EPIDEMIC ENCEPHALITIS: CLINICAL PAPERS BY VARIOUS AUTHORS.

I.—INTRODUCTION.

By Sir THOMAS HORDER, London.

It is only when a disease has been popularized, as it were, by the frequent description of individual cases, and by the emphasis laid upon features that are specially common, that its concept enters into the mind of the pre-occupied practitioner and the clinical picture becomes a thing which he looks for.

This principle is specially true of every disease that has existed first in sporadic form, then in epidemics, and then in sporadic form again. It was so—to speak only of the experience of recent decades—in the case of influenza, and in the case of cerebrospinal fever. Many of the early sporadic cases of both these diseases were entirely misunderstood, there being no criterion by which to judge them. Then came epidemics which set a comparatively easy standard for diagnosis, and this standard has been so frequently seen and described that the sporadic cases of the post-epidemic phase are tracked down without difficulty.

It is so with encephalitis. But since many fewer doctors had opportunities of observing cases of encephalitis during the epidemic stage, and since the total number of cases occurring has been much smaller than in the other two diseases just referred to, it follows that there are many practitioners still without a personal acquaintance with the clinical entity, and there is a much less well-defined composite photograph available for their guidance.

It therefore becomes a matter of prime importance that clinicians should marshal their experiences, and set down their observations, with as much care and exactness as possible, and this whilst questions of exact pathology await the results of laboratory research.

The short symposium of papers, to which these few remarks are introductory, forms a valuable contribution on these lines from Bristol clinicians. The papers show clearly that these observers have made good use of the opportunities afforded them in the material available in the West of England. Most of the cases described are of the lethargic group, and the central point of interest in them as a group is the

marked dominance of mental symptoms observed. Dr. George Parker, in particular, comments in general terms upon the frequency and the wide range of these mental effects as seen in this type of encephalitis—and, it might be added, in other types also, though it is in the lethargic type that these manifestations attain such dimensions as to risk confusion with hysteria and with the primary psychoses. Dr. Neild's cases also revealed marked hysteroid features.

Perusal of cases such as these, and of others like them, must needs bring to the honest clinician's mind the recollection of some of his obscure cases in the past, in which hysteria, or some form of psychosis, was the best diagnosis he could advance in explanation of the picture before him: just as perusals of cases of encephalitis of the ophthalmoparetic and encephalomyelitic types, especially if they be subchronic in course, must needs make the clinician remember his erstwhile inadequate suggestions of myasthenia and cerebral thrombosis. And who amongst us to-day, with his experience of the meningeal type of this protean disease, does not plead guilty to having maintained too stoutly in the past—of some surprisingly negative lumbar-puncture finding—that the case was nevertheless one of cerebrospinal fever?

Up to the present time most of the research work undertaken to decide this point favours the view that the viruses of poliomyelitis and of encephalitis lethargica are distinct. And the absence of any reference to polar effects in the Bristol cases gives clinical corroboration of this view. If, as Loewe and Strauss maintain, rabbits are susceptible to the virus of poliomyelitis but not to that of encephalitis, whereas monkeys show the converse susceptibility; and if other workers confirm their finding that the cerebrospinal fluid of poliomyelitis is innocuous to both these animals, whilst the cerebrospinal fluid of epidemic encephalitis produces typical lesions in both; then we have gone a long way towards settling this very moot point. In practice, however, the matter would seem to be by no means so simple as this, seeing that polar emergencies are not very uncommon in cases which present marked signs of cerebral involvement, including lethargy. No doubt this is more often so in sporadic than in epidemic cases. The conception of what is possible to the poliomyelitis virus in respect of vascular cerebral infiltration has probably been underestimated on the one hand, and the search for polar changes in the course of cases of encephalitis has probably been too casual on the other. It is evidently a point of great importance to record exactly *at what stage* in the course of any case these polar effects are first manifested. All of which bears out the significance of Dr. Carey Coombs's insistence on the desirability of recording carefully individual cases as and when they offer themselves for observation. In this way the necessary

collateral work of clinical medicine and research will eventually lead to a clear issue and definite knowledge in regard to these important and interesting disease-processes.

II.—MENTAL EFFECTS OF ENCEPHALITIS LETHARGICA.

By GEORGE PARKER, Bristol.

