

## PHYSIOGNOMY AND ITS RELATION TO THE SIZE AND EXTENT OF THE SINUS FRONTALIS.

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Our attention is called by Macalister to the fact that the development of the frontal sinuses is intimately connected with the development of the teeth, the extension of the superior maxilla and the protrusion of the facebones, in fact the outer table of the frontal bone separates from the inner at the location of the future sinus, about the period of second dentition.

At about the twentieth year, the sinuses are supposed to have reached their full development. (Treves, Combe.) According to the same men, large sinuses are mostly found after the twentieth year, and it certainly can not be doubted but that there is an enormous increase in the size of the frontal sinuses about this time, which is in a great many cases easily noted by the decided change which takes place in the lower frontal region of the head; a change which gives the face a stronger and more mature expression and which is partly brought about by the internal extremities of the superciliary ridges becoming more prominent.

I have shown that the development of the frontal sinus is in close relation to the general proportional makeup of man and that they differ very much in size and extent, according to the temperament which the man possesses. It is, of course, impossible to describe a distinct type of frontal sinus for every shade of the mixed temperaments which present themselves everywhere to the observing eye, but for our purposes it is better to follow the anatomical classification of temperaments as given by Dr. Jacques, the Motor, Vital and Mental. In the mixed temperaments, mostly one or the other predominates and for our purposes, we may classify them also according to the characteristic which predominates into the Motor, Vital and Mental.

*The Motor Temperament.*—This is the easiest one to recognize, for it can be seen at once that the bony framework and the musculature is developed at the expense of the rest of the body. It is correspondingly found more frequently in man. Men of this type are generally tall, have broad shoulders and a more striking than elegant figure. Adipose tissue is decidedly lacking and correspond-

ingly we find that the joints are quite prominent. The neck is rather long, but the muscles stand out powerfully when contracted. The face is frequently oblong or angular in form, the front teeth are mostly large and have a yellowish hue. The lower jaw is always massive and frequently square, what Woolsey would call a prizefighter's jaw. (The shape of the jaw differs according to the admixture of other temperaments.) The malar bones are more prominent and higher than in other types. The thorax is well developed, the hands are long and have a powerful grasp. The physiognomy gives the impression of being earnest, determined or stern.

*The Forehead of the Motor Temperament.*—The forehead is generally slightly retreating and is never very high, this is mainly due to the parietal bones bulging out in these types much farther than in others. In short, the motor region of the brain is developed at the expense of the upper part of the frontal and the occipital lobes. The superciliary ridges are very prominent, but not the entire ridges, the internal parts of those which bound the glabella laterally being the most prominent. These ridges are not as smooth in outline as in the other types, but in fact the only part which is well developed is the internal part, which has the appearance in these cases of a rough, bony protuberance.

The interfrontal region seems to form two arches, which extend from the prominent portion of bone between the superciliary ridges, a long one, upward to the moderately developed coronal region with its concavity forward and, a short one, downward to the naso-frontal suture, also with its concavity forward. The region above and between the superciliary ridges, glabella is mostly well defined, on account of the internal extremities of the superciliary ridges being so prominent, but this region is never as large as in a mental or vital type.

*The Transverse Naso-Frontal Line of the Motor Temperament.*—It corresponds to the topography of the naso-frontal suture. A well marked transverse naso-frontal line, that is one, which forms a distinct retreating angle between the upper part of the nasal bones and the prominent internal extremities of the superciliary ridges, being buried between and just below the prominent internal parts, indicates the absence or smallness of the lateral or the presence of the internal set of frontal sinuses.

*The Vital Temperament.*—The Vital type is characterized by a body taller but much wider and limbs much shorter than the motor type. This type is found much more frequently among women

than among men. The face is round and has a frank and pleasing expression, the nostrils are wide, the neck is short and thick and the shoulders are broad but nicely rounded. The chest is full and the abdomen is well developed. The arms and legs are plump, but tapering, and the hands and feet are very small. The head is round.

*The Forehead of the Vital Temperament.*—This is not slanting as in a motor type, but bulging forward. In a great many cases there is a well developed intersuperciliary region, but here it is not due to the prominent internal portions of the superciliary ridges, but in a great many cases we find here an enormous breadth between the eyes, and the entire inferior region of the forehead between the external angular processes of the frontal bones may be nicely rounded so as to present a convexity forward, without the slightest elevation indicating the location of the superciliary ridges. Sometimes the internal part of the ridges is prominent, but here we do not find the sharp rough protuberance at the internal extremities of the ridges as in the motor type, but rather an extensive bulging of this region, and whenever the lower part of the forehead presents this peculiarity in a vital type, you can be sure to find very large and extensive sinuses. In these cases the lower frontal region is convex from one external angular process of the frontal bone to the other. The forehead is gracefully rounded and presents a curve with its convexity forward, extending from the coronal region where the hair begins to the nasion, in fact it can be said, that this curve forms a part of a circle, which has its center just between the apices of the orbits. The forehead is frequently rapidly slanting backward and upward from a point about one-half inch below the line where the hair begins.

*The Transverse Naso-Frontal Line of the Vital Temperament.*—In this type, it seems to form a sharp transverse cut at the root of the nose, on account of the lower region of the forehead, from one external angular process of the frontal bone to the other forming a smooth arch, which is pushed forward in such a way, as to overhang the root of the nose. The line is not altered materially in those cases of vital types, which have nicely marked superciliary ridges, and which consequently have the largest sinuses.

