them with the granular layers in the retina. Nissl observes that while Flechsig gives sharp boundaries to his localisations on the surface brain, he might have noticed that the different layers in no way trouble themselves about his boundaries.

(1) *The Mature Development of the Conducting Nerve-paths in the Brain of Animals* (a preliminary communication). By Dr. Döllken, Assistant Physician to the Clinique for Nervous Diseases in the University of Leipzig.

Clinical Notes and Cases.

A Case of Juvenile General Paralysis. By A. HELEN BOYLE, M.D., Brighton.

C. V—, æt. 19, was admitted into Claybury Asylum on 21st December, 1894.

On admission, childish, undeveloped, skin pale and greasy, dark straight hair, and brown eyes. Height was 4 ft. 10 in.; weight 8 stone. She was well nourished, though not fat. Slight mammary development. Palate very high and narrow. Enamel of teeth lined transversely. General shape good. When she spoke, which was rarely and not spontaneously, there was hesitation and drawling. Her gait was shambling, and she dragged her feet, being liable to trip. The knee-jerks exaggerated; pupils regular, and reaction normal.

Mentally she had an imbecile appearance, and was simple and childish in manner. "She is very confused, stupid, and can hardly be got to answer questions at all. She does not know how long she has been here, but can count and multiply simple numbers. She cannot tell what day it is without long thought, and takes very little notice of what goes on around her. Emotionally she is indifferent and placid rather than happy when left alone, but when interfered with she is spiteful, and now and then screams at the top of her voice, though as a rule quiet (possibly this may be from headaches). She has no delusions as far as can be made out.

The *past history* as got from her parents is that she was healthy as a baby, had no rash except measles, and never had anything wrong with her eyes. She got over teething

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well, with the help of teething powders, and had no convulsions. At school she seemed fairly bright and cheerful. About fourteen or so she left school, and took a place as a servant, where she was worked hard and only stayed three months, leaving because she felt overdone. Soon after she took another place, and in four months became ill, was dull, and could not walk as well as usual, and came home. When at home she had a fit (aged sixteen), after which she was in bed, and had to be taken to the infirmary, where she was kept about four or five weeks.

Subsequently her walking and her dulness became worse. She complained a good deal at times of pain in her left arm, which she used to rub, and also of some difficulty in swallowing. Her speech was noticed to be peculiar about one year before admission, *i. e.* at eighteen. Her character was quite altered, she became sullen and lazy, stayed constantly in bed, and took no notice of anything. Her habits were indifferent, and at last her parents were obliged to send her back to the infirmary, and she then came on to the asylum. She was always a steady girl, and had no worry as far as her mother knows. She had never menstruated at all.

The *family history* is as follows:

A grandfather and two uncles died of "consumption."

The father, who is alternately coster and gas-worker, is said to take too much alcohol at times, but I could get no real history of alcoholism. His wife, whom I saw alone, assured me that, although she had seen him the worse for drink on rare occasions "when out for a spree," as a rule he was quite steady and had never been "gay" in any way. Moreover, the home is tidy and comfortable, and he himself a spare, athletic, healthy-looking man, who is "never ill."

The mother, a charwoman, looks robust, and says she has never had a day's illness that she can remember except her confinements, and that they were always easy and natural, with no trouble afterwards.

No history of syphilis in either parent was got, nor any of nervous trouble. The mother had ten pregnancies, all full-term, and no miscarriages. But—first pregnancy, the baby died in a week or so of birth, cause unknown; second pregnancy, the baby died within six weeks of birth, cause also unknown; third pregnancy was the patient; fourth pregnancy, a girl now

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twenty-one, in service, and healthy. The other six are all alive and well. The mother states that their teeth are good as far as she knows, that none of them have suffered from any nervous trouble, but only ordinary childish ailments. There are in all nine girls and one boy.

History of Case.—During the first five months there was no special note. She became somewhat worse, suffered from frequent headaches, and her habits were bad, the bladder acting often, and the rectum occasionally, without her being apparently conscious of the fact.

In June, the sixth month of her stay, she had her first seizure since admission, and in the early part of July two more. They were slight, more like "sensations," as the nurses say, but were succeeded by a stuporose condition, and the patient had to lie down for a long time after them. There was little or no spasmodic movement. Her habits during June and July, when she had these attacks, were very considerably improved as regards the bladder and the rectum, compared with the preceding period of freedom from these seizures. Her mental condition during this time remained much as above described, possibly more dull and vacant. She stood almost invariably at one spot on being left by the nurse.

On July 27th patient had a severe seizure. She was quite comatose, with flushed face, dilated pupils, which were equal and insensitive to light. The pulse was 120, full and bounding, and the temp. 104·2°. There was some twitching of the muscles on the left side, both limbs and face, and apparent paralysis of the right side, with some general rigidity. Knee-jerks were exaggerated. There was also retention of urine, and the catheter had to be used. The bowels were constipated, and an enema given.

28th.—Next day the temperature rose to 104·8°; there was still retention of urine and constipation. Calomel given.