MacNalty states that "in every case of encephalitis which has been studied in detail the note 'a strong functional element present' is recorded in the case-book"; and although other observers have not corroborated this rather extreme view, some such symptoms may be expected in a proportion of cases, since the lesions are in the region of the basal ganglia and optic thalamus where the afferent stimuli from the environment stream in. Thus the very frequent combination of stupor with ophthalmoplegia or facial paralysis points clinically to the situation of the most common lesions, and this is confirmed by many post-mortem findings.

In confirmation of this view, we note that in the prodromal stage before lethargy comes on, patients often show stupidity, loss of brightness and intelligence, and inaccuracy in their work, or on the other hand we may see them laughing or weeping without cause. Later on, stupor from the cutting off of the stimuli from the environment is combined with delirium from cerebration uncontrolled by the perceptions and judgements which those stimuli would give rise to. As the lethargy in course of time decreases, the mental changes become still more obvious, and may continue for some time longer. Thus, in every stage of the disease 'hysterical' and emotional symptoms and mental weakness may be prominent, and, when localizing signs are absent or transient, they may give rise to a wrong diagnosis, and lead to cases being missed altogether. Hence the importance of looking out for them as possible symptoms of an attack of the disease.

Another question crops up, whether permanent mental effects may be expected, and this is not easy to answer. The actual paralyses clear up more or less quickly, but the listlessness, dullness, or nervous condition may last an indefinite period. Whether this is confined to the period of convalescence, or whether emotional or mental feebleness may be lifelong, is important but as yet uncertain.

The three following cases show more or less mental changes after seven months; neither patient is really well, but the great improvement which has taken place has been perhaps as rapid as could be expected.

Case 1.—R. W., 16, a tobacco worker, was attacked on Dec. 21, 1919, with severe headache, drowsiness, and constipation. She was admitted

to the Bristol General Hospital on Dec. 30 with profound lethargy and occasional delirium, lying curled up on one side, the head slightly retracted, mouth open, the eyes closed, and the pupils contracted and showing but slight reaction to light. Pyrexia for ten days was recorded. Though so extremely drowsy, she resisted the removal of her clothes, and could even be made to answer questions if spoken to firmly and plainly. There was at times incontinence of urine and even fæces. When lumbar puncture was performed, the fluid was found to be under slightly increased pressure and showed a slight lymphocytosis. Rather later than this, left facial paralysis came on, and ptosis of the left eyelid. The plantar reflexes in both feet were flexor, and the knee-jerks were hardly perceptible. Kernig's sign was not present.

For some ten weeks or more she remained lying in bed or (when compelled) sitting in a chair, sleeping with her mouth open and the saliva dribbling down. From her mask-like face, gaping mouth, and dirty habits, she looked like an imbecile child. She was taught to repeat childish verses in a slow muttering voice; she could walk well when compelled, but if possible steered for the nearest chair, where she would at once curl up and fall asleep. Her general health remained good. Dirty and indolent as she was, she eventually by slow degrees began to sew and read and write, and gradually improved in her behaviour. At last, after three months and a half, she had so far recovered that she was sent to a convalescent home at the seaside, and wrote me a well-expressed little note of thanks on her departure.

By August, 1920, she had returned to work and was clean, bright, and cheerful, but it was doubtful whether she had quite regained her mental balance. The sister noticed that in talking she was still apt to run on with an inaudible voice for some sentences, and seemed rather "flighty."

Case 2.—M. W., 17, a tobacco worker, admitted Dec. 17, 1919, for drowsiness. Seven years previously she had been ill with chorea. Father asthmatic. The drowsiness began fourteen days previously, followed by diplopia and pain "near one ankle". Temperature 100°; neck stiff. On Dec. 20 the lethargy was marked, and her face was mask-like. There was nystagmus, a nasal voice, and the deep reflexes were sluggish. Flexibilitas cerea was noticed in left arm.

On Dec. 23 the spinal fluid was found quite normal and under slight pressure. There was definite facial paresis on both sides. On Dec. 27 rhythmic spasmodic contractions of the left arm and leg had developed. The patient remained sleeping and speechless, but took food fairly. The arm remained in any position given to it for a time.

