

definite physical disease, but they may be the source of a dread of physical disease. To quote one case by way of illustration. There occurred in one patient a disturbance of the pupil, a thickened, oedematous state of the skin of face and neck, blue extremities, such as you find so frequently in dementia præcox; a sweating condition; an excessive salivation, which led to an almost constant dribbling; incontinence of urine and constipation. These formed a series of physical reactions which were all of them connected with the disturbed action of the sympathetic and autonomic systems, and all were appreciated by the patient. They disappeared after a psychological investigation and explanation which enabled the patient to understand the relation of cause and effect, and to realise that the conditions were the accompaniments of emotional states and need not be regarded as evidences of organic disease.

There are also disturbances of the endocrine glands to be considered. Of these we as yet know very little, but perhaps we may regard it as established that they do play a part. We know, for instance, that a disturbed function of some of the endocrine glands may lead to an alteration of the sensitivity and reactivity of the central nervous system, so that a slight stimulus,

which would not cause much result apart from this glandular disturbance, in its presence may give rise to a definite reaction or an over-reaction. We have also to consider the effects of fatigue, illness, intoxication, and shocks to the organism. Assuming that the form of the mental disease is determined by the mental content, memories, experiences, and the emotions which accompany them, the control which normally enables us to keep these reactions within limits may be weakened by the fatigue, or the illness, or the intoxication as the case may be. It is difficult to see what further influence these can have. That an intoxication can by itself produce a mental illness is impossible; there is no case of such illness which is produced by one cause alone.

#### CONCLUSION.

If we are to understand mental illnesses we shall have to consider not psychology alone, nor psychology combined with a knowledge of the nervous system. A study of the physiology of the human organism must be included, and also whatever of the allied sciences of biology and anthropology can assist in throwing light on the origin and characters of the psychoses and the psycho-neuroses.

### ENCEPHALITIS LETHARGICA:

SOME CLINICAL OBSERVATIONS ON THIRTY CASES.

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IN October, 1918, I reported to the Royal Society of Medicine a series of 16 cases of encephalitis lethargica, all of which had more or less completely recovered. These included the original cases recorded in THE LANCET in April, 1918.\* Since then I have had 30 more cases under my care, but the mortality has not remained at zero, 11 patients having died. The percentage mortality of the whole series is therefore just under 24. This coincides almost exactly with the average of some statistics taken at random from various sources both in this country and elsewhere, thus:—

	Cases.	Deaths.
MacNalty <sup>1</sup> .. ..	168	37
Bramwell <sup>2</sup> .. ..	57	9
Denechan and Blanc <sup>3</sup> ..	31	11
Bauer and Mayer <sup>4</sup> ..	29	5
McClure <sup>5</sup> .. ..	32	17
Total .. ..	317	79 (or 24%)

Economo estimates the mortality at about 40 per cent., and Netter states that, apart from the abortive and ambulant cases, about one-third of the patients succumb.<sup>6</sup> Probably, in all these lists, the numbers are too high, as the milder cases often escape the observation of those who record statistics.

The 30 cases are placed in three groups according to their severity:—

#### Group 1.—Five Mild or Abortive Cases.

Only one of them (Case 43) showed anything unusual—namely, the occurrence of myoclonic contractions limited to the abdominal muscles and simulating an “acute abdomen.” Lethargy and cranial or other palsies were absent throughout.

CASE 43.—Vague ill-health; sudden acute abdominal pain; slight pyrexia; insomnia; recurring spasm of abdominal muscles; recovery. F., aged 31, seen Sept. 20th, 1920; feeling out of sorts for a week or two; awakened on that day by severe pain in abdomen, which kept recurring in cramp-like attacks; she was obliged to go to bed. An “acute abdomen” was at first suspected. Slight pyrexia. I saw her during several attacks of pain and it was obviously due to cramp-like spasms of the abdominal muscles. They continued with less severity and at wider intervals for three or four days, and then subsided. Temperature returned to normal on the 24th, and she gradually recovered.

\* THE LANCET, 1918, i., 568.

