

On the importance of a due estimate of the different modes and degrees of deformation of the skull, in the study of craniology / by Joseph Barnard Davis.

Contributors

Davis, Joseph Barnard, 1801-1881.
Royal College of Surgeons of England

Publication/Creation

[Stockholm] : [Printed by P.A. Norstedt & Söner], [1865]

Persistent URL

<https://wellcomecollection.org/works/c6fgxms3>

Provider

Royal College of Surgeons

License and attribution

This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

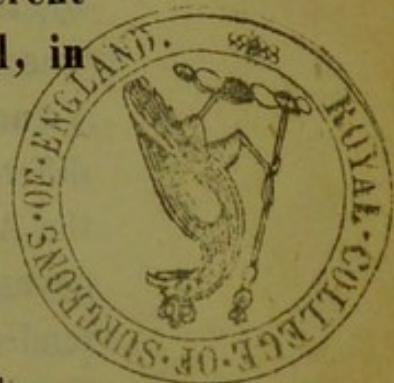
**wellcome
collection**

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

Miscellaneous, Anthropology
The Roy. Socy of Surgeons of
England
With the compliments of
J. Barnard Davis.

**On the importance of a due estimate of the different
modes and degrees of Deformation of the skull, in
the study of Craniology*).**

By Joseph Barnard Davis, Med. doct. etc.



A devotion of some years' attention to craniological pursuits has convinced me, that the normal form of the skull is more or less interfered with, in various ways and among different races, much more generally than has hitherto been supposed. The investigations of Mr PENTLAND, of Professor S. G. MORTON and of others long since showed, that a great variety of *intentional* distortions were practised upon the heads of infants, while yet in a tender and pliant state, for the purpose of producing certain forms of the cranium, dictated and rendered desirable by the caprices of fashion, among American races — ancient as well as modern. The writings of HIPPOCRATES, of STRABO, PLINY and of other authorities frequently mention people of the old continent, who pursued the same arts for conferring distinction upon their offspring. And the subject has excited much interest of late years, in consequence of the discovery of some curious and extremely distorted skulls in Austria and other parts of Europe. The late most distinguished craniological anthropologist of this city, Professor ANDERS

*) From the Proceedings of the meeting of Scandinavian Naturalists at Stockholm, July 1863.

RETZIUS, who occupied for many years the highest position and enjoyed the most extended fame in this science and whose loss we all must sincerely deplore, directed his vigorous powers to the investigation of the problems raised by these singular discoveries. The result of his inquiries was a confirmation of the view of Prof. FITZINGER, of Vienna, that these deformed crania, occurring in so many different places, were all referable to one ancient people, the Avars, an Asiatic tribe in the service of Attila, whose devastating wars, in which these troops were engaged, extended over so large a portion of the continent. Prof. RETZIUS' memoir on these presumed Avarian skulls was read before the Ethnological Society of London, in 1854. At that time, I could not help feeling some doubts respecting the Avarian attribution of these crania, although I had much hesitation in differing from an authority so highly respectable as that of RETZIUS. I was in some degree supported in the opinion, that different ancient European tribes had probably pursued the custom of distorting the skull, by the examination of an Anglo-Saxon woman's cranium discovered in a cemetery of Harnham, in Wiltshire, which, I believe, exhibits unequivocal marks of deformation occasioned by the interference of art in infancy. Candour however, requires me to add, that there are no grounds to think that the Anglo-Saxons generally practised the art of distortion of the head.

So that it appears that deformations of the skull are not confined to American races, among which, however, it has been so prevalent and so notorious, that the father of scientific craniology, BLUMBENBACH, thought proper to introduce it into the definition of his American Variety: "frontis et verticis forma plurimis arte effecta". De Gen.

Hum. Var. Nat. Ed. 3tia. 1795. p. 294. I do not doubt, on the contrary, that in one form or another, or of one kind or another, they are to be met with among the people of every continent and almost of every country. But, in making this statement, I do not confine myself to those distortions which have attracted chief attention, viz. those produced by artificial means and with deliberate intention, for the supposed purpose of improving nature, or of distinguishing families by an aristocratic mark.

