—	—	37.9	50.6	—	89.6
59.0	73.2	76.5	95.6	- 3.3	78.4	60.2	59.8	83.6	82.4	89.7	—	31.2	38.2	—	90.7
56.3	72.3	—	—	—	—	57.0	53.7	—	—	—	—	—	—	—	—
57.3	70.7	73.2	96.6	- 2.5	67.8	55.7	52.6	75.5	75.8	—	—	29.2	13.0	—	82.0
61.0	67.6	72.8	92.9	- 5.2	79.3	57.9	52.6	81.6	82.4	87.1	—	41.3	31.1	—	87.3
59.2	70.4	71.5	98.5	- 1.0	—	—	—	—	74.7	—	—	—	—	—	88.6
66.9	69.4	76.7	90.6	- 7.2	71.7	51.1	47.3	80.6	76.0	—	88.5	32.4	31.5	23.5	76.5
60.9	70.4	76.4	92.1	- 6.0	75.5	54.5	50.2	77.5	78.2	—	—	—	64.4	—	—
61.7	68.7	73.8	93.0	- 5.2	70.0	53.9 ?	53.8	80.8	83.5	—	—	48.1	36.2	—	91.4
58.8	70.6	74.0	95.4	- 3.4	66.7	56.0	50.9	76.5	77.6	—	—	47.0	—	—	81.6
65.7	75.5	81.9	92.2	- 6.4	74.1	51.4	48.0	82.5	80.0	—	78.8	42.9	—	27.0	88.1
58.7	68.8	70.4	97.8	- 1.6	59.4	48.4	48.2	82.7	75.9	—	—	86.6	36.4	22.2	81.0
59.9	66.3	79.3	83.7	- 13.0	66.5	55.6	52.2	76.5	75.1	83.3	68.0	45.5	49.3	—	83.8
59.4	67.7	74.7	90.5	- 7.1	70.7	53.5	52.1	79.8	82.4	86.6	89.6	65.1	30.0	—	91.5
60.6	66.7	74.5	89.5	- 7.8	—	—	—	76.9	—	83.2	—	41.7	—	—	91.2
—	66.4	—	—	—	—	—	—	—	—	—	—	33.3	44.4	—	—
56.2	—	71.0	—	—	68.3	53.8	51.2	85.2	80.2	89.9	85.1	43.4	39.7	—	87.9

FEMALES

JUVENILES

		C	L	F	B	H'	H	OH	Breg- matic OH	LE	B'	U	Gla- bella U	Q'	Breg- matic Q'
FEMALES	R.C.S. 806-03	1305	181	181	120	139	140	119	117	103.5	87.0	491	493	—	—
	05	—	177.5	177	126.5	136.5	138	120.5	119	103.5	93.5	486	492	320	310
	07	1320	180	180.5	126	145	146	122	119	113	94.6	502	505	315	309
	13	—	185	186	—	143	141	124	127	104	94.3	—	—	324	323
	14	1335	182.5	181.5	133	138	144	119	117	100	87.2	495	502	311	301
	18	1290	184.5	187	125	136	136.5	119.5	119.5	99	98.2	510	512	312	302
	20	1400	183	182	129	141.5	145	123.5	121	101	91.4	502	507	319	311
	22	—	186	185	—	139.5	—	—	—	108	—	—	—	—	—
	24	—	175	175	126.5	131	135	116	113.5	100	—	187	491	306	295
	25	1305	182	181	130	138	—	—	—	103.5	—	497	504	—	306
	42	1400	185	186	137	141	143.5	124	122.5	102	91.6	513	513	325	320
	43	—	177.5	179	—	131	133	116.5	115	100	—	480?	485?	302?	297?
