PART III.—PSYCHOLOGICAL RETROSPECT.

1. *German Retrospect.*

By William W. Ireland.

The Supporting Tissue of the Central Nervous System.

Dr. Gierke, of Breslau, has, in two articles in the "Neurologisches Centralblatt" (Numbers 16 and 17, 1883), given the results of special researches on the neuroglia. He accuses Deiters, Boll, Golgi, and Jastrowitz of making incorrect descriptions, and of mistaking the results of their own reagents and dyes for natural structures. Gierki promises to publish his researches at greater length with illustrations, which are highly necessary in the description of delicate tissues. In the meantime he gives a number of details which could only be fairly reproduced by translating his papers. The neuroglia is the supporting tissue or frame-work of the nervous centres. It forms one-third of the substance of the grey matter, and its cells throw out branching processes which, taking the shape of flattened fibres, form sheaths for the nerve tubes. These never lie against one another, as Boll imagined. The cells of the neuroglia in the spinal cord of the sheep have a diameter of from 0·005 to 0·008 mm., and their processes are sometimes as long as from 0·4 to 0·2 mm. The neuroglia is everywhere, save at a part of the medulla oblongata, where the nerve tubes of the stratum zonale Arnoldi crowd upon one another, and lie directly under the pia mater. In other places, as in the substantia gelatinosa Rolandi, the neuroglia prevails, and there are few nerve elements. In contradiction to those who hold that the perivascular spaces may be owing to retraction of the dead tissues or contraction of vessels, Dr. Gierke maintains that there is not the slightest doubt that the perivascular spaces exist in the living brain. They are of varying calibre, and their strongly developed cellular ramifications are analogous to the sinuses in the lymphatic gland. In some places, as in the central canal of the spinal cord, he has found the large vessels surrounded by perivascular canals, which he has traced into real lymphatics.

On the Development of the Nerve Fibres in the Gyri of the Human Brain.

Dr. Franz Tuczek has a well-written paper on the subject in the "Neurologisches Centralblatt" (No. 20, 1883). Huschke observes that a child comes to the world with one-third of the volume of his brain; he acquires the second third in his first year, and the last third is formed between this time and his twenty-first year. Merkel has shown that the development of the skull takes place at two sepa-

rate periods from birth to the seventh year; then follows a pause till the commencement of puberty; then a second period of increase, which goes on till the completion of growth of the cranial bones. According to Huschke and Bischoff, in the first year of life the brain. grows about 450 grammes—that is, more than 1 cc. a day. Dr. Tuczek finds that Exner is mistaken in thinking that there are no nerve fibres in the brain of the new-born child. He himself made an examination of four bodies of children, the oldest of whom was 27 days. The fibres in the hemispheres are generally very fine, as they go a short way, being supposed to keep up the communication between the groups of nerve cells. Dr. Tuczek gives the following conclusions :—

1. In the hemispheres of the brain nerve fibres having an axis-cylinder appear first in the medullary and then in the cortical matter, the development going from the centre to the periphery of the brain.

2. The nerve fibres with axis-cylinders first appear before the end of the ninth month of intra-uterine life in the medullary and cortical substance of the paracentral lobes, and the anterior and posterior median convolutions; then in the occipital lobes and in part of the island of Reil. The other convolutions do not yet contain any such fibres. According to Flechzig these nerve fibres appear first in the pyramids of the medulla oblongata, and then extend upwards to meet those in the brain.

3. The further development of the nerve fibres in the hemispheres goes on in a symmetrical manner. Except those in the paracentral lobule, the median convolutions, and the occipital lobe, there were no nerve-fibres with axis-cylinders in the hemispheres of a child 27 days old, and even in those situations the fibres could only be found in the lower third of the cortex. Thus there were no fibres running from the upper layers of grey matter across the gyri.

5. The appearance of the fibres comes latest in the frontal lobe, both in its superior and basal parts. No traces of such fibres could be found in the gyrus rectus, the orbital part of the frontal lobe, and in the second frontal, either in the cortical or medullary matter.

On the Histo-Genesis of the Human Brain.

Dr. Signo-Fuchs has communicated to the Academy of Science at Vienna his researches on the development of the tissues of the brain ("Centralblatt für Nervenheilkunde," No. 1, 1884). He used 33 brains from the sixth month of fœtal development to the eighth year of life.

The following is said to be a short *resumé* of his conclusions :— Deiter's cells are found in their normal arrangement in the brain of the child five months old.