On Jan. 5, 1920, being roughly ordered to get up, the patient, who had lain apparently quite helpless for a fortnight, got up and walked round the bed, but fell in a heap when trying to get back. About this time the silent lethargic state was varied by loud shouting. On Jan. 6, she suddenly threw her dinner across the ward, and after she had got out of bed threw herself quite naked across it. She was then placed in a private ward, where she lay with closed eyes. The spasmodic rhythmic movements of the left arm continued. She remained in this state for a fortnight. One day, being left alone, she slipped out and was found walking about the public corridors absolutely naked. On a second occasion she went to the sister's room in the same state, and took away what she liked. Her habits were filthy; urine and fæces were passed anywhere. On Jan. 21 she was taken home at the mother's request.

In March she was seen at home, and had improved, but could not speak normally. On July 24 she had recovered, except for the rhythmic spasm of the left arm and leg, which took place twenty-four times to the minute. She could walk a short distance, and took her share in the housework in spite of the spasms. She talked well, had gained greatly in weight, and had lost her tendency to cry out or shout. Her mother reported that she showed no loss of mental power, and could go errands and add up a bill correctly. She was neatly dressed, and seemed fairly normal in her behaviour during the interview.

Case 3.—D. L., 26, married, was attacked with difficulty of vision (diplopia) on Jan. 2, 1920, when apparently in perfect health; pyrexia, slight stiffness in back of neck, some vomiting, and giddiness followed. Lethargy, with occasional delirium at night, was marked. The temperature rose to 100–102° for about a fortnight. Fibrillary movements in face and limbs, and some rigidity and stiffness, were followed by double facial paralysis and constant and rapid nystagmus of both eyes. Ptosis of the left eyelid, but no strabismus, was noted. The nystagmus was continuous, but increased by exertion, and so bad was it that months later she could only read by holding a card below the line she was looking at. This lasted quite seven months. It was practically impossible to get a view of the fundus oculi. No Babinski's sign, increase of knee-jerks, or Kernig's sign was present. She slept continuously for many weeks, but could be roused for a minute or two. Asthenia or stiffness of the limbs prevented her getting up, except when delirious, but she soon regained power in her hands to feed herself. The appetite and general health remained good. Menstruation ceased for several months, but then returned normally. She spoke rationally when roused, but showed little anxiety or interest in her surroundings.

After three months she began to walk about her room with help, but evinced nervousness and fear, and complained of giddiness. In July she could walk out-of-doors, even alone, but was still timid and nervous, though drowsy. I was struck with her disinclination to trouble about her house or husband, who had recently started in business, and on whom her illness was a terrible strain. By the beginning of August the nystagmus had nearly gone. She had gained a good deal in weight, and was mentally more normal, though still timid and rather irritable, and disliked being left alone. She now showed some wish to take part in the business, but was not able to do much. Her husband noticed that she had developed a curious craving for brilliant colours in dress, which was in marked contrast to her previous choice, and was striking though in good taste.

In these three patients, besides the pyrexia, facial paralyses, intense drowsiness, and more or less pronounced inability to move the limbs in the early stages, we find an important group of mental symptoms, varying from delirium, catalepsy, and immodest and dirty behaviour, to simple loss of interest in surroundings, nervous fears, timidity, and a certain childishness. In the worst cases it was soon clear, even if physical signs had been absent, that we were not dealing with merely functional conditions; nor were the nervous symptoms confined to the patient with the choreic history. All showed a

childish mentality and little appreciation of or worry about their state. Still, their progress has been so steady that there seems some reason to hope that they will eventually regain their previous mental level.

III.—NOTES ON ENCEPHALITIS LETHARGICA.

By J. ODERY SYMES, Bristol.

Six cases of encephalitis lethargica were admitted to the Bristol General Hospital under my care between June and September, 1920. Three of these died: a woman, age 45, ten days from the onset; a man, age 24, two weeks from the onset; and a boy, age 14, three weeks from the onset. Of the cases that recovered, one, a woman of 32, was under treatment for four weeks; a man of 49 was an in-patient for fourteen weeks; and a boy of 12 remained in hospital for four weeks. Other doubtful cases were seen in which the symptoms were not sufficiently definite to permit of a positive diagnosis. The following synopsis of the symptoms found in the present series of cases may be found of interest.

Prodromal.—Pains in head (5 cases), diplopia (3 cases), tremors (3 cases), giddiness (2 cases), vomiting (1 case), drowsiness (5 cases).

General.—Lethargy and prolonged sleeping (6 cases), mask-like expression (4 cases), delirium (2 cases), twitching, tremors, or choreiform movements (3 cases), great prostration (3 cases).