I. Among the different *kinds* of deformation of the skull, probably the first place is due to those which may be called, as a class, **Synostotic Deformations**. These arise from the premature conjunction of the bones of the cranium, by the ossification of the sutures. At a late period of life, in the normal state, the cranial bones frequently coalesce. When the brain has ceased to grow, or to alter in magnitude, this is not attended with any deformity or inconvenience whatever. It is much otherwise when one or more of the sutures at the junction of the bones of the skull which, in the normal state, are occupied with a cartilaginous substance, admitting the deposition of osseous matter at the edges of the bones and the consequent growth of the head, become ossified and obliterated. The premature closure of the cranial bones takes place occasionally at a very early age. I have met with an active, healthy boy of between 7 and 8 months old, in whom the sagittal suture was wholly obliterated and the singular resultant changes of form of the head had ensued, subsequently to his birth; for his mother affirmed, that his head was quite like that of other infants at birth. It is also remarkable that synostosis often confines itself to one or more sutures and seldom extends, at all events, in early life, to the su-

tures in general. Various distinguished German anatomists have directed their talents to the elucidation of the interesting and very varied deformations which result from this premature and generally partial ossification of the cranial sutures. It first attracted attention in the heads of Cretins. I may mention the names of Prof. VIRCHOW of Berlin, Prof. LUCÄ of Frankfort on the Maine and of Prof. WELCKER of Halle. The two former have each formed an elaborate system of classification of the deformities of the skull that result from these premature synostoses, which arise from a contraction of the space for the developement of the brain, in one direction, that perpendicular to the closed suture, and a compensatory expansion in some other, mostly in the direction of the suture itself. Thus the too early obliteration of the sagittal suture produces macro-cephalism, or dolicho-cephalism and scaphocephalism; that of the more or less transverse sutures of the skull, different kinds of brachy-cephalism. I need scarcely say, that the use of these terms is in a sense quite distinct from that in which they were employed by RETZIUS, in his classification of the different races of mankind. Another frequent synostotic deformity is the production of obliquity of the head, plagio-cephalism, by the early closure of a suture on one side only. I have no intention to describe, or even enumerate the various kinds of deformity of the cranium produced by synostoses, or to mention the names which have been applied to them. It would be needless to those who are acquainted with the writings of VIRCHOW and LUCÄ. I may, however, be permitted to observe, that synostotic deformations of the head are not confined to any particular race, or races, but, as might have been expected, occur among various

aboriginal peoples*), as well as among European races. My attention has been particularly directed to this point from having in my collection a number of remarkable examples. I possess one skull of an Australian, which is the largest and most singular *spheno-cephalus* hitherto described. The skulls of a North-American-Indian and of a Veddah, of the Island of Ceylon, the former a boy of 14, are also instances of synostosis of the sagittal suture and of scaphocephalism**). The cranium of "Pofii", a native of the Island

*) On the prevalence of synostotic Crania among Aboriginal Races of man. By J. BARNARD DAVIS, M. D. Transactions of the Society of Sciences of Haarlem. 1864.

***) In some races skulls occur, even frequently, which present such a *great length, narrowness and height* as to deserve to be distinguished by the epithet *scapho-cephalic*, a term which has been felicitously applied by the distinguished Professor von BAER of St. Petersburg, to crania presenting an irregularity in their development. This irregularity consists essentially of the premature ossification of the sagittal suture. Prof. von BAER maintained that the two parietal bones, in these cases, had been developed from *one centre of ossification*, situated in the mesian line, i. e. in the course of the sagittal suture. My observations upon the 27 skulls in my Collection which exhibit a too early obliteration of the sagittal suture, afford no support whatever to the existence of such a presumed *uni-parietal* bone. In true *scapho-cephalic* crania, besides the obliteration of the sagittal suture, there are the signs of *compensatory development*, occasioned by the continued growth of the brain, in a very protuberant forehead and occiput and usually a ridge along the line of the closed suture, which, at times, follows that of the obliterated frontal suture also. This represents the keel of the ancient boat and renders the epithet *scapho-cephalic* closely applicable.

Many of the skulls of the New Caledonians and New Hebrideans exhibit such great length, narrowness and height that they may with propriety be designated *natural scapho-cephali*. The parietal tubers are also very low. They are to be distinguished from the *scapho-cephali* produced by anomalous development by the absence of the ridge or keel and of the other marks. Such incomplete *scapho-cephalism* thus becomes, to a certain degree, a race-character.

It will serve in a forcible manner to show the great importance to craniologists of the subject of artificial interference with the configuration of the head, if I mention, that in these very races, the New Caledonians

of Ohiva-hoa, one of the Marquesas, presents the obliteration of the lambdoidal and sagittal sutures, and is a remarkable example of the pachy-cephalism, literally *thick-headedness*, of VIRCHOW. This calvarium has a truncated appearance, as if the occipital region were cut off.