#### Group 2.—Fourteen Cases of Medium Severity.

(a) Four Cases with Complete Early Recovery.—These presented no unusual symptoms, excepting a boy, aged 12 years (Case 24), who, on the nineteenth day, when convalescence had set in, suddenly had a series of left-sided epileptic convulsions with loss of consciousness and temperature up to 105° F. They recurred during about five hours, after which he was quite well. He had never had any fits before.

(b) Ten Cases with Retarded or Incomplete Recovery.—The after-effects were various, mental deterioration, the Parkinsonian complex in varying severity, paraplegia, muscular jerking, &c.

Case 21, a middle-aged man, had to be sent to an asylum for a time. He recovered quickly and completely and is now back at his work as manager of a large business. Case 28, also a middle-aged man, began with pulmonary tuberculosis a few months after his attack. Case 34, a girl, aged 21, was very difficult to manage for many months, being violent and quarrelsome, but eventually improved. Two younger girls (Cases 20 and 35) seem permanently damaged in mentality. One of the cases with the Parkinsonian syndrome (Case 44), a man, aged 39, shows extreme festination, and especially retropulsion. He is an exceptionally powerful man and the combination of this with the plastic tone of paralysis agitans forms a very striking clinical picture. In a young married woman, aged 26 (Case 30), the plastic tone is limited to the right arm and leg. The contrast between the posture of the right and left hand when at rest is characteristic. It is also well shown by getting her to approximate the tips of the fingers and thumb tightly in each hand, and at a signal to extend the fingers and thumb of each hand as quickly and as forcibly as possible. Those of the left hand shoot out to the full extent immediately, whilst in the right hand the movement lags behind and cannot be completed to its full extent. With this she has a typical mask face. Case 32 showed the neuritis type; there was complete flaccid paralysis of both legs, which occurred five weeks after the initial lethargy and cranial nerve palsies. The paraplegia did not disappear for six to eight months.

#### Group 3.—Eleven Fatal Cases.

One of these (Case 17) died from epidemic influenza six months after his attack of encephalitis. He was the patient referred to in MacNalty's report (loc. cit.) as an instance of prodromal vertigo.

CASE 17.—M., aged 22, admitted May 21st, 1918, complaining of dizziness; a few days later it became much worse, accompanied by diplopia, dysphagia, and regurgitation of food through the nose. Lethargy then set in and persisted for some time. Ophthalmoplegias, right facial palsy, hypoglossal paralysis, and aphonia appeared at various times. Wassermann reaction negative (blood and cerebro-spinal fluid). Lumbar puncture, pressure slightly increased; fluid clear; no growth. Eventually he was left with a well-marked paralysis of the right sixth and seventh nerves, marked hemiataxia, loss of posture sense of right arm and leg so that he could not walk alone, and delayed and diminished sensibility of left arm, trunk, and leg, but not of the face.

He remained in hospital during the next six months, and his condition showed no change. In November, 1918, he became infected with an acute attack of epidemic influenza, which was then at its height, and died three days later. At autopsy a typical influenza pneumonia was found. The brain was examined by Dr. J. G. Greenfield who found "an area of softening in the right inferior peduncle of the cerebellum and the neighbouring part of the floor of the fourth ventricle. Above and below this there are some vessels which show excess of cells in their walls, but only such as would indicate the reparative processes which are going on."

In the remainder of the cases death was, so far as one can tell, due directly to the disease. In several of them circumstances did not permit of autopsy. One man (Case 25) began with double parotitis simulating mumps. Two of the cases (37 and 39) occurred within a few weeks of each other, and presented many features in common. Both were big muscular men, who appeared to be in robust health at the onset of illness; both had been walking about up to the time of admission to hospital, and the attacks did not then seem likely to prove very severe. Both got steadily worse day by day, with rising temperature and pulse, and died without any fresh development. In one of these old foci of tubercle at both apices showed recent activity. These cases will be referred to later. In both, typical changes in the central nervous system were found after death. Case 26 is the only one I have seen of the severe myoclonic type. As will be noted from the history, she was admitted in December, 1916, six months before Boveri's account of this type was published. At the time I did not recognise its nature. No autopsy was allowed.