Examination of the cranial nerves showed the optic discs to be normal in every case; 3 cases showed ptosis, but in all the pupils were normal and external ocular muscles intact. A voluntary contraction of the lids in these cases sometimes makes it difficult to recognize the ptosis. In 1 case there was loss of the sense of taste; bilateral facial paralysis, 1 case; one-sided facial paralysis, 1 case; impairment of hearing, 2 cases; difficulty in swallowing, 1 case; tremor of tongue, 1 case; shallow respirations, 3 cases.

There was slight motor paresis and inco-ordination of the limbs on one side in 1 case. In all cases the deep reflexes were normal; 3 cases had incontinence of urine and fæces; 2 cases showed glossiness of the skin of the face. No abnormality of the cerebrospinal fluid was detected. A faint trace of albumin was present in the urine of 3 cases. The blood-pressure was low, but in one case the systolic pressure was 160 mm. The number of red cells was normal, and in only one case was there leucocytosis (16,000). In the 3 cases that recovered the temperature was low, never exceeding 100°. In the fatal cases the evening temperature was about 103°, and it was noted that the pulse-rate was unduly rapid in proportion to the fever. Constipation was the rule. Wassermann reactions were negative in all cases.

There was a possibility of infection in two of the patients who lived in the same street immediately opposite to one another. In two cases of encephalitis under my care in 1919, a father and a daughter, the date of contact could be accurately fixed, and the incubation period was from three to seven days.*

The final state of such cases as recover is varied. Some apparently return speedily to a normal condition of body and mind. A man included in the present series of cases is now, after four months' illness, still suffering from some weakness of the left arm and leg, general tremor, difficulty in swallowing, and left-sided ptosis. A patient recently reported himself at the hospital eighteen months after the original attack, and he presents a typical picture of early paralysis agitans. He is able, however, to control the tremor and to follow his occupation of an aeroplane worker.

IV.—AN IMPRESSION OF ENCEPHALITIS LETHARGICA.

By NEWMAN NEILD, Bristol.

These notes must be regarded as impressions derived from the most outstanding features in some eight or nine cases whose ages varied from about eighteen months to sixty years. The two cases at the extremes of age both died, the youngest after an illness of under fourteen days. The latter case was sent to me by Dr. James Wallace with the diagnosis of encephalitis lethargica. The onset appears to have been rapid, and was a miniature of the most typical form of the disease: great lethargy and very slight squint. The infant made no protest when it was moved, lay passively in almost any position in which it was placed, and there were no signs of meningeal irritation, such as those seen in tuberculous or post-basic meningitis, unless the squint should be considered as being so. There was no difficulty about the feeds of milk until the last two days before death. There had been no stiffness of the neck, and throughout the features were pale and expressionless.

The patient about 60 years old had already been ill for some three weeks before I was asked to see him, but he was still getting about the house, although with great difficulty. Latterly he had to be helped to dress and often to be fed, for he would stop and dream whilst he held his spoon arrested half-way up to his mouth in a somewhat cataleptic way. The most striking feature in his case was the position of his head, his chin resting on his chest as if there were some paralysis. But if the head was slowly raised—slowly because of the muscular resistance—it only sank back to its former position. He

* *Bristol Medico-Chirurgical Journal*, 1920, 25.

was taken into the Bristol General Hospital, where his case became quite typical, but, becoming progressively weaker, he died after a month or so.

A third fatal case, a man about 40, lasted only some ten days; a more sthenic case than any other that I have had. He had a high temperature and was very flushed when I saw him first, but the most striking feature about this case was the 'hysterical' character of some of his performances. Unless spoken to, fed, or otherwise disturbed, he was completely lethargic, and his facial expression mask-like. He also showed that peculiar disinclination to move the eyes aside from the straight-ahead unseeing gaze through half-opened eyelids. In several places on either side, his body showed scratches due to attacks of coarse, rhythmic movements at the elbow of an otherwise rigid arm. The rate of movement was about that of paralysis agitans, but whilst the movements appeared to be beyond his control, the application of the movement to scratching suggested intention. If his body was moved and the arm placed in a position by which scratching was avoided, the limb soon returned to the attack on the same spot. Yet it was not difficult to distract his attention, whereupon the movements ceased. If he was lying on his back or side, and the pillows were removed from under his head, the head remained held at the same height above the mattress as if the pillows were still there. When his hand was taken to help him out of bed, he gripped my hand firmly with stiff fingers, but avoided making any effective use of it: *much try and little pull*, a most valuable sign which has frequently revealed to me the hysterical factor in a patient's condition. He was taken into the hospital, and died within twenty-four hours of admission.