The pyramidal cells are already recognizable in the new-born infant. He found the typical fifth layer in the cortex of a child aged seven months. Fibres with axis-cylinders were found in the white

matter of the brain towards the end of the first month after birth; in the second month they were found radiating upwards.

In the superior stratum of the cortex the first fibres with axis-cylinders are found in the fifth month, in the second layer after the completion of the first year, while the fibres connected with the fibræ arcuatæ in the third layer appear in the seventh month.

In the child of eight, perhaps in that of seven years, the fibres of the cortex and medullary substance have taken the same arrangement as in the adult. Those fibres in the cortex which afterwards become the thickest appear first. They increase in calibre as they grow older. Dr. Fuchs has never observed a decided case of division of a fibre with an axis-cylinder. He could not find the great ganglion cell described by Exner in the upper layer of the cortex of the new-born child.

The Cortical Centres for Touch, Sensibility, and the Muscular Sense.

Dr. W. Bechterew, of St. Petersburg (in a communication to the "Neurologisches Centralblatt," No. 18, 1883), states his reasons for believing that such centres really exist on the surface of the hemispheres. Hitzig and Nothnagel thought that, after extirpation of the motor area of the brain, there was a loss of muscular sense; but Bechterew states that he could not, in his experiments, satisfy himself that, after extirpation of the motor area to the hemispheres, if the lesion did not pass beyond the bounds of this area, such a loss of sensibility really existed. If the animal allowed its paw to rest in inconvenient and unaccustomed positions, this was from the awkwardness of its adjustments owing to the injury of the motor power. Dr. Bechterew makes no reference to the observations of Goltz, who stated that, after a removal of any considerable portion of the cortex, there was a loss of sensibility on the opposite side of the body.

Having come to the conclusion that the centre of sensation for the skin and muscles must exist apart from the motor area, Dr. Bechterew sets himself to look for these centres behind the median gyri. Avoiding the lots already knocked down to Ferrier and Munk, he finds a considerable area quite unoccupied. The function of this extensive region, which in the human brain is represented by the parietal lobe, has not been ascertained by any physiologists. Munk, it is true, has made some claims on this area as centres for the sensibility of the eye and head; but to this Bechterew objects that such a large surface of brain cannot be put apart for the sensibility in so small a part of the organism. Dr. Bechterew arrives at the conclusion, from his experiments on dogs, which occupied several months, that after destruction of these parts there were marked alterations of sensibility, and he finds that lesions of particular parts induce derangements of feeling of touch alone, or of the muscular sense of sensibility to pain.

Dr. Bechterew promises to publish in a more extended form the results of his researches; in the meantime we may indicate the situation of his three new centres. That for the perception of touch is described to lie in the dog immediately behind and outward from the motor area. The centres for the muscular sense and the sensibility to pain must, he thinks, lie close together, as sometimes a lesion caused injury to the one function or to the other. The centres are believed to be situated near the summit of the temporal lobe, above the commencement of the Sylvian fissure.

Fatty Granules and Cells.

Dr. Virchow has returned to an old subject in a paper read to the Berlin Medical Society ("Centralblatt für Nervenheilkunde," No. 2, 1883). Twenty years ago he observed fatty granules in cells lying free in the white substance of the brains of dead-born or new-born children who had died soon after birth. He considered that these were of inflammatory origin, the result of degeneration, and thinks so still. This form of degeneration is, he holds, analogous to the yellow softening of adults, only that in the first case the axis-cylinders are more involved. Virchow has examined 44 new cases, which confirm his views. He has seen along with the fatty cells and granules increased size of the neuroglia cells, but never found the fatty cells accompany general malnutrition alone. Dr. Jastrowitz stated that he had found these granular cells in the brains of almost all children whom he had examined. He believed that they have something to do with the development of the nerve fibres, and it was a confirmation of this that they occurred always in rows. If they were more common in the brains of weak and anæmic children, it was because the children's growth was retarded. He said that Stricker had shown that every embryonal cell was at one time granular, and in the brains of young and healthy animals he (Jastrowitz) had seen these same granular cells. He was not satisfied that the chemical tests were sufficient to prove that these cells were really fatty, and Dr. Liebreich stated that in numerous examinations in the brains of individuals of all ages he had failed to extract fat.

On Recurring Degenerations from Lesions to the Cortical Motor Centres and the Motor Columns of the Cord.