CASE 26.—Severe pain over left side of head; violent clonic spasms of neck and later of arm muscles; delirium; death. A married woman, aged 35, was nursing her son who was ill with scarlatinal nephritis. I saw her on Dec. 16th, 1919. She had been quite well until three days before, when severe pain began behind the left ear and over the left forehead. Next day it reached the back of the neck, and was accompanied by violent painful clonic contractions of the neck muscles. They persisted for two days. The pain then reached the arms and thighs. Insomnia. She was admitted into the Royal Hospital on Dec. 17th, and was then dazed and confused but responded to questions. Temperature raised; no Kernig. On the 18th she was drowsy, restless at times, and trying to get out of bed. Lumbar puncture; increase of pressure; fluid clear. Speech was explosive like an insular sclerosis. She became violently delirious and the temperature rose irregularly to 106° F. just before death on Dec. 20th. Fundi not examined.

The lumbar pressure was increased considerably, as it was in Carnac's<sup>7</sup> case and slightly so in Phillips's,<sup>8</sup> and in the second of Boveri's<sup>9</sup> cases.

Table Showing Duration of Fatal Cases.

No.	Sex	Age	Date of—			Duration of disease—	
			Onset of ill-health	Definite symptoms	Death	Onset	Definite symptoms
25	M.	45	1 or 2 w. before	Oct. 11/19	Oct. 24	3rd or 4th w.	14th d.
37	M.	30	2 w. before	Oct. 6/20	Oct. 17	4th w.	12th d.
39	M.	36	Dec. 1/20	Dec. 1/20	Dec. 20	21st d.	21st d.
26	F.	35	Dec. 13/19	Dec. 13/19	Dec. 20	8th d.	8th d.
33	F.	1½	Some d. before	Aug. 7'20	Aug. 28	? 4th w.	21st d.
41	F.	3	About 1 w. before	Jan. 25/21	Feb. 14	? 4th w.	21st d.
35	M.	5	About 1 w. before	Sep. 23/20	Oct. 8	3rd w.	15th d.
31	F.	41	Jan. 21/21	Jan. 21/21	Jan. 28	8th d.	8th d.
42	M.	60	Apr. 10/20	Apr. 10/20	Apr. 23	14th d.	14th d.
45	F.	31	May 11/21	May 11/21	June 25	46th d.	46th d.

w. = weeks; d. = days.

Three cases in infants (33, 35, and 41) presented many features in common, simulating, more or less, cases of meningitis. In two there was hemiplegia. No autopsy was allowed in any of them. One of them (Case 33, aged 2 years) lived in a small isolated village where no other case occurred before or since. The child had not been outside the village at any time.

The table shows the duration of fatal cases.

### Treatment.

Is bed the best place for very lethargic cases with no other marked symptoms? It is the natural thing as soon as encephalitis lethargica is recognised to send the patient to bed. In some cases this may be necessary for other reasons—vertigo, hemiplegia, extreme asthenia, &c.—and then there is no choice; but in other cases the patient is quite capable of getting up, and indeed has often been doing so up to the time of being seen. This was so in two of the fatal cases recorded above (Nos. 37 and 39); they did not take to bed until coming into hospital. Would the course of the illness in these patients have been more favourable if they had been allowed to continue getting up, and, indeed, urged to do so? Such cases may continue to go about in spite of their extreme lethargy and may recover. Albruzzette<sup>10</sup> records a case in a man, aged 44, so lethargic that he fell into a profound sleep whilst talking to his doctor. His sleepiness was intense. Symptoms lasted 20 days and then cleared up. This patient never lay up during the whole period.