	44	—	175.5	177	—	—	—	—	—	—	—	—	—	—	—
	48	—	184	186	125	134	—	—	—	104	97.4	501	504	—	302
	55	1210	179.5	180	129	136	136.5	117.5	117	105.5	94.0	494	499	314	307
	57	1365	177.5	178	126	142	143	120	119	106.5	91.0	489	495	315	306
	Leiden	191	181.5	182	134	135	134	117	117	107	87.5	497	499	317	316
	193	—	176	175.5	136	139	140	116.5	116	100.6	93.6	492	496	309	311
	194	—	176	176.5	131	137	135	110.5	110.5	103.9	88.6	495	493	299	300
	197	—	179	179	136	131	129	119	118.5	97.4	93.1	502	506	322	325
JUVENILES	206	—	181.5	181.5	136	138	138	120	120	97.8	89.0	509	511	—	322
	B.M.	5	—	183.5	183.5	124.5	129.5	—	—	99.5	84.5	492.5	496	—	292
	8	—	175.5	176	134.5	137	—	—	—	101.1	88.0	486	490	—	310
	7	—	176.5	178.5	127	135	—	—	—	99.7	90.2	492	496	—	302
	13	—	177	176	—	—	—	—	—	—	89.2	—	—	—	—
	R.C.S. 806-04	—	188	188.5	133	138	136.5	121.5	122.5	107	94.3	512	520	323	319
	09	—	168	170	131	125	126.5	113	112	91	88.0	468	—	312	299
	12	—	168	170	134	131	130	121.5	122	100.5	95.2	489	490	328	319
	23	—	183.5	183	132.5	135	137.5	117.5	116.5	104.5	92.0	564	510	310	305
	49	—	189.5	190.5	131.5	138	138	117	117	103	91.0	512	514	312	308
JUVENILES	54	—	180.5	181.5	126.5	136.5	138	118.5	117.5	102	89.0	492	497	314	307
	B.M.	2	—	174	176.5	126	133	—	—	98	89.0	485	487	—	299
	4	—	180	180	139.5	—	—	—	—	—	86.0	503	505	—	314

TABLE XIII. I

	<i>U</i>	<i>Gla-</i> <i>bella</i> <i>U</i>	<i>Q'</i>	<i>Breg-</i> <i>matic</i> <i>Q'</i>	<i>S</i> ₁ '	<i>S</i> ₂ '	<i>S</i> ₃ '	<i>S</i> ₁	<i>S</i> ₂	<i>S</i> ₃	<i>S</i>	<i>fml</i>	<i>fmb</i>	<i>G'H</i>	<i>J</i>	<i>GB</i>	<i>GL</i>	<i>PH</i>
0	491	493	—	—	107·8	112·2	92·1	122	127	109	358	—	—	67·3	—	—	94·0	16·7
5	486	492	320	310	108·0	99·4	107·7	124·5	107·5	126	358	33·2	30·0	63·9	—	—	95·0	15·6
6	502	505	315	309	109·8	101·0	109·3	124	110	130	364	—	33·2	68·5	127	92·0	104·0	19·0
3	—	—	324	323	115·0	115·2	99·2	136	127	121	384	34·1	29·1	63·0	—	86·0	92·2	15·2
2	495	502	311	301	110·0	117·0	96·0	125	134	116	375	—	30·1	—	118·5	90·9	—	—
2	510	512	312	302	105·5	126·0	—	127	139·5	—	—	—	27·3	58·9	125	94·0	91·5	11·9
4	502	507	319	311	113·8	123·2	97·7	128	139	115	382	33·5	28·1	—	125·5	93·6	—	—
—	—	—	—	—	105·0	121·0	100·0	120	137	115	372	35·0	30·9	66·0	—	107·0	17·9	—
—	487	491	306	295	102·5	101·0	103·3	118	110	124	352	35·5	29·0	—	—	—	—	—
—	497	504	—	306	110·3	115·7	98·5	125	130	116	371	35·0	29·9	—	—	—	—	—