Dr. Löwenthal ("Pflüger's Archiv.," Band xxxi., Heft 7 and 8, quoted in the "Neurologisches Centralblatt," No. 16, 1883) has made a microscopical examination of the animals operated upon by Professor Schiff. In some of these the motor area of the brain had been removed; in others the spinal cord had been cut at the level of the fifth cervical vertebra.

He found that, after extensive but not deep extirpations of the cortical motor area, there is a secondary degeneration of the lateral

columns. This degeneration is much less marked than what follows sections of the cord.

In an addition to Löwenthal's paper Professor Schiff remarks that, after this secondary degeneration of the cord following injuries to the brain of the ape, there is wasting of the paralysed muscles which here and there has a resemblance to progressive muscular atrophy. Schiff, in the same number of "Pflüger's Archiv.," admits that, in his experiments in 1870, he had allowed himself to be deceived by the diversion of electrical currents, and that he now believes the posterior columns of the cord are the only parts excitable by electricity.

Lesions in Rabies Canina.

S. Ivanow (reported by Dr. Bechterew in the "Neurologisches Centralblatt," Nov. 14, 1884) has made a histological examination of ten brains of dogs which died from hydrophobia, at the Veterinary Clinique at St. Petersburg, and two brains in which the disease was suspected, accompanied with examinations of ten healthy brains for comparison. The following were the lesions found in all the cases of hydrophobia:—There was a general hyperæmia of the tissues of the encephalon, reaching at some places to acute inflammation, and in spots here and there were smaller extravasations. Around the vessels there was a number of lymphoidal elements, with which the venous and arterial walls were also infiltrated. In some places there was thrombosis of the vessels. In some spots the lymphoidal elements had passed into miliary abscesses. A few more cells were degenerating or degenerated, but in general the nerve cells were spared. The yellow hyaloid lying upon the vessels, described a few years ago as characteristic of rabies, is now regarded as a normal appearance found in all dogs who have attained a certain age. These alterations were found most marked in the medulla oblongata, after this in the corpus striatum and the optic thalami, while they were much less apparent in the hemispheres of the brain. These lesions explain in a great measure the symptoms of rabies, such as the difficulty of deglutition, the loss of motor power in the tongue and of the lower jaw, the increased or diminished salivation, and the presence of sugar.

On Insanity Following Exposure to a High Temperature.

Dr. Rud Victor has an elaborate article in the "Allgemeine Zeitschrift für Psychiatrie" (XLer Band, 1stes and 2tes Heft) on this subject. In the first half he makes a study of sunstroke and its effects on the nervous centres. It would appear that exposure to a powerful sun is sometimes followed by delirium and convulsions instead of stupor and coma. Such preliminary symptoms may be succeeded by paralysis, loss of memory, and mental weakness. Sometimes the patient falls into an incurable chronic state which bears a considerable resemblance to general paralysis. Dr. Victor records the

instance of six hundred Belgian soldiers who were in 1853 exposed to a march of four hours' duration in a very hot sun. Of these four hundred fell out, fourteen died, and twenty-two became insane. The bodily heat rises under exposure to a fierce sunshine to from 43° to 45c.

It is doubtful whether exposure to the glare of the sun can cause meningitis, save when assisted by unusual thinness of the cranial bones; but the effects observed after death showed congestion of the membranes, extravasation of the blood corpuscles, and abscess and sclerosis of the brain.

Dr. Victor then proceeds to consider the effects of forced heat as observed in the engine-rooms of steamboats, iron and other foundries, where the workmen are exposed to an artificial temperature, sometimes running up so high as 65c. Esquirol, Simon, Eulenburg, and others made no doubt that this was sometimes a cause of mental derangement. Moreau and Voisin have described a form of insanity which they called *folie des cuisiniers*, affecting cooks exposed to the heat of great fires. Dr. Loeser found that the workmen at the gun manufactory at Suhl suffered very much from the forced heat, and were affected by subcutaneous inflammation. The workmen at the furnace were often troubled by headache, giddiness, a feeling of general weakness, and disorders of digestion. Sometimes they fall down insensible, and have to be carried into the fresh air. Amongst the work-people this illness goes by the name of Hütten Katyc. In one case the insensibility lasted for two days. In some parts of their work the men are obliged to cover their heads with wet cloths.