29th.—Patient began to menstruate for the first time, but scantily. Her temperature began to come down, the pulse was 88, respirations 24, the paralysis less complete, and the coma was going off. There were red marks from vaso-motor dilatation on all points of pressure; nothing abnormal found in the chest. Bowels moved five times.

31st.—She can draw up the right foot, but does not move the right hand or arm. She is more conscious. Temp. 100·6°.

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August 1st.—Better. Pulse 96, resp. 18, temp. 99·8°. Has stopped menstruating.

2nd.—Consciousness is returning, and for the first time the pupils are reported unequal, the right being larger than the left.

4th.—Patient is not so well, groaning slightly, duller again. Breathing is shallow and hurried, with well-marked friction sounds at the base of the left lung.

From this date she became steadily worse. Right lung affected at base. Temperature higher. Difficulty in swallowing. Became unconscious again, and died on August 10th.

Post-mortem Examination.—General paralysis evident.

Skull thick and dense, and dura mater very firmly adherent over the whole surface. Dura mater much thickened. Superior longitudinal sinus dilated. Pia arachnoid much thickened and adherent to the convolutions, especially over the frontal region. When stripped off it leaves the appearance of a worm-eaten surface. Cerebro-spinal fluid is opaque, and in great excess. Cerebrum badly developed and small. Grey matter fair in amount, gelatinous in appearance. White matter much congested. Lateral ventricles dilated, and floor granular in places. Basal ganglia normal. Cerebellum normal. Fourth ventricle very granular all over.

Spinal cord much congested.

Heart small, with pale muscle and ante-mortem clot in the right side. Valves normal.

Lungs not adherent to the chest wall, but in the lower lobes of both at the posterior extremity there was an infarct, that on the left side being the larger and measuring 2½ inches at its base, that on the right 1 inch. The rest of the lungs was congested. The liver, spleen, and kidneys were normal.

I direct your attention to the following points of interest:

1. The age of the patient. She began to show signs of the illness at about fourteen or soon after. Although there has been a certain number recorded as beginning at or near puberty, these are still uncommon compared with the immense number of adult cases. I have looked through the case-books at the Claybury Asylum, and find that there have been three female deaths due to general paralysis, in whom nervous symptoms began about the time of puberty, and a fourth who died at the age of twenty, the history being very short.

2. The causation is very obscure. Phthisis in the family

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history possibly predisposes to mental trouble. The only other possibility is congenital syphilis, which, in absence of definite history, is suggested by the fact of the first and second of the family dying very soon after birth, the second living just a little longer than the first; no recurrence of similar incidents throughout a large family, and also that the patient's teeth had imperfect enamel, though this again may be explained by the teething powders which she had, and which may have been mercurial. There is no traumatic or nervous history, no worry or real overwork.

3. The relation between the incontinence of urine and fæces and the seizures, her habits in this respect improving during the months she had the attacks.

4. The apparently intimate connection between pubescence and illness.

The symptoms of general paralysis supervened at the most usual time for the appearance of menstruation, which in her case was then absent. The first signs of the catamenia were ushered in by a severe convulsive attack, which was thereafter relieved and partially recovered from as soon as the period began, although she died a few days later. Out of five cases of juvenile general paralysis in females recorded by Dr. Wiglesworth and Dr. Clouston, four of them never menstruated at all, and the fifth either not at all or scantily. In only four of a total number of twenty-nine girls suffering from this malady was it recorded as having occurred, and then only before, not during the course of the disease.

Metabolism at puberty is certainly profoundly affected by ovarian activity, which, with the prospect of pregnancy, results in a habit of producing material not required for celibate life, and probably even deleterious. This may be excreted normally as the catamenia. Under the conditions of pregnancy this material is retained or, one might say perhaps more truly, excreted in another way, being required for the growth and development of the fœtus.

If one may put it thus, the ovary has several functions—to produce ovules, to modify metabolism, to excrete what is not required, directly or indirectly.

These last two functions are probably carried out by reflex nervous action, and possibly also by an internal secretion, for ovarian substance is said to be a powerful drug (causing rise of

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temperature), acting in chlorosis as an emmenagogue and increasing the hæmoglobin and red corpuscles in the blood, and the theory advanced for its use is that chlorosis is a neurosis acting through changes in the internal secretion of the ovary. I suggest that it is possible in the case of this patient that the constitutional taints modified the ovarian secretion so that a toxæmia occurred, either owing to the altered secretion itself or some by-product of the altered nutrition which should have been excreted in the usual way. In the fact that to the end the general nutrition was fairly good this patient differed from most of the recorded cases, in which emaciation was very marked.

Discussion

At the General Meeting, London, 13th October, 1898.