The case just described was the only one in which such signs were observed during the increase of the disease. Three others, all women, showed distinct 'hysterical' signs during the wane; some intentional movements were performed in a somewhat choreic manner, and at the same time the patients were emotional.

A colleague of mine very kindly showed me a case where the choreiform movements were so continuous and severe that the patient's hands were padded and boards fixed at either side of the bed. The required mental surprise was given by suddenly jerking the bedclothes from her; she instantly ceased the movements, and got out over the foot of the bed when ordered to do so. She was next told to help me remove the boards; but, unfortunately, she was allowed to realize that I had forgotten the wool and bandages upon her hands, and the 'cure' was promptly interrupted. She glanced helplessly at her bandages for the fraction of a second, and then tried to collapse between the head of the bed and the wall, giving just that

hint of having selected both the method of falling and the spot on which to fall which is so revealing in 'hysteria'.

One of the cases, a girl about 19 or so, had rather jerky movements of the right arm during recovery, and it was found later that she was unable to write more than a word or two at one sitting, and those hardly legible, although the jerkiness had disappeared. Concentration of her thoughts and attempts at writing very soon tired her, although she had been walking about the ward for some time. The tendon reactions on the right side were rather more exaggerated than on the left, but the differences were so slight that at times the observer suspected his own expectancy to be responsible for the findings; the plantar reflex was doubtful, but generally extensor. For a few weeks any object pressed into the palm of the right hand felt hot, although she was able to distinguish heat from cold when tested in the ordinary way. Before leaving hospital this symptom had disappeared, as well as a complete astereognosis she had had in this hand. Her walking lacked the appearance of confidence, and although both legs were at fault the right was rather the worse. A few months after she returned home she wrote a letter in quite a good hand.

Had I not seen the case just mentioned, it is very probable that I should have failed to recognize a case sent to me from Wiltshire a few months later. The patient had already been seen at various times by seven medical men who were unanimously in favour of a diagnosis of hysteria. Three of these had seen her during the active period of the disease eighteen months before, and their diagnosis goes at least to support the observation that some of these cases are associated with signs which taken by themselves are indistinguishable from 'hysteria'. But the expression of the eyes in this case was that which I have learnt to associate with those who have had an attack of encephalitis epidemica. Without an example before one it is difficult to make an exact analysis of that which constitutes this expression. There is an entire absence of the normal rapid but very minute movement of the eyes when the patient looks one in the face, and there is no 'brilliance of expression'. There is a slight delay in starting to move, and this delay is also noticeable in some cases in the gait and in the mental processes. It is not precisely the word that I want, but in gait, in movement of the eyes, and in mental response there seems to be a kind of initial 'numbness'. In her case the left side was the more affected one; hence the slight disturbances were not so noticeable. The left eyelid space was the wider, and whilst speaking the lips were more drawn apart on the right side. On the left side the tendon reflexes were a little increased and the plantar response was extensor. The abdominal reflexes were at first equal, but after

testing the four quadrants rapidly many times the left side very obviously tired down to a faint response; but this recovered after a moment or two of rest.

Another case, that of a woman of 30, seems worth mentioning, in that she went to the doctor first complaining of a fullness in the head when she stooped to lace her boots or to hold the baby out, and it was not until three weeks after her first visit to him that she returned complaining of double vision.

V.—'EPIDEMIC' ENCEPHALITIS.

By CAREY COOMBS, Bristol.

The wave of brain infection of anomalous type that succeeded the war should be regarded in the light of something more than a mere nosological curiosity. It is true that the number of cases is small, but those who are attacked are either killed or seriously injured by the infection.

Three cases, not among the ten alluded to below, will illustrate this point. One, a child of 4, was brought by her mother to my out-patient department at the Bristol General Hospital one day because of her obviously abnormal behaviour. She fought continually with her mother, talked at the top of her voice, and generally showed an absolute lack of restraint. This, the mother said, dated from a short illness some weeks previously, in which the child was feverish, very sleepy, and 'cross-eyed'. I asked the medical man who saw her during this illness what his view of the case was, and found he had not at the time thought of encephalitis lethargica, though in retrospect he agreed with me that it was almost certainly a case of this kind. Since I first saw her, the child has very slowly improved, but even so she is now (some months after infection) far from normal, reminding one of the unrestrained noisy children who form a section of the inmates of any institution for mentally defective children.

