localization on the one hand and vagueness on the other, v. Monakow attempts and, it seems to me, with success, to provide.

Further detailed examples are needless.¹⁰ I would merely call to mind the possibilities of the diaschisis theory in explanation of the extraordinary succession of events which takes place in migraine, the motor and sensory symptoms, the visual disturbances, hemianopsia and the like and its possible application to the purely psychical events of hysteria, the dissociation of consciousness, together with its motor and sensory accompaniments, a subject which v. Monakow has expressed the intention of discussing at some future time.

In conclusion I may be permitted a few words in answer to the questions propounded earlier in this paper.

First. Is the theory of diaschisis helpful from a practical standpoint? Notably, I think, in this respect, that it offers a basis of explanation for otherwise unexplained effects of disease or injury of the central nervous system. It adds significance to anatomical study; it prepares the way for an understanding of certain conditions which now appear fortuitous; it conceivably makes possible a relatively accurate prediction of the results of lesions; it clarifies our thinking, it recognizes not only the subtle interactions of the parts of the nervous system, but offers a method of studying those interactions on the basis of a fixed principle; it demands investigation of the localization theory on the basis of an analysis of function as well as structure and their relationship through dynamic elements. These all seem to me eminently practical aims.

Secondly. How widely is the theory applicable? Nothing can definitely be said as to this until many cases have been investigated by its means, with accurate anatomical findings. As an example, Ladame's and v. Monakow's case of pure aphemia may be mentioned, in which the mutism was explained by v. Monakow¹¹ as a corticobulbar diaschisis and in which the central neurone bundle for phonation was isolated. There is evidently a certain danger of explaining too much, a fault which v. Monakow perhaps falls into in this very case, where he accounts for the persistence of apparent diaschisis symptoms by the somewhat arbitrary assertion that under certain conditions, of which this is one, the diaschisis cannot be overcome owing to individual disposition.

Thirdly. The influence of concomitant pathological conditions admittedly obscures the action of diaschisis in manifold ways. Pressure, to which I have alluded, predisposition, vascular changes, age with its accompanying lowered resistance to degeneration, are all elements complicating the situation. The effect of a given lesion in one person may be very different from its effect in

¹⁰ The narration of cases naturally can afford no proof of the theory. This must depend upon an exhaustive study from the physiological and anatomical standpoints of the whole series of events occurring as the result of a given lesion through analysis of defects and tracing of secondary degenerations.

¹¹ Ladame et v. Monakow: Observation d'aphemie pure (anarthrie corticale). *L'encephale*, 1908, No. 3. *Ref. Neurolog. Cb.*, 1909, xxviii, 488.

another, due to such causes. This factor materially interferes with useful generalizations.

Fourthly. Again, the theory does not apply in equal measure to lesions of gradual onset. The extraordinary adaptability of the brain to destructive lesions of slow development is always a confusing factor in diagnosis. Other elements than diaschisis must presumably be called to our aid in the interpretation of such conditions.

Finally, it may be said with no likelihood of contradiction that it is altogether premature to apply the diaschisis theory to the higher psychical attributes until the simpler functions have been studiously investigated. Even here, however, we may ultimately see a possible fruitful field for the application of the theory.

SOME OBSERVATIONS ON THE LATE RESULTS OBTAINED BY THE SUBMUCOUS RESECTION OF THE NASAL SEPTUM.*

BY OLIVER A. LOTHROP, M.D., BOSTON.

THE following observations were made at the Massachusetts General Hospital on patients who had been operated upon in the Nose and Throat Clinic two years previously, and I am indebted to Dr. A. Coolidge, Jr., for permission to report them. Two hundred and fifty-four patients were asked to return for observation. Forty cases reported in person and 19 others communicated their condition through letters.

Of the 19 who wrote, 15 stated that they were benefited, receiving moderate to complete relief; 3 stated that they were no better and 1 claimed to be worse.

Among the 40 cases who came for observation, 5 claimed no relief and only 2 expressed complete satisfaction from the submucous operation alone. Thirty-three cases obtained from slight to considerable improvement in breathing, while of these, 10, who in addition had had partial turbinectomy, expressed the greatest satisfaction. Upon examination, the cases expressing no relief or slight relief revealed either an incomplete operation or enlarged turbinates or both. Of these cases a large proportion had symptoms of alternating and periodic obstruction, especially noticeable at night.

In the 40 cases there were 7 perforations of the septum. The openings varied in size from that of a pinhead to that of a quarter of a dollar. In these cases there were no symptoms attributable to the perforation itself, except crusting.

In 3 of the 40 cases there were adhesions on one side between the septum and the lower turbinate. In one of these there was a large perforation in addition to the synechium.

In the majority of all the cases observed, a deviation or thickening remained opposite the middle turbinate and, in 8 cases, a prominent basal or vomer spur had been left. Otherwise, the septa were reasonably straight, except in 5 cases where an enlarged turbinate, situated on the concave side

* Read before the New England Otological and Laryngological Society, Jan. 27, 1910.

of the septum, prevented the resected septum from assuming a vertical position.