Dr. Robert Jones.—I should like to know whether in the opinion of the members of the Society we should look upon general paralysis as an entity, as a type of disease. Is it a type of general disease? We know that there are two things that go with it, the paresis and dementia, but it seems to me to vary much. These juvenile cases are not very much like ordinary general paralytics. In ordinary cases we find the exaltation and paresis; but in these cases, as Dr. Boyle has suggested, although the children are bright at school they seem to become very dull and depressed. I myself was a little time ago very sceptical as to the syphilitic origin of general paralysis; but I must say I am becoming very gradually, and none the less very thoroughly, converted to the theory that syphilis and general paralysis go very much together. I have seen at Claybury several cases of juvenile general paralysis, but this is the most interesting we have had recorded. At puberty there is general stress upon the organism, an organism perhaps tried by constitutional decay owing to inherited syphilis, and also by the actual poison that must be circulating in that person's body. And if we look upon the pathology of general paralysis, it seems to limit itself more or less—much more than less—to the association fibres of the neuron. When do these fibres appear? They receive an undue stress about the period of puberty or adult age; but it is extraordinary that we find so very few cases of general paralysis in young people, and in those we do meet with there is, as a rule, some sort of inherited syphilis. With regard to the pupils, I should like to know whether there is any one definite symptom of general paralysis in them. I think, from a fair experience, that the speech seems to be the most pathognomonic; others would say perhaps fixation of pupil, as in locomotor ataxia. In Dr. Boyle's case it was this paralytic mydriasis that was the more marked, not fixity of accommodation. The vaso-motor dilatations are also interesting. If general paralysis is not an entity, is it a genus with a number of species? Does it include saturnine, syphilitic, and alcoholic general paralysis? In some cases of general paralysis, with the ordinary signs of the disease, there is found nothing but syphilitic arteritis. I think the earliest age at which syphilitic endarteritis was found was described by Dr. Barlow, and that was a few weeks after birth. As to the metabolism at puberty, what Dr. Boyle has told us is very interesting; but the influence of the ovary is a speculative matter I am not capable of discussing.

Dr. Mickle.—I had the disadvantage of not hearing the first part of the paper; but speaking on the general subject of general paralysis in young persons, in this case it appears to have been one of the kind sometimes called juvenile or pubescent general paralysis. The chief interest in these cases is partly etiological and partly clinical. The strongest etiological relationship appears to be syphilitic. A traumatic element has been reported in some cases. But regarding the clinical aspect of the majority of the cases, one finds certain departures from the general

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paralysis as usually observed in adults, especially as regards one point, viz. the incidence in the two sexes. In adult general paralysis the frequency is several times greater in the male than in the female. On the other hand, in juvenile cases the relative frequency is about equally divided between male and female. The average duration of the disease is longer among young persons than among adults. Then the exalted delusions so often found in adults are comparatively rare and slight in the young. As regards the physical symptoms of the disease, I do not see how on the whole there can be very much difference between the young and the adult. There are certain seizures to which general paralytics are subject, which are quite as frequent, if not more, in the young than in the adult. I have especially noticed in a few cases of general paralysis occurring in early youth the tremor about the muscles of the face. One great authority on the subject holds that to be a strong indication of alcohol having a large, perhaps the chief, share in the etiology. I have, however, seen a number of cases which completely oppose that view. And I remember two young paralytics showing a large amount of tremor, with no evidence whatever of their having had any alcohol. With regard to the cerebral post-mortem appearances, there is practically no difference between juveniles and adults when the length of the disease is considered. There are a number of cases of juvenile general paralysis recorded and unmistakeably described by observers who have long ago gone to their rest. I do not think that there is any age when individuals are free from the disease. I believe in an infantile general paralysis, and see no reason why a child should not be a general paralytic at its birth. It is difficult to prove that; but if we examine the history of the recognition of general paralysis one has very fair grounds for believing that to be probably true. I think that among those who have been described as dying in early life from congenital syphilis with lesions of brain and cord, many were general paralytics.

Dr. MERCIER.—I rise not to traverse the whole field of etiology, symptomatology, pathology, and treatment of general paralysis, which might occupy us to an inconvenient hour, but to welcome the first paper before this Association by a lady member, and to express my high appreciation of that paper. I noted that this patient improved very much after a convulsion. Now I think it is a common experience that general paralytics do always improve temporarily after convulsions. If a patient is having convulsions at stated intervals, after any convulsion his condition will be decidedly better than it was immediately before the convulsion, but not so good as immediately after the previous one, and so he will go on deteriorating, but not steadily. He will pursue a course which may be compared to a switch-back. Every fall will be deeper than the previous, and every rise will be less high, until he arrives at his destination.

Dr. BOYLE.—In reply to Dr. Jones, and as I ventured to suggest the occurrence of toxæmia, it has been said that the differences in the course of general paralysis in various cases are due to the differences in the toxins producing the disease.

The Effects of an Injury to the Head in an Alcoholic Subject.

By NATHAN RAW, M.D., Medical Superintendent, Mill Road Infirmary, Liverpool.

THE following remarkable case exemplifies in a marked manner the varying symptoms which may be produced in a subject of chronic alcoholism, and especially when some severe injury to the head has occurred to mask and complicate them.

H. P—, æt. 38, a window cleaner, was admitted into this Infirmary on 13th December, 1897, with a strongly alcoholic history. Two days ago he was working on a ladder, whence

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