RELATIONS BETWEEN THE CONFORMATION OF THE CRANIUM AND THAT OF THE EYE.

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IN one of my works, which was not long since translated into English, I said a few words on the relations existing between the conformation of the cranium and the condition of the refraction of the eye. In many cases, flatness of the forehead, of the bridge of the nose, and of the zygomatic arches, is accompanied with hypermetropia; whereas one would be more likely to find myopic eyes in deep orbits, surrounded by more largely developed bones. If there are many exceptions to this rule—as, for instance, when an eye has become myopic from choroiditis, without an excessive development of the cranium—there is at least one relation between the shape of the head and that of the eyes, which presents fewer exceptions; and that is, asymmetry of the cranium, accompanied by anisometropia and astigmatism.

In all cases of (congenital) anisometropia—that is to say, when the refraction of each eye is different—it is well to examine the conformation of the cranium and of the face. It will then almost always be found that that side of the forehead is more developed which corresponds to the eye with the stronger refraction. On the other hand, the half corresponding to the eye with the lesser refraction is flatter, more retreating, and generally smaller. It is not necessary for this, that the eye of the more developed side should be myopic, and the other hypermetropic. Both of them may be myopic or hypermetropic; only, they differ in degree. In the case of hypermetropia, the eye of the less developed side is the more hypermetropic; and, in the case of one being emmetropic and the other myopic, it is the more developed side in which we find the myopic eye; inversely, when one eye is hypermetropic.

I desire to bring under notice various circumferences of the cranium, which have been taken with the aid of a simple hatter's measure. The refraction of each eye is indicated on the corresponding side. It will be remarked that, in some cases, the entire half of the cranium is more developed than the other; whereas, in others, the difference of development is only perceptible in the anterior portion.

It is, in reality, the frontal part which has a predominating influence upon the development of the eyes; and it is on account of this, that a simple inspection of the forehead, especially accompanied by palpation (either hand being placed on the temple, while the thumb is exploring the forehead), suffices, in the majority of cases, to make the diagnosis of anisometropia.

But, there is more than this. It is not only the forehead, but nearly always one entire half of the face, which is less developed than the other. In my book (Lecture ii, page 22), I say: "We find, sometimes, faces, in which the median line, instead of running vertically, makes a kind of lateral curve; the line, which joins the middle of the forehead with the chin, is thrown to one side, and no longer coincides with the vertical, corresponding to the bridge of the nose. This latter presents

often a lateral curvature. This is the result of one side of the face being more developed than the other. The frontal tuberosities, the zygomatic arches, the maxillæ, are much more prominent on one side than on the other."

If not the two halves of the forehead, it is the two halves of the chin which, in those cases, present a considerable difference of development; one side being decidedly larger than the other.

Moreover, examples are in reality scarcely necessary for the support of my assertion. Numerous and very conclusive instances will be found if attention be given to this point in your practice. I can, however, show another photograph of an individual, who travels about on the strength of the fault of conformation, with which nature has endowed him. He is called Schwahn, of Berlin, aged 41, and is the subject of a congenital atrophy of the left half of his face. The left eye is hypermetropic 2 diopters, the right 0.75 diopters.

It might be asked, whether the refractive difference existing with asymmetry of the cranium can be explained by a difference of the refracting power of the optical system, or by a difference in the length of the eye, the dioptric apparatus remaining the same, or a combination of the two influences?

A comparative inspection of the length of the globes is generally sufficient to prove that the cause lies in the length of the eye. Perhaps, in some cases, a difference of the refracting power may be found to exist alone; but it is scarcely probable, when we consider that, from the moment there is a difference in the length of the globe, marked enough to strike the observer on simple inspection, it is generally sufficient to account for the anisometropia—since a difference of only 0.3 millimetres in the length of the axis gives a difference of 1 dioptric

in the refraction of the eye. Moreover, ophthalmometric mensuration has proved that, in the majority of cases, the dioptric system does not present a very marked variation in the different instances of ametropia.

I believe I am able to draw another conclusion from these observations: namely, that hypermetropia ought more often to be considered as an arrest of development of the eye—since, in cases of anisometropia, with asymmetry of the cranium, hypermetropia is always found on the least developed side of the face. In thus accounting for it, I believe I have also found the explanation of the inferiority of visual acuteness, which generally accompanies high degrees of hypermetropia; whilst I attribute the low visual acuteness of the high degrees of myopia to the choroiditis, which is the cause of the lengthening of the globe.