6	513	513	325	320	116·7	114·3	99·3	133	128	119	380	35·2	28·5	—	126·5	93·0	—	—
—	480?	485?	302?	297?	102·2	112·7	97·0	117	126	119	362	32·8	29·0	—	—	—	—	—
—	—	—	—	—	109·5	112·0	—	124	126	—	—	—	—	—	—	—	—	—
4	501	504	—	302	113·5	118·0	—	132	135	—	—	—	—	—	—	—	—	—
—	494	499	314	307	112·0	108·7	89·5	130	122	111	363	33·2	27·9	67·2	123	95·0	97·0	—
0	489	495	315	306	110·6	103·0	100·5	126	112	116	354	39·4	28·5	60·1	126·5	90·2	97·2	12·4
5	497	499	317	316	112·0	112·8	94·1	127	127	112	366	32·6	30·3	62·5	123·5	88·0	99·8	15·0
6	492	496	309	311	112·4	113·0	99·8	125	125	113	363	35·0	29·0	61·6	120	99·5	92·3	15·2
6	495	493	299	300	106·8	99·2	98·4	123	108	121	351	33·0	33·2?	64·2	126	87·0	99·0	15·5
1	502	506	322	325	114·1	108·3	99·2	134	119·5	120·5	374	35·0	—	58·4	123	—	98·0	—
0	509	511	—	322	116·3	101·0	112·7	136	110	141	387	33·2	31·0	60·6	—	—	91·0	17·0
5	492·5	496	—	292	109·2	112·2	87·0	128·5	127	109	365	35·9	29·3	58·1	—	—	96·0	—
0	486	490	—	310	106·0	102·0	104·0	124	113	125·5	362	32·6	27·5	—	—	—	—	—
2	492	496	—	302	116·0	112·5	88·3	135	128	106	370	31·4	27·2	61·5	126	98·5	95·5	—
2	—	—	—	—	112·5	112·0	—	128	125	—	—	—	—	—	—	—	—	—
3	512	520	323	319	114·0	109·5	105·3	133	121	127	381	35·2	31·6	—	—	—	—	—
0	468	—	312	299	104·0	108·0	80·8	124	124	99	347	31·5	26·8	—	106	79·2	—	—
2	489	490	328	319	110·0	107·0	89·0	131	124	105	360	25·5	20·9	57·2	124	91·3	94·8	15·7
0	564	510	310	305	113·0	110·0	97·0	132	123	114	369	34·9	29·3	57·4	126	89·6	95·7	13·4
0	512	514	312	308	111·3	118·0	88·0	129	132	113	374	40·0	29·6	56·4	—	92·6	95·0	13·5
0	492	497	314	307	110·0	110·0	93·1	128·5	121	113	363	35·0	28·2	63·7	116·5	90·0	94·3	17·2
0	485	487	—	299	103·0	111·5	92·8	119	124	113	356	32·1	26·8	53·8	111·8	82·5	90·6	—
0	503	505	—	314	111·0	108·7	99·6	129	120	122	371	—	28·0	67·0	122·0	86·1	—	—

TABLE XIII. *Individual Measurements of Female and Juvenile Easter Island Skulls.*

H	J	GB	GL	PH	NHR	NHL	NH'	NB	SC	SS	DC	DS	DA	O ₁ R	O ₁ 'R	Laer. O ₁ R	O ₂ R	O ₂ L	O ₁ L
3	—	—	94.0	16.7	52.4	53.0	49.2	21.2	7.0	2.1	21.5	7.5	28	41.0	37.8	37.4	34.0	41.0	38.3
9	—	—	95.0	15.6	47.9	47.8	47.0	—	6.5	2.1	25.1	7.8	33	—	—	—	—	42.0	37.4
5	127	92.0	104.0	19.0	53.7	53.0	50.5	27.3	7.3	2.0	23.0	8.0	30	41.4	39.8	37.3	31.8	42.0	38.0
10	—	86.0	92.2	15.2	50.8	49.0	47.5	24.0	9.2	3.0	22.3	9.0	30.5	40.3	37.0	37.0	33.8	40.1	37.0
—	118.5	90.9	—	—	47.0	48.9	41.2	25.9	6.5	2.5	21.0	7.0	28	40.0	38.2	36.9	33.7	39.9	36.2