There are different other synostoses of the cranial bones which it is not necessary to mention before this assembly. They give rise to acro-cephalism, klino-cephalism, platy-cephalism, &c. In some instances, where the ossification of the sutures is pretty general, besides the special anormal form imparted to the skull, there is a serious diminution of space in its cavity, or micro-cephalism. And here I wish particularly to mention, that from a series of crania in my collection, I am led to infer the great probability that this contraction of the cranial cavity, most likely accompanied with compression upon the cerebral mass, has an injurious effect on its intellectual and moral functions. At all events, the facts are these. I possess the micro-cephalic skull of a convict who was executed on Norfolk Island. This paradisaical Island is situated about 15° east of Australia, and, at the time when New South Wales was a penal Colony, was selected by the English government for the re-transportation of criminals who were

and New Hebrideans, I have instances of *brachy-cephalism*. These otherwise naturally extreme *dolicho-cephali*, or natural *scapho-cephali*, by the arts of nursing in infancy and, I believe, without any intentional design to change the form of the head, have actually been converted into *brachy-cephali* and show a breadth of skull greater than $\frac{80}{100}$, or than 80 in proportion to 100, regarded as the length of the cranium.

No 817 of my Collection, the fine skull of a man of about 30 years of age from the *Island of Fate*, or Sandwich Island, one of the New Hebridean group, is a good example of the *natural scapho-cephalism* I have described. Its length is 7,7 inches English. If we regard this as 100, the extreme breadth will be in the proportion of only 65, whilst its height rises to 75.

found to be incorrigible and too bad for that settlement — criminals of the deepest dye — and this individual seems to have been preeminently vicious, for his crimes in Norfolk Island led to his condemnation to the scaffold. The cranium is that of a man of probably about 40 years of age, and presents a complete ossification of the sagittal and of the greater part of the lambdoidal sutures, the coronal suture being partially obliterated at the sides and is only faintly traceable in all the middle portion. The cranium has by these premature synostoses of its bones become *cylindro-cephalic*, rather *dolicho-cephalic*, and decidedly *micro-cephalic*. Its internal capacity is reduced to 59 ounces of sand, which is equal to 71,4 cubic inches. A lower capacity than the mean of any race in Morton's great table, where the mean internal capacity of the skulls of Australians, including both females and males, is 75 cubic inches.

In this case of synostosis, concurrent with striking moral depravity, there was scarcely any compensatory development of the cranium, only a slight longitudinal one, and the brain must have been limited in its growth, if not actually compressed. I have other skulls which tend to confirm the view, that the premature obliteration of the sutures and consequent contraction of the cranial cavity, has the effect of limiting the intellectual powers, and especially of perverting the moral feelings. In the skull of "Peron", a Spaniard, of not more than 50 years of age, which was formerly in the museum of the celebrated anatomist, JOSHUA BROOKES, there is a pretty general synostosis of the bones, as well as some hyperostosis, and, without looking small, it may be regarded as somewhat *micro-cephalic*. "Peron", who had lost his right arm, during

a commemoration of the Battle of Waterloo, assassinated an English soldier with a fork, held in his left hand. The cranium of another murderer, "Owen", a Welshman, supposed to have been 40 years of age, also from the BROOKES Museum, presents much of the same long, low and narrow cylindrical form as that of the Norfolk Island Convict. All the sutures effaced in that of "Peron" are closed in this, on both sides. I have other skulls of criminals which exhibit synostoses and Prof. LUCÄ, in his fine work "Zur Architectur des menschlichen Schädels" gives a considerable amount of evidence in the crania of criminals which he depicts and tabulates, which tends to show that synostoses are common among this class of persons, and that the result is frequently some degree of micro-cephalism. Prof. LUCÄ is an independent witness, for, whilst he records the facts, I am not aware that he has alluded to the theory, that such encroachments on the cavity of the skull and their consequences in preventing the due evolution of the brain, especially the surface of its hemispheres, have any influence on the moral and intellectual powers. It has appeared to me that such effects are highly probable.

We have the testimony of numerous authorities that the mental powers of the Chinooks, Flatheads and other North-American Indians, who practise distortions of the skull, are quite equal to those of the tribes who are content to leave nature alone. This may possibly be the case, where compression in one direction is compensated for by expansion in another; whilst synostotic deformation, especially in those cases in which it results in restricting the cavity for the brain and of preventing its develop-

ment, may nevertheless occasion a moral perversion of the faculties.

Pardon so long a digression.

