



93. On Some Vagaries of the Cephalic Index

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PHYSICAL ANTHROPOLOGY.**Physical Anthropology: General.****Waterston.**

92 *Developmental Changes in the Human Skeleton from the Point of View of Anthropology.* Communicated by David Waterston, M.D., F.R.C.S.E., to the Anthropological Section of the British Association for the Advancement of Science. Bradford, September 8th, 1900.

A series of specimens of the long bones of the extremities at different ages of embryonic and infantile life has been collected and examined. The methods employed in the examination were those of anthropometry, namely, osteometry and osteoscopy.

By the former, the relative lengths of the bones of the limbs at different ages have been ascertained and compared one with another, and by the latter it has been found that these bones present some definite and interesting characters. Without going minutely into the rate of growth of each segment of the upper and lower limbs, the general character was shown, and the special features of the bones at different ages was demonstrated by means of lantern slides taken from photographs of the objects. An attempt was also made to ascertain the cause of the special characters found in the bones by investigating the time of their appearance and of their replacement by adult characters.

A comparison was also instituted between the bones of the embryo and those of the lower races of mankind and of the higher apes, both as regards their relative length and their characters.

As it has been shown that the curvature of the spine in the lumbar region is a post-natal development, and one adapted to the assumption of the erect attitude by the infant, it was shown that in a similar way the configuration of the bones of the lower extremity alters after birth, before the infant can stand erect.

Kephalic Index.**Beddoe.**

93 *On some Vagaries of the Kephalic Index.* Communicated by John Beddoe, M.D., LL.D., F.R.S., to the Anthropological Section of the British Association for the Advancement of Science. Bradford, September 8th, 1900.

The great value of the kephalic index has hardly ever been questioned by any school of physical anthropologists. There are of course certain groups of facts the consideration of which tends to raise a doubt of its absolute permanence in any race, such as the occasional occurrence of marked brachycephaly among the remains of primitive dolichocephals, and the substitution unexplained, as yet, of moderate brachycephaly for dolichocephaly in many parts of the Slavonic area. But whether we accept the views of De Lapouge and Ammon as to the transformation of types through social selection, or whether we follow Sergi in the multiplication of permanent types which "au fond" arrange themselves into two great groups, the division of longheads from shortheads still continues to have great importance. In individual cases, however, far too much is often made of it. Thus, we may have a broad head of a dolichoid type, or, less often perhaps, a narrow head of brachy type. I propose in this little paper to describe two specimens of dolichoid character which lately came in my way, one of which yielded an index which, taken by itself, would have relegated it to the brachy division. One of these immediately followed the other in the course of my work. Both of them, before I had gotten their measurements, had been set down in my mind as of fairly pure Anglo-Saxon breed; but the former one especially struck me as being so, his fair complexion, blue eyes and

pale red hair, together with his general pattern of body, constituting him apparently an exquisite example of the pure dolicho blond.

The facial features in these two subjects are not very much alike, owing chiefly to the greater length and less breadth of the lower jaw in B: the upper part of the face is however nearly identical. B is a west-countryman and probably less Teutonic.

Description.	A.			B.	Measurements.	A.	B.
Individual	Dr. I.	....	Rev. W.	Kephalic Index.	82.23	78.06
Locality	{ Aberdeen and Northumberland		Somerset	Lengths. { Glabella-maxi- mum. Fronto-inial ... Glabella-inial... Ophryo-maxi- mum. Face, from Nasion.	197	196
Complexion	Fair	....	Fair.		194	190
Face	Ovo-Elliptic	....	Long-Scutiform.		192	190
Forehead	Dome	....	Dome.		193	192
Brows	Arched prominent	....	Arched promt.		120	127
Nose	Busqué	....	Straight.	Breadths. { Fronto-min ... Stephanic ... Zygomatic ... Auricular ... Maximum ... Mastoid ... Bigonial ...	105	106
Cheekbones	Moderate	....	Moderate.		128	131
Chin	Med. prominent	....	Med.		133	135
Head	Oval	....	Oval, high.		132	132
Occiput	Rather prominent	....	Rather promt.		162	153
Eyes	Blue	....	Blue.	Arcs. { Nasio-inial ... Transverse auricular. Supraciliar ...	152	142
Hair	Pale red	....	Lightish-brown, thin.		114	92
					Circumference	591	570
					Nasal. { Length ... Breadth ... Index ...	366	358
						368	378
						317	296
						56	54
						36	37
						64	68.5

The longitudinal measurements of the two heads differ very little; but those of A indicate that his forehead is more highly arched and his upper occipital region less prominent than those of B. In fact there is in B a notable degree of what the Germans call *absätzung* of the upper occipital, causing a parieto-occipital furrow. The dolichocephaly is more occipital in B, the auriculo-superciliar arc being decidedly larger in A.