9	125	94.0	91.5	11.9	48.2	48.2	47.2	26.7	11.0	2.8	26.0	9.0	33	41.1	37.5	37.5	35.0	42.2	37.4
—	125.5	93.6	—	—	46.6	48.0	42.6	25.0	7.0	2.3	21.6	6.5	27.5	41.5	38.4	38.0	35.8	41.2	38.2
0	—	—	107.0	17.9	48.3	47.7	46.6	24.8	8.5	2.5	24.1	11.5	36.5	44.4	40.3	40.3	35.0	—	—
—	—	—	—	—	45.5	46.3	43.1	25.0	7.2	2.1	21.8	5.0	24.5	41.9	39.0	39.0	33.3	—	—
—	—	—	—	—	—	—	—	—	9.2	2.0	25.0	10.0	33	41.7	36.8	36.8	33.2	—	—
—	126.5	93.0	—	—	49.0	48.2	46.0	25.5	6.9	2.1	23.0	7.0	30	42.3	39.0	38.0	34.0	42.7	39.0
—	—	—	—	—	45.9	46.4	43.0	24.8	8.1	3.0	18.7	7.6	28	—	—	—	32.9	38.3	34.3
—	—	—	—	—	—	—	—	—	10.3	2.8	23.0	9.1	31	41.3	38.4	37.6	32.0	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7.2	123	95.0	97.0	—	50.5	51.2	49.4	25.8	9.6	4.0	22.7	9.4	32	42.0	38.6	38.6	32.6	44.0	39.0
0.1	126.5	90.2	97.2	12.4	49.0	49.1	47.0	26.2	8.8	3.0	21.0	9.2	33	41.0	37.0	37.0	36.0	41.5	37.0
2.5	123.5	88.0	99.8	15.0	50.0	48.0	46.5	25.3	10.2	3.8	21.0	8.6	27.5	41.0	—	36.9	34.0	39.0	—
1.6	120	99.5	92.3	15.2	46.8	47.5	45.9	24.0	8.0	2.4	—	—	—	42.2	—	—	33.5	40.5	—
4.2	126	87.0	99.0	15.5	48.7	49.6	47.7	24.0	7.2	3.0	—	—	—	41.0	—	—	33.3	40.2	—
8.4	123	—	98.0	—	44.7	42.5	42.0	26.5	7.9	2.5	—	—	—	40.1	—	—	31.3	41.0	—
0.6	—	—	91.0	17.0	47.2	47.6	43.0	25.3	—	—	20.3	7.0	25	40.0	38.6	37.0	33.5	40.4	38.6
8.1	—	—	96.0	—	47.5	47.2	46.8	26.6	5.5	—	19.6	9.5	—	43.0	38.9	37.5	33.6	43.6	39.6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	—
1.5	126	98.5	95.5	—	47.6	50.0	47.4	28.0	6.9	1.2	21.1	9.5	—	42.5	39.2	39.2	33.0	41.8	38.0
—	—	—	—	—	—	—	—	—	8.8	1.3	20.5	7.8	—	43.0	39.7	39.7	36.0	—	—
—	—	—	—	—	—	—	—	—	7.8	2.5	21.0	8.2	29.5	41.2	37.3	37.3	—	—	36.5
7.2	106	79.2	—	—	47.0	49.1	47.0	23.3	7.0	1.8	19.2	7.0	26	36.2	34.0	34.0	31.9	37.1	34.2
7.4	124	91.3	94.8	15.7	39.0	39.0	37.9	22.0	8.3	1.5	21.6	7.1	29.5	40.7	37.0	37.0	33.0	40.9	37.4
6.4	126	89.6	95.7	13.4	45.0	43.8	42.4	26.5	7.2	2.2	20.0	9.0	30.5	40.6	38.9	37.8	32.8	40.3	38.0
3.7	—	92.6	95.0	13.5	45.0	46.2	43.4	25.9	9.4	2.6	22.3	11.2	34.5	40.0	36.0	36.0	35.8	41.0	36.9
3.8	116.5	90.0	94.3	17.2	47.5	46.1	45.7	22.9	8.8	2.4	19.0	6.4	26	41.3	39.8	38.3	34.0	40.6	38.4
7.0	111.8	82.5	90.6	—	43.4	43.3	42.7	25.1	4.5	—	18.0	7.1	—	40.8	36.7	36.7	33.5	39.4	36.8
—	122.0	86.1	—	—	48.4	49.4	46.0	22.3	6.4	2.3	17.9	9.0	—	41.1	38.2	38.2	36.3	40.5	36.9

aster Island Skulls.