For the last ten years a series of cases have passed from the gun-foundry of Spandau into the asylum of Eberswalde. Eliminating some cases where the insanity appeared to be owing to other causes, Dr. Victor gives a description of fifteen patients admitted to this asylum after habitual exposure to great heat in gun-foundries, the high temperature exciting changes in the brain, and afterwards insanity.

Five of these cases had hereditary tendencies to insanity, and one was a drunkard. In all cases the disease came on gradually, generally commencing by disquietude and headache; then followed a stage of depression, sometimes passing into melancholia with suicidal tendencies. In ten of the cases the disease had a strong resemblance to progressive general paralysis, there being paralytic disturbance of speech and inequality of the pupil. The stage of melancholy was succeeded by acute mania; the patients gave utterance to senseless boastings, declined in bodily and mental health, and were unclean in their habits. Then followed epileptic and apoplectic attacks, and, after a prolonged decubitus, death in a state of marasmus. Of the other five cases, two were melancholic and three demented. Of the fifteen patients, nine died, four were discharged, of whom one was cured, and two remained still in the asylum in a state of dementia.

The lesions found after death were discolouration and thickening of the membranes, adhesion of the dura mater to the bones, œdema of the pia mater; adhesion of this membrane to the convolutions were only observed in one or two cases. There were also noticed granulations on the surface of the ventricles and atrophy of the brain substance—in short, the appearances of diffused chronic inflammation. Of the six cases published by Bertens, three recovered and two showed symptoms of progressive paralysis.

Dr. Victor argues, from the absence of other apparent causes in most of his patients, that we have here to do with a specific disease, from exposure to a high temperature exciting changes in the brain resulting in insanity.

On Insanity Arising from Auditory Hallucinations.

Dr. Fürstner brought this question before the meeting of the Medical Association at Carlsruhe in October, 1883 ("Zeitschrift," Band xl., Heft 1 and 2, and "Neurologisches Centralblatt," No. 12, 1883). In addition to two already published, he has given 26 cases of insanity which seem to have originated in diseases of the ear or auditory nerve. He observes that hallucinations of hearing often commence during the night, or when the patient is alone, that is, when other auditory impressions were absent. Aurists have observed that patients who hear noises in the ear are often much disturbed and oppressed, and sometimes have suicidal tendencies. He asserted that hallucinations may be produced by the action of electric currents upon the acoustic nerve. Of Fürstner's 26 cases, 19 were troubled with subjective noises in the ear. Many of these were old people. In the majority of cases there was chronic catarrh of the cavity of the tympanum and alteration of the membrana tympani. In these cases the prognosis was generally unfavourable. In one case the patient recovered from a state of stupor and melancholy through the sudden discharge of purulent matter by the meatus. He cited a case from Schüle of the same character. In one patient with melancholia there was chlorosis with anæmic noises; in another there was compression of the vessels of the neck through an enlarged thyroid gland.

Experimental and Clinical Researches on Epilepsy ("Archiv.," xiv. Band, 2 Heft).

In the introductory history of previous researches which, according to the German custom, is appended to Dr. Unverricht's paper, we are informed that there has recently been a return to the old view that the seat of epilepsy is in the pons and medulla oblongata. This was owing to the experiments of Albertoni, who found that after extirpation of the motor zone of one hemisphere general convulsions could be produced through electrical stimulation of the remaining hemispheres. He saw general convulsions appear after the entire removal

of the cortex, when he applied stronger currents to the nerve masses below. This induced him to conclude that the epilepsy produced by stimulation of the hemispheres was really owing to the irritation being conveyed to the medulla.

To elucidate these and other questions about the pathology of epilepsy, Dr. Unverricht has made some careful clinical observations, and tried a number of experiments upon dogs, the result being communicated in an elaborate paper which fills 87 pages of the "Archiv." In his experiments Dr. Unverricht used weak electrical currents, considering that strong ones are apt to be misleading. He found that an electric stimulus applied to the grey matter of the hemispheres causes epileptic attacks, whether the electrodes are applied to the so-called motor regions or to those behind. The posterior lobe, believed by Munk to be a visual centre, when stimulated, excites epileptic attacks. The disposition to fits under this stimulus is, as a general rule, independent of the supply of arterial blood to the cortex, of the bodily temperature, and of the reflex excitability. The duration of the electric stimulus was found to have more efficacy in causing convulsions than the strength of the current. The course or succession of the convulsions was found to correspond with the arrangement of the motor centre in the brain, so that only such groups of muscles come successively into action whose centres lie near one another in the motor area. For example, it is never observed that the klonus of one extremity follows convulsions of the muscles of the ear passing over the orbicularis whose centre lies between; nor does one ever see convulsions of the muscles of the jaw follow those of the lower extremity. The author's researches have also led him to the following results:—That after convulsions have gone through one side of the body, when they pass over to the other side, the muscles are affected in exactly the same order as in the side first affected. The convulsions may either oscillate from one side to the other, passing from one side of the body and then returning to the other side, and so on till general convulsions ensue; or the same tract of muscle may be visited by a third and fourth convulsive attack, until general convulsions follow. Special muscular groups sometimes take part in the convulsive fits, which shows that their centres are fully excitable during the fits or are not excitable at all.

