

shows how, in this way, the "commissariat of the active or animal part of the body" undergoes profound modification. A paper by Dr. Bulkley on "The Failure of Nutrition in Children" is incorporated in the appendix. Altogether the volume will prove a helpful addition to the practitioner's library.

Lehrbuch der Gehirnkrankheiten für Aerzte und Studenten. (Text-book of Diseases of the Brain for Physicians and Students.)

By Dr. C. WERNICKE, Privat-Dozent, University of Berlin.
Two Volumes. Berlin: 1881-82.

In the copious literature of diseases of the central nervous system, published during the last five years, Dr. Wernicke's book deserves especial mention as one evincing great originality of observation, experimentation and thought.

The first volume is divided into two parts, viz.: 1. An anatomico-physiological introduction. 2. Semeiology of brain diseases. The first eighteen sections, 195 pages, are devoted to the topographical anatomy of the encephalon. Pages 195 to 276 contain the physiology of the organ, and the remaining ninety-four the semeiology of its diseases. The anatomical part is after the still unsurpassed model of Theod. Meynert. The first chapters present an enlarged and more elaborate reproduction of the author's (Wernicke's) "*Das Urwindungssystem des menschlichen Gehirns.*" It is scarcely necessary to remark that in the special anatomical description of the organ, its component parts and the relations of these to each other, the more recent researches of Gudden, Gowers, Forel, Huegenin, Luys, Flechsig, Stilling, the author, and others, have all received due consideration. The description is enhanced by nineteen diagrams and sixty-nine illustrations from natural

preparations, only three of which are not original. It is, according to our judgment, the most lucid exposition yet offered.

The physiological part commences with the labors of Fritsch and Hitzig. The labors of Ferrier are acknowledged with the meagre compliment that he has given a very intelligent and graphic description of the movements produced by cortical irritations, and determined or circumscribed the motor region in the brain of apes. And Nothnagel's classical experiments receive but cursory mention. The highest authority on this subject, in the author's opinion, is H. Munk, of Berlin, whose experimental researches he reproduces in detail, and whose conclusions and terminology, as "cortical blindness, cortical deafness," &c., he adopts. The significance of aphasic symptoms, and especially of those produced by affections of the second (sensory) centre of speech, discovered by the author, as regards the true interpretation of cortical function, is also discussed in this part of the book.

Wernicke, in transferring the cortical regions in the brain of apes to that of man, points out the following:

- A. Sphere of vision: Surface of occipital lobe.
- B. Sphere of hearing: Temporal lobe without defined limits.
- C. Leg-region: Upper third of the central convolutions and upper parietal lobule, with the exception of its anterior margin.
- D. Arm-region: Middle third of the central convolutions, lower margin of the lower parietal lobule, posterior third of the third frontal convolutions.
- E. Head-region: Lower third of the two central convolutions and the neighboring parts of the first frontal convolutions.
- F. Eye-region: Gyrus angularis, viz.: the larger part of the lower parietal lobule which is not bordered by the sylvian fissure.
- G. Ear-region: The marginal convolution of the lower parietal lobule.
- H. Neck-region: Part of the frontal lobe, closely anterior to the middle third of the anterior central convolution.

I. Trunk-region: The remaining convex surface of the frontal lobe.

The author adds: "The extraordinary development of the frontal lobe in the human brain seems, at first sight, to preclude all attempts to apply the results of experiments on the brain of apes to that of man. This difficulty, however, will disappear when we consider how numerous the conceptions of movements (*Bewegungsvorstellungen*) must be, which the erect walking of man requires."

Section 2 treats of "The Theory of Epilepsy; the Cortical Centres of Heat." It contains a critical review of the literature of the subject and will be read with interest. The physiological part then closes with a valuable description of the motor and sensory tracts of the hemispheres, and a treatise on nerve nuclei and special centres.

2. Semeiology of diseases of the brain. This part begins with the following remark: "The brain differs from all other organs in that it is composed of very many parts of quite different significance, and that it can only be regarded as an entity so far as its histological structure is concerned. The morbid affections of each area of special function, therefore, produce special clinical phenomena, which consist in the disturbance of this special function."

The number of morbid processes of clinical importance to which the encephalon is subject, is limited. Two of these spread over the whole surface of the brain, and are to be considered as diffuse affections, viz., meningitis and progressive general paralysis, and, as a sequela of these, chronic hydrocephalus. The other morbid processes are so-called foci diseases, viz.: Cerebral hæmorrhage; cerebral softening; tumors; abscesses, and sclerosis. The latter may be taken as the transition to diffuse affections.