Explanation of the Diagrams.—The upper part is the forehead, the lower part the occiput; the vertical line corresponds to the middle line of the apparatus. The signification of the letters is as follows. "E." = Emmetropia; H. = Hypermetropia; M. = Myopia; as. = astigmatism; *ast. h.* = hypermetropic astigmatism; *as. m.* = myopic astigmatism. The figures give the refraction in dioptries.

SUMMARY.—In asymmetry of the cranium, characterised especially by flatness of one half of the forehead, and of the corresponding zygomatic arch, and lateral curvature of the median line of the face, together with inequality of the two halves of the chin, there is generally anisometropia. The eye of the side which is less developed presents the lower refraction.

TABES DORSALIS WITHOUT LOCOMOTOR ATAXY.

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THE following cases, which seem to bear out the title of this paper, may not be without interest.

CASE I.—L. S., aged 39, a blacksmith, was admitted into the Newcastle-on-Tyne Infirmary on July 24th, 1879. His symptoms dated twelve months back, previously to which time he had been in good health. At first a tightness in the right side, from the epigastrium round to the spine, three inches below the nipple, was complained of. Subsequently, pain took the place of the tightness, which, being accompanied by nausea and vomiting, led to the belief on the part of the patient, and the statement by his medical attendant, that he was suffering from liver-disease. Giddiness and headache were very early symptoms, as also were shooting (lightning-like) pains down the legs and arms. Five months before admission his sight became dim, and he had at times double vision. He noticed also his left arm to be weak, with a general feeling of numbness in his left side. On admission he walked into the "out-patient's room" without any peculiarity of gait, except that he advanced rather slowly, with the eyes partially closed, as is the habit of myopic individuals.

The most striking feature in the case was soon recognised to be *impaired sensibility*, at first most marked on the left side, especially the left arm; but subsequently the whole surface of the skin became equally affected, from the crown of the head to the soles of the feet, with the exception of the limited area, included within the zone of "girdle pain"; this being at first confined to the right side, as already indicated, but afterwards encircled the whole body.

The phenomenon of impaired sensation will be best described as *analgesia*; pricking with a pin or burning failed to elicit any complaint of pain. The former was simply described as a touch-sensation. However, the impairment in tactile sensibility was much too gross to permit the *æsthesiometer* to be of any service in testing it. The skin to be last affected was that of the head and face, or that supplied by the fifth nerve.

Of the special senses, smell, taste, and sight were certainly impaired; hearing was normal. The inability to smell was not confined to pungent substances (fifth nerve), but the perfume of the most odoriferous roses was not appreciated. Taste and sight, though distinctly affected, were not accurately tested. The right pupil was slightly dilated and fixed; the only ocular deviation was slight left internal squint. Tickling of the soles of the feet produced jerking of the legs (increased cutaneous reflex), whilst there was complete absence of the patellar tendon-reflex.

Muscular sensibility, especially of the upper extremities, was markedly impaired. He was unable to touch his nose with his forefinger when his eyes were shut; weights were with difficulty distinguished. The lower extremities were similarly, though to a less extent, affected. He at once became giddy and unsteady, when, whilst standing, he raised his eyes from the ground, and the "ataxic position" was to him an exceedingly difficult one to assume, whilst, when lying in bed, the position of his limbs was to a great extent unknown to him. He was not in the slightest degree ataxic; never, during the five months of his stay in hospital had he any difficulty in the co-ordination of the most complex movements. The shooting pains continued from time to time, and the girdle-pain was often loudly complained of. Occasional attacks of headache, usually accompanied by vomiting, were noted. Hyperæmia of the fundus oculi, with indistinctness of the margin of the discs, was observed with the ophthalmoscope.

CASE II.—J. H., aged 43, an engine-fitter, was for a considerable time an out-patient, but subsequently became an in-patient, of the Newcastle Infirmary. The attack for which he was admitted commenced eight years before; the initial symptoms being pains down the legs, which were described as of a "shooting" character. Very early in his illness, he was seized with headache and vomiting, and, in consequence, was confined to bed for a fortnight, during which period he had what his wife described as a fit (the patient's own account was not to be relied on, his memory being considerably impaired), the result of which was loss of power in the right arm and leg—the latter he trailed for some time afterwards. From this attack, he apparently recovered completely. He returned to work, and followed his employment for some months; but soon the "shooting" pains commenced again, this time in the right leg and right side of the head more especially. These pains have continued to the present time. When walking, it was always observed that he was "shaky" (a term, on close questioning, found not to mean "ataxia", but rather the unsteady gait of semi-intoxication). During