In the course of his observations, Dr. Unverricht found two spots in the cortex, from which he could excite isolated motions of both halves of the tongue. At first he believed that only the left half of the tongue received its nervous stimulus from the left hemisphere, and that the motions of the right side of the tongue were passive, and *vice versa*. In order to decide this question, he cut through the hypoglossal nerve on the same side (the left) as the stimulated hemisphere; he then saw the movements of the left half of the tongue cease, while those of the right half were continued. In the same way the innervation of the retractive muscle of the tongue was decided. They were proved to de-

rive their nervous supply from both hemispheres. By sawing the jaw he was able to differentiate the action of the muscles on both sides. He came to the conclusion that the masseter and temporal muscles always receive their nervous supply from both hemispheres. The muscles of the neck and trunk seem to get their principal nervous supply from the hemispheres of the same side; but he thinks farther researches are needed to determine whether they do not receive some fibres from the opposite side.

Dr. Unverricht was able to make sections of the corpus callosum, which generally caused death by bleeding into the third lateral ventricles; but he was able to ascertain that division of this commissure did not prevent the passage of convulsions from one side of the body to the other. On a stimulus being applied to one hemisphere, convulsions attacked one side of the body and then the other, after a pause between.

Extirpation of the motor zone in the status epilepticus was found to cause the convulsions to cease on one side. If the motor zone were removed on both sides the convulsions entirely ceased.

Dr. Unverricht considers the following experiment very decisive:—He took a dog and excited convulsions on both sides of the body by the application of the electrodes, after which he removed the whole motor area of the left hemisphere, comprising the cortical centres for the limbs, those for the muscles of the trunk, neck, jaw, and tongue, leaving only the centre for the orbicularis muscle. On stimulating this solitary centre, there followed a long-continued convulsion of the right orbicularis, and of the muscles of the ear, while the other muscular groups remained in absolute rest, save that on the left risorius muscle, whose centre is probably not sufficiently ascertained, there were some convulsive startings. Then followed rhythmical turnings of the eyes to the right, which continued for some time, so that one who looked on from a distance might think the convulsions had ceased; but suddenly, and with great vehemence, there appeared convulsions in the left hind leg, which soon spread upwards through the body, involving the muscles of the tongue and jaw.

Dr. Unverricht holds that the convulsions caused by electric excitations of the cortex have a close resemblance to epilepsy, though he will not allow that the spasms produced in Brown-Sequard's experiments by division of the sciatic nerve or section of one half the cord do actually constitute genuine epilepsy.

The author considers that many forms of the aura epileptica prove that epilepsy originates in the cortex. Sometimes there are appearances of light and colour, or hallucinations. From all this he comes to the conclusion that the integrity of the motor cortical region is necessary to the evolution of a complete epileptic attack.

Sometimes the bodily heat increases during the fits by 1 or 2 degrees centigrade. In one case the rise of temperature was observed to be as high as 44·1 c.; but a sinking of the temperature to 34·8 was found

neither to hinder the excitibility of the cortex nor the appearance of the status epilepticus. Anæmia will only check the appearance of fits when pushed to a dangerous degree. This was also true with asphyxia, and a new supply of oxygen caused the convulsions to reappear. It was found that morphia in large doses caused convulsions to cease; but more effectual for this purpose were intravenous injections of chloral and inhalations of ether, both of which promptly brought the fits to an end. Atropine was found to increase the excitability of the cortex so as to renew the convulsive attacks after they had ceased. This was not what was expected, as atropine is a well-known remedy in epilepsy. Dr. Unverricht, however, observes that different effects may follow the long-continued administration of a drug in small doses from the use of a single large dose.

Dr. Unverricht's experiments have led him to conclude that chloral is the most valuable remedy in the status epilepticus. It has recently been found very useful in the other motor neuroses, especially in chorea (Mosler).