The phenomena of diffused affections, considered, are:

1. Disturbances of the sensorium and the intellect.
2. Disturbances of the vegetative functions.
3. Disturbances of the subjective state of health.
4. Neuritis optica.
5. Convulsions.

The phenomena arising from foci are:

1. Hemiplegia, hemiparesis, hemicontractions.
2. Its sub-divisions, as monoplegia of the face, the arm, the leg, etc.
3. Hemianæsthesia with its sub-divisions.
4. Independent paralyzes or phenomena of irritation of the cerebral nerves.

Wernicke's second volume opens with a long preface replete with polemical disparagement, directed more especially against Goltz's "Functions of the Cerebrum" and his criticism of Munk's experiments and deductions; against Brown-Séquard's views regarding cerebral localizations, and those of Nothnagel (*Topical Diagnosis of Cerebral Diseases*) concerning the diagnostic value of the symptomatology of morbid foci in the brain.

The book is itself an interesting monograph on cerebral hæmorrhage and cerebral softening.

I. Cerebral hæmorrhage. The author calls especial attention to his own views on the mechanism of the affection. The effect upon the brain of an effusion in the encephalic cavity must be regarded as the equivalent of a sudden mechanical shock, generally of such intensity as not to confine itself to the site and immediate neighborhood of the effusion; but extending, it may be, through the whole of one hemisphere, or even still further. The site of the effusion is, therefore, in the beginning not of much consequence, in so far as

the accompanying phenomena are at first of a more general hemiplegic character. These complex symptoms only disappear gradually, and finally become reduced to such more defined disturbances of function as correspond to the organic defect which was produced by the destruction of the parts directly exposed or involved in the injury. The term "foci symptoms" should only be applied to this remaining class of symptoms, but the author does not agree with Nothnagel, who fixes a period from six to eight weeks after the access as the time when the effects of the secondary affections have ceased to operate. Either a much longer period, say two years, should be selected, or each case should be disposed of according to its individual characteristics. The effect of the mechanical shock is equal to the action of a moving body upon another at rest. The author calls this the "traumatic momentum" of cerebral hæmorrhage, and this of course can be measured in any given case, when the mass or quantity in motion and its velocity are known. The quantity here is, first of all, dependent upon the extent of the rupture and stands in direct relation to the calibre of the vessel. The traumatic momentum therefore increases in proportion to the diameter of the respective vessel. The velocity of the mass in motion, on the other hand, may be identified with the pressure of the blood in the vessel: the higher the pressure the more rapid the blood will flow out, or the greater the amount of blood which, in a given time, will pass the point of rupture. The author's argument is as follows: Since the measure, therefore, for the traumatic momentum is given with the product of the mass into the square of its velocity, it is evident that the second factor, which comes into play in proportion to the square of its action, must greatly outweigh the other and become of far more

importance. For this reason even small differences in the blood pressure should have due consideration, or in other words, the traumatic momentum is more directly dependent upon the degree of blood pressure than upon the lumen of the bleeding vessel. Applied to the circulatory arrangements in the brain it thus becomes evident that the traumatic momentum in the basal and trunk regions of the encephalon must be more considerable than in the centrum ovale, and here still greater than in the cortex.

The material elaborated by the author is arranged in the following order:

1. Aetiology and anatomical appearances.
2. Symptoms of traumatic hæmorrhage.
3. The apoplectic injury.
4. The foci symptoms of cerebral hæmorrhage.
5. Cases comprising lesions, in the following order: Nucleus lenticularis; internal capsule; frontal lobes; temporal lobes; occipital lobes; motor region; thalami optici; pendunculi cerebri; bi-lateral cerebral hæmorrhage; pons Varolii; cerebellum; medulla oblongata.

Diagnosis, prognosis and therapy of cerebral hæmorrhage, close up the first 109 pages of the volume.