We may contrast this with my two cases or with another case reported elsewhere in 1920 in which lethargy was the chief symptom. This man was going about for the first seven days, and was then first seen by his doctor who, diagnosing the disease, insisted on him going to bed, which he did. He died ten days later without anything further of a definite kind developing. I realise that it is characteristic of many of these cases to begin insidiously; the patients therefore continue going about for the first part of their illness, whilst this is often impossible in the third or fourth week. The question I would raise is whether the possible harm which may arise from allowing a lethargic patient to be up each day is greater than the undoubted risk of putting an extremely lethargic person to bed, where he lies like a log hour after hour and day after day. As regards actual treatment, I have not found anything give beneficial results with sufficient constancy to call for notice.

### Infectivity.

Nothing amongst these cases has indicated direct or indirect infection. It is interesting to note that epidemic influenza does not protect against encephalitis or vice versa. Case 17 died of influenza in November, 1918, six months after having encephalitis, whilst Case 22 had severe influenza during the epidemic in November, 1918, and a typical encephalitis lethargica in January, 1919.

### After-History of Cases.

Nearly four years have elapsed since encephalitis lethargica was recognised as a distinct entity, and it is now possible to form some idea of the extent and frequency of permanent trouble which it leaves behind. I have given the after-results of the present 30 cases. In order to complete the series, I have also made inquiry about the 16 earlier cases recorded in the Proceedings of the Royal Society of Medicine, October 1918. Of these, only three had any symptoms left at that time. Their further history is as follows: Case 7 was an old lady of 70, still living in May, 1921; her medical man assures me that she has completely recovered and is as well as ever she was. Cases 4 and 16: Both showed polyneuritic symptoms with flaccid paraplegia, which was considerable in October, 1918—i.e., about six months after onset. Of these, Case 16 has made a good recovery. He is able to do general labouring work on the pit-top and can walk several miles without undue fatigue. Case 32 (vide supra) showed an equally good recovery after paraplegic symptoms of several months' duration. It is therefore rather surprising and disappointing to find that the third case of this type (Case 4 of the original series) has not recovered after three years. I think, however, that there is a possible explanation. I have not been able to see him since he left hospital in 1919; he writes that "he tried to walk about a little, but had to give it up as it used to give him such pain in his head and all up his back." He is in receipt of a pension.

*Effect on Pre-existing Tuberculosis.*

Case 37 died with a steadily rising temperature about the fourth week from his first symptoms. Previous to this illness he was on full duty as a police constable and had been in good health. At autopsy old foci of healed tubercle were found at the right and left apices with acute depositions of miliary tubercles for a small area around. This was not suspected during life, although I remember that he developed a troublesome cough whilst in hospital. He was one of the very lethargic cases with very few other signs. It seems probable that the renewed activity in the tuberculous foci had begun during his attack of encephalitis.

A similar awakening of old tuberculosis occurred in Case 28, who had a typical rather severe attack of encephalitis, from which he slowly recovered. Within a few weeks he had severe hæmoptysis and pulmonary symptoms followed rapidly. The third case, in which tuberculosis developed as a widespread disseminate lupus, is full of interest and will be recorded in full later. In this respect it is worth noting that most of the recorded cases of disseminate lupus have followed infection by measles; pulmonary tuberculosis is also a not uncommon sequela of this disease. Whether it is also a common sequela of encephalitis lethargica remains to be seen.

*Prognosis.*

I had hoped to conclude this paper with some general deductions on prognosis; but the more I consider the cases in detail the less do I feel that such generalisations are as yet possible. I agree with Bramwell<sup>11</sup> that a steadily progressive stupor with rising temperature and loss of sphincter control is ominous, though not necessarily fatal, but by the time that stage is reached the gravity of the case is obvious. In the early stages uncertainty as to the future of most cases is one of their most characteristic features. Even during the progress of the case it is often impossible to form an opinion as to the prospect of recovery. If one compares it with other acute specific infections it is apparent that signs upon which we can usually rely in them for prognosis are often not forthcoming in cases of encephalitis. Patients with comparatively mild attacks recover only to be seriously damaged for very long periods, even permanently. Others who have appeared in the early stages to be at death's door recover quickly and completely, whilst still others whose illness has seemed moderately severe for one or two weeks suddenly become worse and die without any obvious reason why they should.