O_1R	$Lacr.$ O_1R	O_2R	O_1L	$O_1'L$	$Lacr.$ O_1L	O_2L	G_1	G_1'	G_2	EH	$Alveolar$ $P\angle$	$Prosthion$ $P\angle$	$N\angle$	$A\angle$	$B\angle$	$Oc. I.$	100 $\frac{B}{L}$	100 $\frac{H'}{L}$
37.8	37.4	34.0	41.0	38.3	37.8	34.0	44.0	—	—	—	99°.4	87°.6	62°.6	78°.0	39°.4	61.4	66.3	76.8
—	—	—	42.0	37.4	37.4	34.5 ?	43.1	39.8	35.8	7.7	92°.0	89°.6	64° .1	78° .8	37° .1	62.7	71.3	76.9
39.8	37.3	31.8	42.0	38.0	36.8	32.8	49.0	46.1	—	—	90° .0	86° .1	64° .5	79° .2	36° .3	60.9	70.0	80.6
37.0	37.0	33.8	40.1	37.0	37.0	34.0	46.0	40.8	37.8	9.7	91° .7	91° .0	61° .3	81° .9	36° .8	58.6	—	77.3
38.2	36.9	33.7	39.9	36.2	35.3	33.9	—	—	—	—	—	—	—	—	—	59.4	72.9	75.6
37.5	37.5	35.0	42.2	37.4	37.4	36.0	46.6	44.0	—	—	87° .9	83° .8	65° .1	79° .3	35° .6	—	67.7	73.7
38.4	38.0	35.8	41.2	38.2	37.0	35.8	—	—	—	—	92° .0	89° .6	—	—	—	62.0	70.5	77.3
40.3	40.3	35.0	—	—	—	—	52.0	48.1	—	—	—	—	71° .2	73° .1	35° .7	65.0	—	75.0
39.0	39.0	33.3	—	—	—	—	—	—	—	—	—	—	—	—	—	60.0	72.3	74.9
36.8	36.8	33.2	—	—	—	—	—	—	—	—	—	—	—	—	—	61.9	71.4	75.8
39.0	38.0	34.0	42.7	39.0	38.2	34.0	—	—	—	—	92° .0	90° .2	—	—	—	60.2	74.1	76.2
—	—	—	32.9	38.3	34.3	32.2	—	—	—	—	—	—	—	—	—	58.2	—	73.8
38.4	37.6	32.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38.6	38.6	32.6	44.0	39.0	39.0	33.0	50.2	46.8	37.8	8.7	90° .5	—	63° .9	77° .8	38° .3	57.5	71.9	75.8
37.0	37.0	36.0	41.5	37.0	37.0	36.0	43.2	40.5	35.8	6.4	86° .0	83° .8	64° .7	81° .4	33° .9	64.5	71.0	80.0
—	36.9	34.0	39.0	—	35.9	33.6	48.3	45.0	39.0	9.2	90° .5	87° .7	66° .2	79° .0	34° .8	60.8	73.8	74.4
—	—	33.5	40.5	—	—	33.5	44.5	41.5	39.8	9.0	87° .2	85° .5	64° .2	79° .0	36° .8	67.7	77.3	79.0
—	—	33.3	40.2	—	36.6	33.0	48.0	44.5	34.2	11.6	82° .7	79° .8	67° .4	75° .8	36° .8	58.1	74.4	77.8
—	—	31.3	41.0	—	—	31.1	52.5	47.0	—	—	87° .6	84° .5	73° .2	72° .2	34° .6	59.0	76.0	73.2
38.6	37.0	33.5	40.4	38.6	37.0	33.6	43.0	40.0	37.0	—	90° .5	—	65° .4	77° .5	37° .1	57.0	74.9	76.0