II. A second class of deformations of the cranium are pathological. I have named them **Plastic Deformations**. My attention was first directed to them about 10 years ago. These exhibit a change of form in the skull from the weight of the brain itself, or of burdens borne on the head, by reason of a loss of consistency in the cranial bones. Excessive thinness of the bones, atrophy from disease or age, and softening of the osseous texture, are the causes of plastic deformities of the skull. They chiefly show themselves by a bulging out of the circumference of the cranium, platy-cephalism and an *apparent* elevation of the basal portions surrounding the occipital foramen. These latter are supported on the vertebral column and cannot be elevated into the cranial cavity, or undergo other change of position. Hence, it is the upper and lateral portions of the skull which are *really* depressed.

This kind of deformation is not common, but sometimes proceeds to an extent much greater than would have been expected*).

III. The next class of deformations, are the **Artificial Deformations**.

These require to be divided into two orders. *a.* Those which are induced intentionally, or by design. *b.* Those which are accidental, or unintentional.

a. The almost inconceivable and very varied fantastical shapes given to the head in infancy, *purposely*, by

*) See: Sur les Déformations plastiques du crane par D:r J. BARNARD DAVIS
Mém. de la Soc. d'Anthropologie. I. 379.

different aboriginal tribes, have always excited much curiosity. A learned swiss physician, D:r L. A. GOSSE, published an excellent treatise upon these artificial distortions, in 1855. He enumerates and describes 16 different species. Still, whilst it is probable that he has not embraced every deviation of form of the head produced artificially, D:r GOSSE has described some distortions as distinct which differ only in degree. And, from his more general views, that distortions, when practised *on both sexes*, may produce hereditary deformations — which is a revival of the Hippocratic doctrine, — and from his suggestion, that artificial compression might possibly be advantageously employed to depress those parts of the head which cover the cerebral organs of the animal and lower propensities, whilst those of the higher faculties are allowed free room for developement, and that it might thus be turned to good account in education and the improvement of the race, I must be allowed to express a decided dissent.

These deformities, according to our ideas, but ornaments and elegancies, according to the better judgment of those who devised them, are produced by bandaging the head in different directions, by pressure on or between boards or compresses and other devices, in early infancy, before the bones have acquired much consistency and while the sutures are in an open state. According to good authorities, the head is fully moulded into the proper *mode* in 10 or 12 months after birth. I know not how long it takes to convert a Chinese girl's foot into a stump, but the practice of compression is not begun until the age of from 6 to 9 years, for whatever may be said by HIPPOCRATES, or the disciples of M:r DARWIN, the heads of Chinook infants and the feet of Chinese girls are perfectly normal at birth.

The North-American Indians do not confine themselves to the "improvement" of the head alone. The Indian mother of the Haeeltzuk tribe, of Vancouver's Island, applies a thick pad or pillow to the region of the lower dorsal and the lumbar vertebræ of her female infant, so as to cause the spine to bend forwards to a greater degree than the natural curvature at this point. The protrusion of the *glutei* muscles is very conspicuous in the adult woman and is esteemed a grace; which is quite in accordance with the taste of the English ladies a few years ago, the size of whose "bustles" was generally proportionate to their rank. A Haeeltzuk Chief's daughter, with whose modelling great pains have been taken, waddles considerably in her gait, and has a stuck-up, penguin-like carriage.

It would probably be considered only amusing to describe the different shapes into which the head is tortured by different tribes. There is scarcely any direction in which this spheroidal body can be changed in form that is not practised by one tribe or another, or effected by individual caprice. Examples are to be seen in most craniological museums. Mine contains many. Perhaps that which strikes a person like myself, familiar with the usual artificial deformations, as most curious, is that adopted by the *Newatees*, an exceedingly warlike tribe at the northern extremity of Vancouver's Island. This is an attempt and a pretty successful one too, by means of winding a cord made of deer's-skin round and round the head, which is gradually tightened, to convert it into a cone, rising straight upwards. Their hair drawn up in the same direction and tied at the top of the cone, adds much to their very singular appearance. The tribes who practise this mode of

distortion are, from the strange form of their heads, called Sugar-loaf-Indians.