The more cases one sees the more anxious does one feel as to the future of any case, however mild its onset or progress.

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## DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.—

The annual meeting was held in the Liverpool Town Hall on March 3rd. Mr. W. H. Dulton, the chairman, stated that in the past year the number of out-patients had increased by 1000. New expenditure was contemplated next year in the renewal of the heating system and in the opening of a ward for diseases of women and for obstetrics. He appealed for a greater measure of support from the wage-earners of the city, who benefited chiefly from the work of the hospital. As chairman of the joint committee, appointed under Lord Cave's scheme for Liverpool, he felt that much might be done by combination and coöperation between the hospitals. If they would coöperate in several directions, such as in buying or seeking subscriptions, there could be little doubt that the community would greatly benefit. Mr. J. Wedderburn Wilson, the hon. treasurer, submitted his accounts, which showed an excess of expenditure over income of close on £3000. He mentioned that £2336 had been received from in-patients.

## THE HYSTERICAL NATURE OF SO-CALLED PERNICIOUS VOMITING OF PREGNANCY.

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As vomiting occurs in more than 50 per cent. of women in the early weeks of pregnancy, it can be regarded as physiological. In about 1 case per 1000 in hospital patients, and rather more frequently in better-class practice, vomiting occurs after every meal and even apart from meals, and persists longer than the usual period of six or eight weeks. It is then referred to as "the pernicious vomiting of pregnancy." The classification of "pernicious vomiting" suggested in 1906 by Whitridge Williams has up till now been widely accepted. The first or reflex class consists of those cases in which some obvious organic condition is present, which could give rise to vomiting by reflex action, just as reflex vomiting may occur in appendicitis. Apart from this rare and comparatively easily recognised form, pernicious vomiting is regarded as either nervous or toxæmic. It is generally agreed that the only means of diagnosing between these two forms is by estimating the ammonia index of the urine, as this is regarded as a measure of the toxæmia present. The index represents the percentage of the nitrogen present in the urine as ammonia, and depends to a large extent, though not exclusively, on the quantity of acids produced as a result of disordered metabolism. The normal index varies between 3 and 5, but it is a little higher in pregnancy, the average being 5.9. According to Whitridge Williams, if it exceeds 10 per cent. a diagnosis of toxæmic vomiting can be made with certainty. If the ammonia index is not raised, the condition is supposed to be nervous; no other means of diagnosis are suggested, the symptoms being indistinguishable.

*Usual Treatment of Nervous and Toxæmic Forms.*

The nervous form of pernicious vomiting is described by Whitridge Williams as due to "some neurosis allied to hysteria"; the vomiting is treated by isolation, forced feeding, encouragement, and such drugs as bromide. If these measures fail, the diagnosis is altered, as it is then known that the ammonia coefficient will certainly rise sooner or later. Ever since the discussion in the Academy of Medicine of Paris in 1852, when Dubois advocated the artificial termination of pregnancy for the treatment of pernicious vomiting, because of one recovery in four cases in which this was done, whereas all of his ten other cases died, this has become the accepted treatment for the condition. The moment for emptying the uterus has generally been decided by the severity of the vomiting, the degree of emaciation, the dryness of the tongue, the condition of the pulse, and so on. Whitridge Williams, however, recognising that these symptoms did not help in diagnosing toxæmic from nervous vomiting, laid down the law that an increase of the ammonia coefficient to 10 per cent. "affords an urgent indication for the prompt termination of pregnancy," as death otherwise invariably occurs within a few days. When a laboratory is available, in which the necessary investigations of the urine can be made, this chemical indication for emptying the uterus is now generally adopted.

*Argument for the Hysterical Origin.*

For several years I have believed that pernicious vomiting of pregnancy is always hysterical.<sup>3</sup> Discussing the question with obstetricians, I have almost invariably been told that they recognised a nervous type, and that cases cured by psychotherapy must have been "nervous," as toxæmic cases would never respond to such treatment. I have now had a patient under my care in circumstances which for the first time made it possible to prove with certainty that the case was one which would generally be regarded as