Progressive Hemiatrophy of the Body.

In the "Neurologisches Centralblatt" (No. 16, 1883) there is a report of a remarkable case, described by Dr. Henschen, of Upsala. The patient, who is now 43 years of age, lost his parents from consumption, and had a cousin who was insane. When 14 years old he suffered a dislocation of the left ankle joint, which caused an inflammation rising to the knee. This was followed by pricking pains, formication, muscular startings, and feelings of rigidity in the affected parts. After this there was headache lasting for some months; and atrophy commenced in the left leg, and gradually became sensible over the whole left side of the body. At the age of 19 the patient was visited by an attack of melancholia, which passed away in a year, but returned two and a half years ago. The man's condition is described very minutely. On the right side he is strong and well-nourished, while the left side is everywhere smaller. When he stands upon the right leg his height is 170 c. When he stands upon the left leg his height is 164 c. The cranium is well developed and symmetrical, but there is a depression on the left temporal region, and the notch for the supra-orbital nerve is somewhat deeper on the left side. The whole left face from below the eyebrow is smaller, looking as if the upper and lower jaw had been resected. The opening of the left eyelid is smaller, but there is little appreciable difference in the size of the eyeball, and the pupils are equal. The tongue, as well as the neck, are symmetrical. In the trunk the left side seems, on the whole, somewhat smaller, but the atrophy is confined to the following places:—In the chest, between the fifth and seventh interspaces, there is a depression about 20 centimêtres in length, where the ribs may be felt under the attenuated skin. In the umbilical region there is another depression of 23 centimêtres long and 3½ centimêtres broad, lying from the

linea alba to the margins of the 10th and 11th ribs. The skin over these spots was thin as paper, and had fallen into folds; the muscles were atrophied. The left arm is shorter than the right, and all the muscles atrophied. The arm can be moved, though, owing to alteration in the elbow and wrist joint, the limb cannot be completely extended. The left hip is atrophied, and there is another depressed spot of from 3 to 4 centimêtres broad between the anterior superior spinous of the ileum and the first lumbar vertebra.

The whole left leg is atrophied, and 10 c. shorter than the right, but part of this shortening is owing to the limb not being capable of complete extension. The skin is thin as in the other atrophied parts, and the muscles wasted. Along the quadriceps run two parallel lines of ossification, about 10 or 20 centimêtres long. The left leg below the knee is about half the circumference of the right, and the calf has disappeared. Below the tibia and fibula are grown together, and the ankle joint ankylosed; the bones of the foot are immovably connected with one another, and the skin stiffly adhering to the hard parts. The toes are atrophied. The sensibility of the skin is not diminished; indeed, it is rather increased on the left side. The reduction to the induced and continued current are somewhat greater on the left arm than on the right, in other parts the reaction seems equal. The reflex action is stronger on the left thigh and abdomen than on the right. Nothing abnormal was discovered on the right side.

Dr. Henschen calls this a case of tropho-neurosis, arising from chronic irritation of the nerves distributed to the parts around the dislocated ankle, which the patient suffered from when 14 years old. At last it affected the brain, as shown by the melancholia and spasms. The patient is still alive.

Stuttering and Stammering.

Dr. Berkhan defines stuttering to be the incapacity to pronounce consonants or vowels, which is only occasional, and brought on by emotion; and stammering, where the incapacity occurs without any anxiety, and where the difficulty generally consists in pronouncing consonants. He finds these deficiencies of speech to be generally hereditary, and to occur amongst poor families. He finds that amongst children who stammer the circumference of the chest is very small; in some cases he found it even less than the circumference of the head. On looking over Dr. Berkhan's tables, we doubt whether he has allowed for the fact that the proportion of the circumference of the chest to that of the head is less with younger children. Apparently Dr. Berkhan is better able to make original observations than to go through the necessary task of ascertaining what has been done by previous observers. At any rate, he cannot be acquainted with what has been written upon idiocy in the English language, or he would never have claimed as an original observation of his own that stuttering and stammering are common with idiots, or that a high palate is apt to occur in

those who are born deaf, or that deafness and idiocy are commonest with males. He has a better claim to the merit of the observation which we have not read before, that the vaulted or saddle-shaped palate is frequent with stammers.

Disturbances of Vision in General Paralysis.