There were, in the series, 4 cases who had external nasal deformities prior to operation. Three of these stated that they believed the deformity to be increased. Although a sufficient bridge of cartilage had been left, there was a lateral displacement which lacked the support of one in the median line. The fourth case had the nose straightened a year later, giving good internal and external results.

Operations upon 2 cases having atrophic rhinitis gave no relief from crust formation. One case stated that there was increased dryness and soreness of the throat after the operation. Cases not having atrophic conditions prior to operations did not complain of dryness of the nose or throat.

There were 2 cases associated with epilepsy. In one, the attacks followed an incomplete operation. In the other, the attacks became more frequent after the operation, but of shorter duration.

In one of the cases observed, bilateral nasal polypi existed as a complication. The patient had been much relieved until the growing polypi had encroached upon the breathing space.

Another case had unilateral frontal sinusitis a short time after the operation. The septum had not been resected high in this case. Removal of the anterior end of the middle turbinate relieved this condition shortly. In all cases the resected septa had become very firm but, apparently, no cartilage had regenerated.

There were eight children in this series. Five were thirteen years of age and the other three were ten, nine and seven years respectively. In 5 cases the tip of the nose was apparently depressed and the alæ broadened. The nose of one of the older children had remained undeveloped. In the seven-year-old child, whose nose had been fractured in infancy, there was an undeveloped and deformed nose with deviated septum and partial nasal obstruction. The nine-year-old child likewise had sustained a fracture of nose some years before the operation. The mother states that the nose is more deformed and broader across the alæ. Examination shows a depression between the tip and the nasal bones, together with a lateral displacement. The nasal bones are abnormally long in proportion to the cartilaginous part of the nose. Mention is made in the literature of this depression of the nose in children. Apparently, a sufficiently broad cartilaginous bridge had been left for support in these children.

Noting the fact that a characteristic deformity was observed in the majority of the cases in children whose septa had not reached full development and that this deformity is absent in adults, leads me to advance the following theory: The depression of the tip of the nose is not due to insufficient support from too little cartilage but to a retarded growth of the remaining cartilage while the bony parts develop normally.

Hyalin cartilage grows, according to Schäfer¹ and Huber,² by interstitial proliferation of cells

¹ Schäfer, E. A.: *The Essentials of Histology*. Seventh edition, 1907, p. 90.

² Huber, S. Carl: *Histology*, 1901.

and also by deposition of cells from the perichondrium. Sieur and Jacob³ claim that there are two centers of growth in the septal cartilage which become most active in the eighth to ninth years. The most active center is situated along the inferior border of the cartilage which lies in contact with the vomer. The other center is in the posterior border adjoining the perpendicular plate of the ethmoid.

If we accept the conception of growth by interstitial increase, we must admit that any resection of cartilage will necessarily reduce the number of proliferating cells. Again, as its posterior and inferior support is removed, whatever growth takes place in the remaining cartilage is not wholly directed forward and upward, but may extend partially into the resected area. The forward and upward growth of the ethmoid and vomer would be less effective in influencing the position of the tip. Accepting the evidence that the main growth is from the centers adjoining the ethmoid and vomer, resection would, in most cases, remove more than half of these centers because the perpendicular plate of the ethmoid frequently takes part in the thickening and deviation, and certainly the removal of the vomer ridge would be indicated.

From the above it is evident that resection hinders or nearly checks the growth of the cartilage while there is no retardation of the downward and forward growth of the remainder of the nose, particularly of the nasal bones. The end of the cartilaginous bridge adjoining the tip of the nasal bones and ethmoid will be carried downward and forward while the tip of the nose will remain about the same distance from the nasal spine. This will produce an angle, seen in profile, between the nasal bones and the cartilaginous bridge. The result will be an apparent depression of the tip.

Conclusions. — The submucous resection of the nasal septum for deflection is beneficial in almost every case. The greater the deflection the more definite will be the improvement. To insure the best results, however, the operation must be thorough and complete, and all thickened and deflected portions of the septum must be removed, particularly the vomer ridge and the perpendicular plate of the ethmoid high up opposite the middle turbinates. If careful attention is given to these latter points, the flaps of mucous membrane will approach nearer the median line. Drainage from the middle turbinal region is facilitated and greater space on the convex side is obtained. If turbinectomy is indicated, it can then be limited to the larger turbinate on the concave side. If there is insufficient space between the septum and the larger turbinate when the septum is brought to the median line, a judicious trimming of the turbinate will prove efficient. This may be done either before the operation on the septum and allowed to heal, coincident with it, or subsequently. If there is any laceration of the mucous membrane of the septum on that side, this should be allowed to heal before

³ *Recherches Anatomiques, Cliniques, et Operations sur les Fosses Nasales et Leurs Sinus*, Paris, 1901.

the turbinate is trimmed or cauterized, lest synechia form later. The operation should not be attempted until the nose has attained full development. However, trimming of the turbinates and plastic operations in children may not be contra-indicated. An incomplete operation renders future operative procedures very difficult and unsatisfactory. Perforations are undesirable and unsightly and they may cause annoying crusting. Whistling has been mentioned as a symptom but it was not found in this series. Crusting is not relieved in cases of atrophic rhinitis. In cases in which external deformity is found as a complication it may be expedient to supplement the submucous resection with a correction of this deformity.