38.9	37.5	33.6	43.6	39.6	38.0	33.7	50.0	45.5	34.5	—	—	—	69° .7	75° .8	34° .5	56.9	67.8	70.6
—	—	—	41.1	—	—	35.7	—	—	—	—	—	—	—	—	—	59.5	76.6	78.1
39.2	39.2	33.0	41.8	38.0	38.0	34.3	—	—	—	—	—	—	68° .0	75° .3	36° .7	60.0	72.0	76.5
39.7	39.7	36.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
37.3	37.3	—	—	36.5	36.5	—	47.8	43.4	40.2	10.2	85° .7	83° .0	—	—	—	59.6	70.7	73.4
34.0	34.0	31.9	37.1	34.2	34.2	32.0	36.7	33.7	—	—	90° .5	85° .2	—	—	—	58.4	78.0	74.4
37.0	37.0	33.0	40.9	37.4	37.4	33.0	—	44.2	38.7	11.0	92° .8	91° .0	67° .4	78° .8	33° .8	61.7	79.8	78.0
38.9	37.8	32.8	40.3	38.0	36.9	32.8	48.5	46.0	35.0	6.8	90° .0	88° .2	65° .0	81° .9	33° .1	62.1	72.2	73.6
36.0	36.0	35.8	41.0	36.9	36.9	35.8	48.0	42.6	40.8	7.8	87° .1	85° .0	65° .6	81° .8	32° .6	55.7	69.4	72.8
39.8	38.3	34.0	40.6	38.4	38.1	33.8	45.2	42.1	35.0	5.2	89° .8	86° .9	64° .6	78° .0	37° .4	59.0	70.1	75.6
36.7	36.7	33.5	39.4	36.8	36.8	34.0	45.0	41.4	32.7	—	—	—	66° .3	80° .9	32° .8	58.8	72.4	76.4
38.2	38.2	36.3	40.5	36.9	36.9	35.9	—	43.3	—	—	—	—	—	—	—	58.4	77.5	—

\angle	$B\angle$	$Occ. I.$	$\frac{100}{B}$	$\frac{100}{H'}$	$\frac{100}{R}$	$\frac{100}{(B-H')}$	$\frac{100}{G'H}$	$\frac{100}{NB}$	$\frac{100}{NB}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$	$\frac{100}{O_1}$
			$\frac{B}{L}$	$\frac{H'}{L}$	$\frac{R}{H'}$	$\frac{(B-H')}{L}$	$\frac{G'H}{GB}$	$\frac{NB}{NH'}$	$\frac{NB}{NH'}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$	$\frac{O_2}{O_1}$
0.0	39°4	61.4	66.3	76.8	86.3	-10.5	—	43.1	40.4	82.9	82.9	89.9	—	34.9	30.0	—	—	—
0.8	37°1	62.7	71.3	76.9	92.7	-5.6	—	—	—	—	82.1	—	83.1	31.1	32.3	21.5	90.4	—
0.2	36°3	60.9	70.0	80.6	86.9	-10.6	74.5	54.1	50.8	76.8	78.1	79.9	—	34.8	27.4	—	—	—
0.9	36°8	58.6	—	77.3	—	—	73.3	50.5	47.2	83.9	84.8	91.4	82.2	40.4	32.6	25.7	85.3	—
0.3	—	59.4	72.9	75.6	96.4	-2.7	—	55.1	55.1	84.3	85.0	88.2	—	33.3	38.5	—	—	—
0.1	35°6	—	67.7	73.7	91.9	-6.0	62.7	56.6	55.4	85.2	85.3	93.3	—	34.6	25.5	—	—	—
0.1	—	62.0	70.5	77.3	90.2	-6.8	—	58.7	53.6	86.3	86.9	93.2	—	30.1	32.9	—	83.9	—