b. The next section of artificially deformed skulls, or those which are made to deviate from the normal shape *without intention* and, as it were accidentally, is that which it of the greatest importance to the craniologist. For it frequently happens, that the forms thus impressed on the head so complicate or mask the natural form, as to render it difficult to determine what is natural and what is due to an interference with nature. These deformations are also produced in infancy, and are the consequences of certain modes of nursing, of covering the head and of dressing it. They appear to have first attracted attention in France, where Dr FOVILLE and others described them very accurately. Among French skulls it is occasionally seen that there exists a slight depression, running across the fore-part of the parietal bones, giving rise to the *tête annulaire*, or the *tête bilobée*, where the compressing bandage has wrought a more effectual deformation. These distortions are the results of tight bandages applied to the heads of new-born infants, which are passed across the middle of the head and round by the occipital region. But such a mode of dressing the head is, I am satisfied, not by any means confined to the French nurses. The *tête annulaire* is not very unusual in any collection of skulls, and is to be seen among those of various races. I think it is quite as common in Russian crania as among any others.

Another very interesting series of undesigned deformations results from attaching infants to a cradleboard, or other hard substance, during the early months of life, for the purpose of more conveniently nursing them, or moving them about. It is well known that such a custom prevails

with the squaws of many tribes of North-American Indians. Where such a large amount of labour, not merely domestic, falls to the share of women and the duties imposed on them demand activity and frequent journeys, the cradle-board must be a very useful adjuvant. The infant so confined is quite safe, and can be suspended from the branch of a tree, or a peg in the wigwam and slung over the back, whenever it is convenient. It seems to me most likely that the women of the ancient Britons, who, no doubt, were real help-meets of the greatest use to their husbands, followed this custom. At all events, the skulls of the ancient Britons frequently exhibit an artificially flattened surface behind, extending over a portion of the parietals and of the occipital bone. The degree of this parieto-occipital flattening varies in different instances and is almost always accompanied with other slight deformations. The circumference of the calvarium immediately before this flattened portion, in the inter-parietal and inter-temporal regions, is usually bulged out, so as to render these diameters a little greater. And there is another peculiarity that attracts attention. It is rare that the occipital region of the head has been placed exactly symmetrically on the plane surface, on the contrary, it is commonly found to be rather more flattened on one side than the other; this is sometimes the left, sometimes the right. But, to whichever side the occipital flattening may incline, there is generally observed a slighter flattening in the frontal region, *on the opposite side*. These are the necessary results of any interference with the form of a spheroidal body having yielding walls, like the human calvarium. Whenever such a body, as a full bladder for instance, is laid on a flat surface, its sides tend to bulge

out, and the surface of contact, as well as that opposite to it, to expand in the direction of the plane of apposition. It has a tendency to assume a discoidal form. The dilatation at the sides of the calvarium in the interparietal and intertemporal regions, or at right angles to the flattening force, may be regarded in some measure in the light of the *compensatory development* of VIRCHOW, among synostotic skulls.

This parieto-occipital flattening, the accompaniments and mechanism of which I have been so tedious in describing, is very apt to complicate the true form of the skulls of the ancient Britons, for the *typical* form among these crania, I have shown is brachy-cephalic. I mean by typical form, in this place, not the universal, but the prevalent and most characteristic form.

And here I would observe that this *parieto-occipital flattening*, — such are the accidents and caprices of nursing, — is occasionally met with among many races of people who are not known to adopt any such custom as that connected with the cradle-board. Among the ancient Britons it is so common as to induce the opinion that the cradle-board was in use. Among other races and tribes it occurs occasionally, as it were sporadically. I will mention some instances of this and regret that I cannot exhibit the specimens themselves. The aborigines of the fine Island of New Caledonia and those of the surrounding islands: the Isle of Pines, the Isle of Yengen, the Loyalty Islands, Tanna, Fate or Sandwich Island (not the Sandwich Islands, which are totally distinct), and I believe others of the New Hebrides, are especially distinguished for their long, narrow and tall skulls. They appear to have a paramount right to that slender dolicho-cephalic character-

istic, which the distinguished Professor of Zoology at Leyden, van der HOEVEN, attributed to the Negro races in general, in his classical work on those people. Among about a dozen crania of New Caledonians and allied people, in my collection, every one presents the full, long, protuberant occiput, which is as much peculiar to the race as their prognathousness. But a skull of a New Caledonian has just reached me, from my friend, Dr GEO. BENNETT of Sydney, New South Wales, which was obtained on the summit of a peak, called by the French Deadman's Peak, from the natives exposing their dead there, at Kanala, on the eastern coast of New Caledonia. This fine cranium, which has been exposed to the action of fire, is much distorted and appears to me a good example of what I have called parieto-occipital flattening. This flattening is much confined to the right side of the occipital region, and is accompanied with the interparietal compensatory expansion, which is very irregular in this specimen, as well as the frontal flattening on the opposite, or left side. I have no reason to think that, in this case, the distortion is the result of a *custom* among the islanders, but that it is an individual deformation dependent on some caprice of the mother.