The second, a man of 36, driver of a motor lorry, had an illness in which I did not see him, but his medical man felt sure it was an attack of encephalitis lethargica, and from the description which he gave I agreed without hesitation in this view. The attack began with diplopia and passed over into protracted drowsiness. It left behind it a cycloplegia, from which he recovered slowly; also a liability to headache and giddiness which, with a sense of incapacity for effort, was so persistent that eighteen months after the attack he still felt unable to resume his lorry-driving, and had undertaken, permanently in his own view, less risky duties about the garage.

The third case was that of a maiden lady of about 40, of a quiet disposition, with almost excessive respect for the conventional proprie-

ties. More or less suddenly she was seized with an illness characterized by mild fever and persistent stupor, from which she emerged after many days. The late Dr. Michell Clarke, who saw her with me, agreed that a diagnosis of meningitis could be set aside (the cerebrospinal fluid was clear and normal), and we labelled the condition 'encephalitis'. This was in 1915, but I have no doubt as to its general identity with the syndrome of recent years. There were two curious points about her mental convalescence: impairment of memory, so great as to destroy for many months her capacity for figures, at which she had previously been adept; and a total change of disposition, seen in a propensity for slang and mild immodesty, which also lasted for months. Indeed, I doubt whether she ever regained her memory fully.

Here, then, is a disease or group of diseases, probably infective in origin, capable of leaving behind very serious depreciation of the higher functions of the brain. It seems worth while to make a careful study of the origin of such a disease, not only in order to prevent its spread in these days when cases are so numerous, but also because of its possible bearing on the sources of some forms of mental deficiency. Epidemiological data seem to be singularly unhelpful. Between January and July, 1920, I saw 10 cases to which the diagnosis of encephalitis lethargica ought, I think, to be applied. Eight of these were in Bristol (several of them from one district, it is true; but no connection could be proved, or seemed even probable, between them), one in Somerset, and one in Gloucestershire. The ages varied from 2 to 68, and the conditions showed every conceivable variation. One child was taken ill while on a long visit to a comfortable country house, while a man who was attacked, and is still slowly recovering, was living in an unsavoury tavern.

The fact that seems to me likely to prove most significant is the high incidence of the disease after the war, and particularly in areas, like Vienna, which felt the stress of war keenly. Perhaps this may be related to the similarity of the syndrome to 'functional' complexes. At all events, I do not believe bare notification, with all its possibilities of error, will discover the data on which an understanding of the problem can be founded. The disease is so multiform that many cases will fail to be notified. The medical man in charge does not care to notify a case unless he is quite sure about it. It seems worth while, therefore, to go on collecting data of all kinds, and in this connection we may refer to a discussion of cases seen in Bristol by Professor F. H. Edgeworth, Dr. D. S. Davies, and others,* to which the reports published here may be regarded as supplementary.

* *Bristol Medico-Chirurgical Journal*, 1920, 25.

VI.—CASES OF ENCEPHALITIS LETHARGICA.

By STANLEY J. KERFOOT, Bristol.

Within a comparatively short period four cases occurred in my practice within a short distance of one another which appear to have been examples of the encephalitis lethargica syndrome. Two other cases, closely similar in many respects, are not reported because there were alternative diagnoses. But in the four noted here, it will be seen that a moderately acute illness, characterized by deepening lethargy, with mental disturbance and absence of focal cerebral symptoms, succeeded a period of vague ill-health with generalized neuritic pains.

Case 1.—K., male, age 65. Illness commenced late in 1919 with pains in the back, neck, and limbs, and increasing muscular weakness. The first symptom of importance to attract notice was slurring of speech. In the following three weeks he gradually became drowsy, unsteady on his feet, and muscular weakness increased. There was general malaise, and anorexia and foul tongue, but no vomiting. The knee-jerks were increased, also the abdominal reflexes. There was no ankle-clonus, or Babinski or Kernig sign. The pupils were sluggish, normal or dilated slightly. The optic discs were normal. He was very drowsy and stupid, but could be roused to take some interest in proceedings. At the end of three weeks he was confined to bed a good deal, and was more drowsy. The pupils were dilated and very sluggish. He could only be roused with difficulty, and one could not keep his mind on any subject. A few days afterwards he became almost comatose, and could just be roused for a few seconds. Marked rigidity of the neck, with Kernig and Babinski signs on both sides, ensued. There was general hyperæsthesia. He could not answer questions, but might just be roused to mumble some unintelligible words. The coma deepened, and he died after an illness of some weeks.