THE DIAGNOSTIC VALUE OF THE SEARCH FOR SPIROCHETA PALLIDA IN THE UMBILICAL CORD OF THE NEWBORN.

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THE establishment of a positive diagnosis of syphilis in the newborn may be a matter of the greatest importance both as regards prophylaxis and treatment. At the present time nothing short of demonstrating the causative organism in its tissue can be considered as absolutely conclusive. This is most satisfactorily accomplished after autopsy when the characteristic lesions are usually evident, while in many cases, by the aid of appropriate staining methods, the organism may be demonstrated in large numbers in the internal organs, especially the adrenals or liver.

When an autopsy cannot be made for one reason or another, such as refusal of permission, but more particularly when the child is living, the cord and placenta are usually available for examination and may give important information.

The study of the gross and microscopic anatomy of the placenta generally permits a probable, and usually an almost positive, diagnosis of syphilis. The significant points are briefly: The relative increase in the weight of the placenta as compared with that of the child. This ratio, which is normally 1 to 5 or 6, is increased to 1 to 4, or even 1 to 2. The pale, greasy appearance of the maternal surface is characteristic. Most important, however, is the microscopic appearance of the teased villi, which are thicker, more club-shaped and less graceful and arborescent than usual, while the stroma cells are increased in number, larger and more spindle-shaped. At the same time the vessels are obliterated in the smaller and are the seat of pronounced endarteritic changes in the larger villous stems.¹

Such changes, if present, make the diagnosis highly probable and amply justify specific treatment. Unfortunately, however, in a certain number of cases these signs are not clearly marked, and under such circumstances the finding of the spirocheta pallida in either the placenta or cord

would do away with all doubt and confirm the diagnosis.

The observations of W. O. Pauli² in the obstetrical department of the Johns Hopkins Hospital, in 1908, however, tends to indicate that its demonstration in the placenta is not always easy, for he concludes that "the spirocheta pallida is rarely found in syphilitic placenta, and then only after long and tedious search."

The following year Gräfenberg³ reviewed the results obtained by several investigators who had searched for the spirocheta pallida in the umbilical cord of the syphilitic newborn and reported that in 39 positive cases in which the diagnosis was confirmed by studying the internal organs, spirochetæ could always be found in the cord. He stated that similar findings were made by Bab and Mohr in 9.4 and 50% of their cases respectively, while Simmonds reported two positive cases. He suggested that the comparatively infrequent positive results of these observers may have been due to the fact they studied sections of the cord too far removed from the umbilicus, as in his experience spirochetæ were abundant in its fetal and rare in its placental end.

With these observations in mind, and at Dr. J. W. Williams's suggestion, I undertook to test the clinical value of this procedure. During the six months ending July 1, 1909, I studied the cords of all cases suggestive of syphilis occurring in my Obstetrical Department of the Johns Hopkins Hospital. When the child was born alive, the portion of the cord immediately adjoining the ligature was studied, and in stillbirth cases the portion between the ligature and the abdomen. Whenever possible, autopsy was done, and in each case the routine microscopic examination of the placenta gave a clue as to the probable diagnosis.

The tissue was imbedded in paraffin and the sections stained by the method of Levaditi. Whenever the liver from the corresponding children was obtainable, it was put through at the same time, so that sections from it could be compared with those of the cord. When positive results were obtained, the liver sections showed the abundant presence of well-stained spirochetæ, and in such cases numerous sections of cord were studied and a negative report registered only after a most prolonged and careful search.

The cases with suggestive history or other evidence of syphilis numbered 30. Of these, one half showed no evidence of syphilis in the child, placenta or cord, while the remaining 15 may be tabulated as shown on the following page.

Case 10 was the only one in the entire series in which spirochetæ could be demonstrated in the cord, and, therefore, justifies a more detailed description. L. D. gave a history of a rash on the body four to five years ago, and since then has had two miscarriages at the fifth and sixth months, and two premature labors at the seventh and eighth months with stillborn children. The present pregnancy started about six months before delivery and fetal movements were not felt

¹ Williams, J. W.: *Obstet.*, p. 599.

² *Johns Hopkins Hosp. Bull.*, 1908, xix, 326.

³ *Arch. für Gynäk.*, 1909, lxxxvii, 190.