An extensive series of skulls of the races of the Himalayan mountains, from Nepal, Sikim, Butan, as well as the pestilential Tarai, I owe to the kindness of Mr BRYAN HODGSON, so celebrated for his researches into the philology and natural history of these countries. They vary a good deal in their forms, yet exhibit much of that broad, flat-faced, broad-headed character which has been regarded as distinctive of BLUMENBACH'S Mongolian class.

In this collection, as well as another from the same source, in the British Museum, which was described in his elaborate anatomical manner and with his usual acumen, by Professor OWEN, before the British Association, there are skulls which exhibit indications of parieto-occipital flattening, yet Mr HODGSON assures me that he does not know of any practice in the mode of nursing infants among these tribes which could account for it. A calvarium in my collection of Himalayan skulls presents this distortion to such a degree, that it might be taken for an ancient Peruvian — it exhibits the "vertical occiput" of Morton. In infancy, the individual to whom it has belonged, must have been confined to a position on the back of the head upon a wooden or other hard substance.

On the present occasion, it is not necessary to say more of the deformations of the skull effected by art, but unintentionally. They are to be met with in most races, in one degree or another, yet hitherto have scarcely attracted attention. Now, that their frequency has been made known, their infantile origin pointed out, as well as their importance to the craniologist, who should be able to discriminate them from natural forms, I have no doubt they will be observed more extensively and obtain the appreciation they deserve*).

IV. Before concluding, I would mention a fourth class of distortions, which attracted my notice some years ago, when I began to study *ancient* skulls. I have called it **Posthumous Distortion**, as it is the result of changes in the form of the skull, after interment, occasioned by the pres-

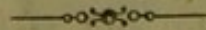
*) See On the Distortions which present themselves in the Crania of the Ancient Britons by J. BARNARD DAVIS, M. R. C. S. E., Nat. Hist. Rev. 1862, p. 290.

sure of superincumbent earth. At times these changes are very considerable. Of late years, the excavations made on the site of the Roman city of Uriconium, have made these distortions very notorious and produced some controversy as to their nature and causes. The mere antiquaries have decided that such strangely deformed heads, with one eye before the other, must have belonged to some monstros and unheard of barbarians, who invaded Britain at the close of the Roman sway and perpetrated inhuman cruelties and great devastation. Other more curious inquirers, admitting to a certain degree the true theory of such contortions, namely, unintermittent and long continued pressure, have thought this alone inadequate to effect the changes, and have maintained that the carbonic acid of superficial soils dissolves out a certain portion of the bone-earth. The author of this hypothesis, D:r HENRY JOHNSON of Shrewsbury, whose memoir was lately read before the Royal Society, makes no effort to prove that these bones contain less bone-earth than others. I believe that it is not the disappearance of the mineral, but of the animal constituent of bone, on which its flexibility depends, that is most intimately connected with posthumous distortion. The spheroidal calvarium, the walls of which are penetrated with gelatinous matter and its cavity filled with slowly decomposing brain, is placed under the most favourable conditions for a change in its form, when subjected to permanent pressure*). And that such changes are really and truly posthumous is often proved by the separation of the bones at the sutures, and their further contortion, so that they can no longer be adopted to each other at their edges.

*) Se Crania Britannica, p. 39.

Having brought these four distinct classes of distortions of the cranium before the notice of this learned society, and described a few of the varieties comprehended under each of them, I think you will agree with me, that they are particularly deserving of the serious attention of the craniologist, and that they should be taken into the account in the study of the skulls of every race of man.

D:r GOSSE, after his elaborate investigation of artificial distortions of the head, drew the conclusion, that those distinctive characters of human races, which are based on the permanency of the forms of the skull, would probably become of less value, from the fact and the frequency of these deformations. My own impression is that such consequence is not likely to result from the study of cranial deformations — unless this study is conducted in a very superficial manner. On the contrary, I think it may be unhesitatingly affirmed, that a more extended and thorough knowledge of the kinds and species of deformation will put us much more on our guard against regarding them with the natural and normal forms of the head and will, when employed with judgment, enable us to appreciate and to distinguish these natural forms, which are so various and distinct among different races of man, with much more correctness and more confidence.



STOCKHOLM, 1865.

Printed by P. A. NORSTEDT & SÖNER,
Printers to His Majesty.