Case 2.—T., female, age 58, after a long period of diffuse neuritic pain, was taken ill in December, 1919, with increasing weakness and pains in the right lower rib cartilages. She was very tottery on her legs, and had a foul tongue and headaches. The speech was slurred, the pupils were dilated and sluggish. There was no optic neuritis. During the first three weeks increasing muscular weakness showed itself, with slight swelling of feet; no Kernig or Babinski sign or nystagmus was found, but the reflexes were increased. The mind was dull: she called a coat a shirt, but then recognized her mistake; there was no optic neuritis. After three weeks she became very apathetic and drowsy, with marked hyperæsthesia. For several days before death there was rigidity of neck and back, and marked Kernig and Babinski signs. Coma increased, and death ensued on Feb. 7.

Case 3.—I., female, age 56, was taken ill on Jan. 21, 1920, after a long period of neuritic pains, with headache and an apathetic condition which lasted a week or so; there was marked slurring of speech and drowsiness; the pupils were dilated and sluggish; the reflexes generally were increased. During the next three weeks the headaches and drowsiness increased; she was irritated if roused. There was rigidity of the neck and general hyperæsthesia. No nystagmus or optic neuritis was present. At the end of three weeks there was a phase marked by rigidity of neck and back, with positive Kernig and Babinski signs on both sides

and ankle-clonus on the left side only. The reflexes were very much exaggerated, with marked general paræsthesia. The mind wandered, and there was a sad facial expression. In another week she was apparently becoming moribund, with hypostatic congestion of the lungs; but after a few days there was a gradual improvement; the mind became clearer, and she was not so irritable, but she talked a lot of rubbish and remained apathetic still. Three weeks later I noted smiles, and she put out her hand to greet me with the remark, "I can sit up in bed". The lungs were clear and the mind bright, and she was making a good recovery. Two weeks afterwards the whole of the original symptoms recurred within twenty-four hours, and she developed dementia with definite delusions. She was removed to an asylum, whence she returned six weeks later, apparently well mentally, but still suffering from neuritic pains.

Case 4.—D., female, age 54, began to be ill in January, 1920, after a long period of 'neuritis', with headache and increasing muscular weakness. Slurring of speech was the first symptom to attract attention to the seriousness of her illness. The pupils were dilated and sluggish; the reflexes were exaggerated; no optic neuritis was found. During the next three weeks there was increasing drowsiness, with headache and irritability. Towards the end of this period there was rigidity of the neck and back and marked Kernig sign on both sides, with an extensor plantar response on the left side, and intense hyperæsthesia over the outer part of the left leg below the knee. She had delusions, and her mind was dull. Coma increased, also the rigidity of her neck. She appeared to be going downhill, but after a few days there was general improvement in mind and she was not so irritable; occasionally she smiled and was more pleasant. She was not so drowsy, but the hyperæsthesia was still very marked, particularly over the area in the left leg. There were no Kernig or Babinski signs after another two weeks, the rigidity of the neck had gone, and she answered questions intelligently and appeared to be making a good recovery. Four days afterwards, however, sudden coma ensued, with snorting, and with pin-point pupils. There was no vomiting and no definite paralysis of limbs. The pulse was soft and there was no albuminuria. Death occurred within thirty-six hours on March 9.

This autumn I have seen two more cases, both in elderly people, closely similar to the four here recorded, and occurring in the same area of Bristol.

VII.—A CASE OF 'EPIDEMIC' ENCEPHALITIS.

By FRANK H. ROSE, Bristol.