*The Mental Temperament.*—This type is also very frequent in women. The most distinguishing feature is the frail body, as compared with the size of the head. The head is large, the face oval

and the features delicately cut, but most sharply outlined. The teeth are bluish and the muscles well developed, but not large. The hands are slender and tapering and the fingers long, in fact, the entire appearance shows that all the structures of the body are delicately molded, according to a very sensitive nervous system.

*The Forehead of the Mental Temperament.*—It is mostly high and has a pale color. The lower part is not very prominent on account of the coronal region being better developed. If the superciliary ridges are plainly visible as generally in these cases, then they present a nice and even contour. They are about as well marked at their outer as at their inner extremities and are not rough like the ones of the motor type.

*The Transverse Naso-Frontal Line of the Mental Temperament.*—In this type, the naso-frontal line is not very prominent, on account of the forehead and the dorsal surface of the nose forming a much greater angle than in the motor type, in fact the sharp angle between the upper border of the nasal bones and the internal extremities of the superciliary ridges seems to be filled in with bone and the entire transverse naso-frontal line seems to be carried downward and forward. (Of course the degree of slanting of the forehead must be taken into account.)

#### QUALITY OF THE FRONTAL BONES IN THE DIFFERENT TEMPERAMENTS.

*Motor type.*—Course and heavy bones. Thick skulls. Frequently a large amount of diploe present between the frontal sinus and the external plate of the frontal bone. The bone is not as dense as in the mental type.

*Vital type.*—Thin, frail bones. Skulls thin and brittle. The anterior wall of the frontal sinus frequently fused with the external plate of the os frontalis.

*Mental type.*—Delicate, strong and very dense bones. Skulls of medium thickness. Diploe frequently present between the sac of the sinus and the external plate of the os frontalis.

*Size of the Sinus Frontalis in the Motor Temperament.*—In this temperament the sinus is very small or absent. This is the type, we must look out for Trephining in the region of the frontal sinuses in such a case, would mean, in at least 60% of them, the same as opening the cranial cavity.

*Size of the Sinus Frontalis in the Vital Temperament.*—In this type, you always find a large sinus, which extends well outward. If the superciliary ridges are prominent even in their smallest details, in this type, you can expect to find sinuses which are very large, which extend well outward and upward and the lowest point of which is mostly the upper opening of the infundibulum.

*Size of the Sinus Frontalis in the Mental Temperament.*—In these cases the sinuses are frequently of the average size, which is given by Sir Logan Turner in his article on the frontal sinuses, in the *Edinburg Medical Journal* of May, 1898. (Height, 31 mm. from the upper opening of the infundibulum vertically upward; breadth, 30 mm. from the median septum horizontally outward; depth, 17 mm. from the anterior wall at a level of the fronto-nasal suture backward along the orbital roof.) Of course, what he states about the sinuses never being symmetrical is true, but in the mental type we find sinuses which come closest to what could be called symmetrical.

*Instrumental Diagnostic Methods.*—Even though it does not belong to this paper, to mention or discuss instrumental diagnostic methods, I must mention Sir Logan Turner's important method of transillumination in case of the frontal sinuses, the technic of which is familiar to you all. I believe that every case of empyema of the frontal sinus or sinuses, should be carefully examined by this method before an operation is decided upon, and then if it should seem necessary to open the sinus or sinuses, this same method should be used as one of the important aids in the deductive diagnosis, as to the size and extension of the involved sinus or sinuses. By following this method exactly, the electric bulb with its short tube will be placed about 17 mm. to one side of the middle of the nose at its root. This would be above the internal canthus of the eye, in fact just behind and inferior to the internal angle of the frontal bone. Sir Logan Turner is correct in calling this the thinnest place of the entire sinus, but even if the electric bulb should be applied still farther backward, I do not believe that it is possible in every case, to make a diagnosis of the presence of the large accessory sinus, which is so frequently located behind the sinus proper. I should like to again call attention to the cuts in Dr. Cryers paper on the frontal sinuses of January 26, 1907, in the *American Medical Journal*, which verify some of the facts mentioned in this paper.

After having completed this paper, I became acquainted with Dr. E. Zuckerkandle's *Anatomie der Nasenhöhle*, 2nd edition, Vol. 1, 1893, and I am very glad, indeed, to see that one of my main observations coincides with what he states on page 325: "However, it should be noted that when the sinus frontalis is very large, not only the eyebrows, but also the supraorbital region as a whole is prominent, but when the sinus is lacking the prominence is usually limited almost to the arcus supraciliares."

The first variety he mentions is undoubtedly the second variety of the vital type, mentioned in this paper, in which the entire lower forehead is convex from side to side, and in which the superciliary ridges are prominent and nicely marked. The second variety he mentions is in all probability a motor type, in which the internal extremities of the superciliary ridges are very prominent.

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**Congenital Deafmutism.** JOH. HABERMANN. *Arch. f. Ohrenh.*,  
Leipzig, Dec. 1904.

Female, 44 years old; congenital deaf-mute; cause of death, pernicious anaemia. The pathological findings, which were essentially alike in both ears, were as follows:

Hypertrophy of the mucous membrane of the middle ear. Adhesions between the head of the malleolus and the roof of the tympanum. Exostoses of the inner wall. Thickening of the base of the stapes, and fibrous and bony ankylosis of the stapes. Atrophy of the nerves of the cochlea and ascule, hypoplasia of the organ of Corti, and various anomalies of the structures in the turns of the cochlea.

YANKAUER.