II. Softening of the brain: Encephalo-malacia. As regards the phenomenology of this affection, the author considers the traumatic element as likewise playing an important rôle in the original process. Here the injury to the brain is produced by the sudden occlusion of the cerebral vessels. The immediate effect may be considered from a point of view similar to that of cerebral hæmorrhage, although in this case the direct mechanical shock is the result of the collapse of vessels which have been suddenly occluded by emboli. The process is that of filling a vacuum at the point of collapse, and must necessarily be associated with actual displacement or even laceration of brain tissue. We

can readily conceive that there may occur also in these cases, as in cerebral hæmorrhage, an extension of the direct influence of the traumatic momentum to regions remote from the seat of the lesion. The author considers the symptomatology of this affection likewise under two heads: (1) Symptoms of a more general character, occurring in the earlier stages, and (2) those which continue presenting features corresponding to the defect in the organ as the result of the lesion.

The foci symptoms in brain softening differ quite frequently, however, from those of cerebral hæmorrhage in their transient character, especially when due to embolism or thrombosis in regions in which compensation is facilitated by the collateral circulation.

The pathological process of brain softening is a tissue necrosis which terminates in fatty degeneration, and is frequently associated with calcareous infiltration; calcified ganglion cells and nerve fibres may be found in the softened foci. Cerebral hæmorrhage, as we have already seen, occurs especially in the trunk region of the brain, and rarely in the cortex. The foci of softening, so far as we know, have no especial seat, but they are more likely to be found in the cortical substance than in the trunk on account of the greater area of the former.

The author has collected in this part of his work a great number of valuable clinical cases which will repay careful perusal, yet it seems to us that in the interests of the practitioner and the student for whom he writes, a more systematic arrangement of the material might have been made. Section 42 treats of aetiology, 43, of anatomical appearances, 44, of symptoms and course, 45, of chronic softening of the brain, and 46, of the foci symptoms of brain softening.

The author distinguishes two stages in chronic softening of the brain, namely: (1) the progressive stage, and (2) the stage of arrest.

The former is marked by the slow development and increase of the foci symptoms, and may last a year or more, terminating in complete hemiplegia. In the second stage no further increase in the foci symptoms is demonstrable. If the case terminates fatally, death is, in most cases, due to intercurrent disease of other organs, and not to the brain affection itself. The favorite seat of this form of softening is the centrum ovale of the hemisphere, and it is often found to be of considerable extent.

In section 47, Wernicke introduces a new form of disease: "Acute hæmorrhagic polyencephalitis superior." The floor of the fourth ventricle, especially in the neighborhood of the motor nuclei, as the direct continuation of the anterior horns of the spinal cord, is, like the latter, a favorite seat of independent disease, probably of an inflammatory character (polymyelitis).

Yet even in regions above the medulla in the basal portions of the brain, we meet with very similar affections. Here also their seat is in the nerve nuclei, but exclusively in those connected with the muscles of the eye. It is a distinct, acute, inflammatory disease, which terminates in death in from ten to fourteen days. The foci symptoms consist in associated paralysis of the muscles of the eye, which rapidly progresses and terminates in an almost total paralysis of the muscular apparatus with few exceptions, as the sphincter iridis or levator palpebrarum. The gait becomes unsteady, and exhibits a combination of ataxia and stiffness resembling that of drunkards. The diffuse symptoms (of a general character) consist in a disturbance of consciousness characterized by somnolence, which may be preceded by excitement of some duration.

There were in all cases evidences of inflammation at the papillæ opticae. Wernicke cites three cases of this rare disease, in one of which it occurred after poisoning by sulphuric acid, while in the others it followed the excessive use of alcohol.

The second part of the book closes with a description of the vascular arrangement of the brain, in which the author recapitulates the results arrived at by Heubner and Duret. Wernicke's book must be welcomed as a contribution of unusual value to the subject of which it treats.

Medical and Surgical Reports of the City Hospital of the City of Boston. Third series. Edited by DAVID W. CHEEVER, M. D., OLIVER F. WADSWORTH, M. D., and A. L. MASON, M. D. Boston: Published by the Trustees, 1882.

The excellent reputation which the staff of the Boston City Hospital have attained is well sustained by this contribution to the literature of medicine and surgery. We have no data from which to judge of the amount of material from which the cases for this report were drawn, but it is evident that the editors and contributors have exercised a rare discretion in the selection, and that they have gathered such as are "most interesting and useful for comparison and reference."

The reports open with an article by Dr. S. G. Webber entitled "The Pathological Histology of the Spinal Cord," thirty-three pages and three plates of which the first six pages and plate I. are devoted to the normal histology of the spinal cord. The article is not characterized by great originality, except it be in the author's general method of treating his subject, and is, therefore, not calculated to materially increase our knowledge. Although Dr. Webber has shown great zeal and attained success in the microscopic study of