Dr. C. Fürstner, in two papers in the "Archiv." (Band viii., 1 Heft and ix., 1 Heft), a *resumé* of which was given in the German Retrospect (Jan., 1879, p. 681), called attention to a peculiar disorder of vision in general paralysis, which he thought to be dependent upon a brain lesion. It seemed to consist in a loss of the power of recognising objects often confined to one eye only. Dr. Carl Stenger, in a paper in the "Archiv." (Band xiii., Heft 1), continues the study. He distinguishes two disturbances of vision. In the one there is a loss of the power of perception (Wahrnehmungs-vermögen), in the other a loss of the power of recognition, or forming an ideal representation (das Erkennungs, das Vorstellungs-vermögen), the result of lesions of the occipital lobe, which Munk calls soul-blindness (Seelen-blindheit), and Goltz visual weakness of the brain (Hirnsehschwäche).

Wilbrandt thought that the confusion of vision might be owing to hemiopia or defect of sight in one portion of the retina, so that the individual might make false conclusions which his mental weakness would render him less liable to correct. It ought to be carefully kept in mind that sight requires not only the integrity of the apparatus of the eye and optic tract and ganglia, but that the recognition of objects and the ordinary exercise of vision require a number of mental processes of apprehension, recognition, comparison, memory, and judgment, which seem to many intuitive, since they have been acquired in infancy. The mental nature of many of our acts of vision has been demonstrated by Helmholtz. In a disease like general paralysis, where the mental faculties slowly waste away, it seems likely enough that the power of making correct inferences from the impression of the senses may be lost before the senses themselves are weakened or destroyed. These considerations are certainly not always kept in view; and this is one of many instances where careful observations are vitiated by want of psychological analysis, or by careless, though convenient assumptions at the outset of the investigation.

It is clear that where derangements or weakness of sight and hearing occur in advanced general paralysis the weakened mind would have great difficulty in correcting the sensory deficiencies, and that the patient would give no assistance in analysing his sensations; hence, in a disease, with diversified lesions and diversified sensory and mental deficiencies like general paralysis, it would be very difficult to say if the patient were unable to recognise objects by sight, whether the deficiency lay in the optic tract, in the corpora quadrigemina, or in the hemispheres.

Wernicke observes that in general paralysis there is a rapid loss of the memory of the images derived from the organs of hearing and

sight. Some of Dr. Stenger's patients had evidently lost the power of recognising the import of objects of sight and sound, and one had lost the power of learning what objects were through touch. In another, to use Dr. Stenger's own words, the power of the mind to elaborate the impressions of the senses seemed to be entirely lost. Dr. Stenger, in describing one of his cases, says that after severe convulsions ending in stupor, which lasted about ten hours, the patient began to recover. He heard every sound, but when questions were put to him he either did not understand them, or mistook the meaning, so that he gave wrong answers or no answer at all. In speaking, he changed the words and letters, and when objects were held before him he could not name them. He ran against things in his way, and was not afraid of a lighted body held before his eyes. It was only when he felt the burning heat of fire that he drew back, and when a needle was held before his eyes he seemed to recognise what it was only when it pricked him. He did not seem to recognise wine till his lips were moistened with it, when he showed the desire to drink. In fact, the power to gain the right import of the impressions of the senses seemed to be lost. In all the five cases, save one, the deficiencies of the visual faculty were common to both eyes. The lesions found in the brain of those cases which he examined were of the usual character in general paralysis, and, as he admits, do not confirm any particular theory of localisation.

Dr. Zacher ("Archiv für Psychiatrie," xiv. Band, 3 Heft), in a long contribution to the "Pathology and Pathological Anatomy of General Paralysis," continues Dr. Stenger's inquiries, accepting his distinctions of Seelenblindheit and Rindenblindheit, or cerebral amaurosis.

The soul-blindness, which is not common, is always double, and associated with aphasia, and some degree, more or less, of paralysis of the right side. One of his patients, for example, failed to recognise objects held before him; when bread was put near his eye he did not eat till it was placed between his lips. Formerly he was fond of smoking, but now, when a cigar was put into his hands, he did not recognise it. Nevertheless, he seemed to see, for he followed objects with his eyes, and when anything got rapidly near, the eyelids were closed.