On the afternoon of Thursday, March 25, 1920, I was called to see M. B., a little girl 4 years of age. I found a well-nourished, bright-looking child in apparently normal health, but whose temperature was 105°, and pulse 140. Her mother told me that on the preceding Monday she had been perfectly well, but woke up on Tuesday complaining of acute earache; this passed off during the afternoon, but she appeared rather feverish and a little quieter than usual. No other pain or trouble manifested itself during the Wednesday; and

on Thursday, the temperature being still high, I was asked to see her. I made a careful examination but could find nothing objective. I gave a prescription of salicylate of soda, and in the morning found that the temperature was 104°. This was maintained during the whole day and the next, but, beyond slight delirium at night and a general quiet demeanour, there was no sign of disease. On the Saturday, Dr. Carey Coombs kindly saw her with me in consultation, but could find no definite cause for the fever. The urine showed no sign of *B. coli* infection. At our request her mother took her out of bed and on to her lap for examination, and the child appeared terrified, and stiffened her body, not with pain but with terror. A similar phenomenon was noticed the previous evening when her mother gave her a warm bath: she became so rigid that her mother was alarmed, but she appeared to enjoy the warm water while in the bath.

On March 28 the temperature fell to 102·5°, and for the next four days swung irregularly between 103·2° and 100·6°. On the night of April 1 it suddenly dropped to below 97°, but next day was 100·4°, then with a slight fall rose to 101·8°; on the morning of April 4 it was 97·4°. After that it gradually fell to normal and the general condition improved. The knee-jerks were normal until the temperature fell, since when they have been very much diminished, that on the left being practically absent. The plantar reflexes were normal. While there has been throughout an entire absence of physical signs of disease, there has been a singular mental hebetude; after the first day when, as a stranger, I examined her, and she replied to my questions, I could not get her to speak or to show her tongue; she was very good, submitting quietly to examination, but taking no interest in anything, and her mother told me that the change from her usual brightness was remarkable. On the subsidence of the fever she began to make brief and inconsequent remarks to her mother, but if asked to repeat a word that was not quite understood she would not do so. Later, if she made some remark, and her mother referred to some other subject of equal interest, she apparently took no notice of the second subject, her dulled mind occupied with the one only.

It was most interesting to notice the gradual return to normal mentality. She daily took more interest in her toys, and smiled more readily; but nearly a month after the onset of the illness she persisted one day in wishing to write an ordinary letter to an aunt whom she knew perfectly well was dead. Her speech also was very much slower and more dragging than normal. I was unable to obtain a knee-jerk during a visit about this time, and although she could walk she was rather unsteady. The leg muscles also were soft and flabby. She has since made steady progress and is now (four months later) practically well.

Oct. 1.—Six months after the attack the child is practically herself again, with certain exceptions. The musculature of the left arm and leg is perhaps very slightly diminished in size and firmness, and the mother says that the left leg occasionally "lets her down". Both knee-jerks are unobtainable. She is more easily excited and, perhaps, more easily frightened. Her hair, which was wavy, is now straight and rather coarser, and "comes out in handfuls".

VIII.—A CASE OF ENCEPHALITIS LETHARGICA.

By S. A. TIDEY.

Recently I saw in Bristol a girl of 20, acting as barmaid in her mother's public-house. Three days before, she was taken ill with right supra-orbital headache, sharp and neuralgic. When I saw her this was less severe, but she complained of dizziness and noises in the ears. Her temperature varied from 101° to 103°. She vomited once only. For several weeks before, she had been feeling tired and unwell. Five days after the onset she was still feverish, the pulse-rate was 102, and she lay in a loose and flaccid attitude. She was very drowsy. Her eyelids drooped, and she complained that she could not keep her eyes open. She rambled in her talk a little; for example, she said "Good evening" at 10.30 a.m. At night she was quietly delirious, but in the day-time she could easily be induced to talk sensibly. The pupils were small, and they reacted poorly. All the ocular movements appeared defective, especially abduction of the left eye. The optic discs were normal. The neck was a little stiff, and there was a trace of hypertonus in the hamstrings. The tongue showed a coarse tremulous movement, and the arms twitched constantly. The reflexes were normal or diminished. There was no rash, and the viscera appeared normal except for a little abdominal tenderness. She became steadily worse, and died a week or ten days after the onset. No autopsy was allowed.

The case recalled that of a man under my care at the Middlesex War Hospital, Napsbury, in the winter of 1918–19. The chief points were somnolence, from which he could always be roused to answer questions rationally; retention or suppression of urine; inactive bowels; ophthalmoplegia with drooping of lids; and some affection of lower limbs—loss of knee-jerks, I believe. After a few days' illness he died rather suddenly. The post-mortem examination disclosed no gross changes in the brain or elsewhere, but a micro-organism recovered from the intestinal contents was thought to be the *B. botulinus*.