But in the breadths A develops a singular anomaly. While all his anterior breadths are either the same or slightly less than those of B, the maximum breadth, which in A is temporal, is greater by nine millimeters than in B, and the mastoid greater by ten. The cause of this has evidently been connected with delayed ossification of the temporo-parietal sutures, along the line of which, especially in their posterior parts, the temporal bones can be felt standing out prominently. The temporo-sphenoid sutures are unaffected, and the auricular breadth, taken in the pits above the roots of the zygomata, just in front of the ears, is consequently the same as in B. Now we may pretty safely say that, but for this protrusion of the posterior part of the temporal bones, the maximum and mastoid breadths in A would have been about the same, or perhaps even a little less than in B, in accordance with the general form of the two crania. In that case the kephalic index of A would have been about 77, or let us say, making the usual allowance, about 75 in the skull, on the confines of

dolichokephaly and mesokephaly, instead of being actually brachykephalic. That the parietal breadth in A was really rather small is confirmed by the moderate dimension of the transverse arc: this is actually much less than in B, who had the parietal eminences well developed. On the other hand, if we imagine the head of B divested of the before-mentioned *absatzung* or protrusion, which probably increases the maximum length by two or three millimeters, its latitudinal index might probably enough be increased by a degree or more. Thus, the index of A being 77, and that of B 79, that of A would be less than that of B by 2, instead of being greater than it by 4, a relative change of 6 altogether between the two.

It may be objected that the peculiarity of the posterior temporal region in A stamps the head form as pathological, and that A should therefore be excluded from appearing in any series of measurements. But if so, should not B also be excluded, by reason of the protrusion of the upper part of the occiput, a reason, by the way, that would exclude all the skulls of His and Rutimeyer's Hohnberg type, for they have all that same peculiarity of late ossification of the posterior fontanelle. And what of metopic skulls, in which the increase of breadth generally extends, though in a slighter degree, from the frontal to the other points at which we measure skull-breadth? Scapho-kephalism is regarded as pathological; but minor degrees of it, such as are frequently met with in long roof-shaped skulls, are not and cannot conveniently be excluded from averages, and divers observers will draw the line of exclusion differently.

Of course I cannot, in this brief note, enter on the great question which underlies my whole subject, viz., how far the orderly development of the skull is influenced by variations in that of the brain. Lucæ and others did good work in this field long ago: but I am not aware whether anatomists have given much attention to it of late years.

Cranium.

Dixon.

94 *On certain Markings on the Frontal Part of the Human Cranium, and their Significance.* Communicated by Professor A. Francis Dixon, M.A., to the Anthropological Section of the British Association for the Advancement of Science. Bradford, September 8th, 1900.

An examination of the frontal region of the cranium shows that, in many cases, grooves or channels are present on the bone, corresponding to the branches of the supra-orbital nerves. These grooves vary very much in appearance, as they may be simple or branched, shallow or deeply cut. They are not infrequently converted in parts of their course into little tunnels. In some cases they are found on one side of the cranium only, in others they occur on both sides; their distribution is very rarely quite symmetrical. Most frequently the grooves occur beneath the outer branches of the supra-orbital nerve, but in many cases they are found beneath the inner branches. The grooves never pass from the frontal on to the parietal bone—across the coronal suture. They often extend upwards from the supra-orbital notch, or foramen, as far as the coronal suture; in other cases they begin inferiorly at a little foramen where some branch of the nerve enters the bone. The openings of these little foramina are directed upwards towards the coronal suture, just as the openings of the nutrient foramina in the long bones are directed towards the end of the bone, where growth is most active and goes on longest.

The presence of these grooves indicates a want of proportion between the growth in length of the nerves and the amount of expansion of the underlying part of the cranium. The nerves might be looked upon as constricting cords which become