In one case he describes a general paralytic seized with convulsions which diminished motor power and sensibility on the right side, the right pupil more dilated than the left. There was a complete loss of visual power on the right side, so that there was no closure of the lid when a burning light was rapidly brought near to the eye; but the reaction existed on the left side, in which the sight seemed unaffected. In the next case the paresis and diminution of sensibility was on the left side. There was the same loss of visual power in the left eye, the visual power in the right eye being preserved. In both patients the loss of vision disappeared in a few days. Twelve cases of a similar kind fell under Dr. Zacher's observation.

In the second category Dr. Zacher gives three cases as examples of double-sided hemiopia.

It was ascertained by careful examination that objects were not perceived on the temporal side by one eye, and on the nasal side by the other. In cases like these total blindness would only be produced by double hemiopia. Dr. Zacher thus reduces the visual deficiencies into two categories—

1. Pure soul-blindness. Further observations are required to make out whether this blindness is always double with motor derangements on the right side and aphasic symptoms.

2. Double-sided visual disturbances, which are probably true hemiopias, and are connected with lesions in the occipital lobes.

He acknowledges that some cases described by Fürstner and Willbrandt would probably require another class.

Tendon Reflex and Tâche Meningitique in General Paralysis.

Dr. Zacher, in his general paralytics, finds the tendon reflex always heightened after convulsive attacks (even when the fits of motor excitement are followed by paresis). The greater the irritation the greater the clonus. He has often repeated Nothnagel's observation that, by striking with the percussion hammer upon the paralysed leg, startings are produced in the foot of the opposite limb. On the other hand, when symptoms of paresis or paralysis alone appear, the clonus is found to be diminished, so that sometimes it nearly disappears. Dr. Zacher finds this result in accordance with the views of Schwartz, who stated that if a process causing destruction of the motor and sensory areas of the brain has a paralysing effect on more distant parts of the nervous system, that even the reflex centres of the spinal cord which stand in connection with these parts of the brain are more or less paralysed, but when the process is of a stimulating or irritating character, that a stimulating effect is produced. He also found that where the sensibility to pain was diminished, the reflex from cutaneous impressions was also diminished.

In some cases great disturbance of the muscular sense was observed, so that the patient did not know the position of a limb, and kept it in strange and inconvenient positions.

Dr. Zacher also directs attention to two cases of vaso-motor disturbance in general paralysis, in which there was transudation of a serous fluid. When the surface was touched with a blunt point, the spot first turned white, then red, and at last there was elevation of the skin. After a prick there was no blood, but a raising of the surface, owing to the transfusion of serous fluid into the injured parts. This Dr. Zacher regards as an exaggerated form of the tâche meningitique, which he has observed after epileptic fits, and even after attacks of the petit mal.

An Insane Mother Kills her Five Children.

Dr. von Krafft Ebing (in "Friedreich's Blätter für Gerichtliche Medizin," Band xxxiv., 1883, quoted in the "Neurologisches Centralblatt," No. 13, 1883), gives a tragical story of the result of the delusion of suspicion. The subject had a strong hereditary neurosis, and experienced hallucinations of a religious character when nine years old, and which afterwards frequently returned. Her education and moral training had been neglected in childhood. She was married when twenty-seven, and lived happily until her thirty-second year, when she lost all her property through an usurer, and had to suffer great hardships. In the hope of regaining some portion for her children, she involved herself in reckless lawsuits, and as she was unable to obtain a favourable verdict, she abused the court in an unmeasured manner. In spite of her violent language and imprudent conduct, she was declared by the physicians employed by the court to be sane, and was punished for defamation. About a year later, as she continued to complain, and had become wilder and more senseless in her language, threatening to kill her children, the question of her responsibility was again raised; but the physicians said that, though she had fixed ideas, she was not insane. But in consequence of her excited state of mind, and her threats to kill her children, they recommended her to be kept under supervision, which, however, was not done. The poor woman's distress became more pressing. She had frequent hallucinations, which seemed to point to heaven as the only refuge remaining for herself and children, and strengthened by an old vow to dedicate her children to heaven, she believed that she was entrusted to kill them. After contending with despair and hallucinations for nearly two years, the catastrophe took place, which could have been avoided if the mother's state of mind had been rightly understood. On the 12th August, 1881, she at length resolved to kill her children to save their souls. She prayed fervently that if God wished to prevent the deed to send someone to stop her. She waited at the door to see if anyone came, but as no one appeared, she went into the house and deliberately killed the five children with a pestle, at each blow making the sign of the cross and calling the name of Jesus. After a long prayer in the village church, she arranged the linen for the corpses, and confessed the deed in a quiet and composed manner. Then at length she was sent to an asylum.