0.1	35°7	65.0	—	75.0	—	—	—	53.2	51.3	78.8	—	86.8	—	47.7	29.4	—	88.3	—
0.1	—	60.0	72.3	74.9	96.6	-2.6	—	58.0	54.9	79.5	—	85.4	—	22.9	29.2	—	83.4	—
0.1	—	61.9	71.4	75.8	94.2	-4.4	—	—	—	79.6	—	90.2	—	40.0	21.7	—	85.4	—
0.1	—	60.2	74.1	76.2	97.2	-2.2	—	55.4	52.0	79.0	79.6	87.2	—	30.4	30.4	—	81.0	—
0.1	—	58.2	—	73.8	—	—	—	57.7	54.0	—	84.1	—	—	40.6	37.0	—	88.4	—
0.1	—	—	—	—	—	—	—	—	—	77.5	—	83.3	—	39.6	27.2	—	—	—
0.8	38°3	57.5	71.9	75.8	94.9	-4.0	70.7	52.2	51.1	77.6	75.0	84.5	75.3	41.4	41.7	23.0	84.0	—
0.4	33°9	64.5	71.0	80.0	88.7	-9.0	66.6	55.7	53.5	87.8	86.7	97.3	82.9	43.8	34.1	17.9	72.3	—
0.0	34°8	60.8	73.8	79.0	99.3	-0.6	71.0	54.4	50.6	82.9	86.2	—	80.7	41.0	37.3	23.6	92.9	—
0.0	36°8	67.7	77.3	79.0	97.8	-1.7	61.9	52.3	51.3	79.4	82.7	—	89.4	—	30.0	22.6	82.9	—
0.8	36°8	58.1	74.4	77.8	95.6	-3.4	73.8	50.3	49.3	81.2	81.9	—	71.2	—	41.7	33.9	—	—
0.2	34°6	59.0	76.0	73.2	103.8	+2.8	—	63.1	59.3	78.1	75.9	—	—	—	31.6	—	—	—
0.5	37°1	57.0	74.9	76.0	98.6	-1.1	—	58.8	53.6	83.8	83.2	86.6	86.0	34.5	—	—	93.4	—
0.8	34°5	56.9	67.8	70.6	96.1	-2.7	—	56.8	56.0	78.1	77.3	86.4	69.0	48.5	—	—	81.6	—
0.3	36°7	60.0	72.0	76.5	94.1	-4.5	62.4	59.1	58.8	77.6	82.1	84.2	—	45.0	17.4	—	86.6	—
0.1	—	—	—	—	—	—	—	—	—	83.7	—	90.7	—	38.0	14.8	—	—	—
0.8	—	59.6	70.7	73.4	96.4	-2.7	—	—	—	—	—	—	84.1	39.0	32.1	25.4	89.8	—
0.8	33°8	58.4	78.0	74.4	104.8	+3.6	—	49.6	49.6	88.1	86.3	93.8	—	36.5	25.7	—	85.1	—
0.9	33°1	61.7	79.8	78.0	102.3	+1.8	62.7	58.0	56.4	81.1	80.7	89.2	—	32.9	18.1	28.4	82.0	—
0.0	32°6	62.1	72.2	73.6	98.1	-1.4	62.0	62.5	58.9	80.8	81.4	84.3	72.2	45.0	30.6	19.4	84.0	—
0.0	37°4	55.7	69.4	72.8	95.3	-3.4	60.9	59.7	57.6	89.5	87.3	99.4	85.0	50.2	27.7	19.1	74.0	—
0.0	32°8	59.0	70.1	75.6	92.7	-5.5	70.8	50.1	48.2	82.3	83.3	85.4	77.4	33.7	27.3	14.9	80.6	—
0.0	—	58.8	72.4	76.4	94.7	-4.0	65.2	58.8	57.8	82.1	86.3	91.3	72.7	39.4	—	—	83.5	—
0.0	—	58.4	77.5	—	—	—	77.8	48.5	46.1	88.3	88.6	95.0	—	50.3	35.9	—	—	—