SOME CASES OF EPIDEMIC ENCEPHALITIS
IN GENERAL PRACTICE.

by

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INTRODUCTION.

A period of comparative quietude that has super-vened on the active engagement in general practice, for somewhat more than a decade, is perhaps the provocative stimulus that has produced this essay.

A fairly extensive supply of patients in a large industrial town has brought before the notice of the writer most of the commoner maladies to be encountered in the course of everyday practice, and a number of other affections of greater or lesser rarity in the several branches of the profession—medical, surgical, and obstetric.

A description of some of the unusual conditions, striking enough to imprint their salient characteristics on one's memory, assisted by some surreptitious notes and observations taken in the course of treatment and elaborated at a later period by reference to recent accessible investigations will form the subject matter of this theme.

In the light of these researches a comparative study of the cases or group of cases will be made, and it would be almost a presumption to attempt anything more, with the opportunities available than a superficial/
superficial criticism of them.

It is the writer's hope that this will be approved as satisfactory for the specific purpose for which it is written.
CASE I. The first of the series came to my notice on the night of the 12th Sept. 1919. I was called to see Mrs T., age 35, and found her in what appeared at first to be a semicomatose condition, recumbent on a couch. Her illness according to the statement of her relations began three days previously with headache and vomiting. She was able to answer questions only on being roused and on being spoken to in elevated tones. Her intellect was dull, her speech slurred, but her only complaint was headache. Her pupils were contracted. I was at first inclined to think it a case of alcoholic intoxication, but for the emphatic statement of those around, that the condition had been in existence some days. I thought from what I took to be drowsiness rather than coma, as I proceeded further with the examination, and from the contraction of the pupils, that it might be a case of opium poisoning in the early stage, or of a mild degree, though the odour of the commonest preparation was not evident; the locality of her residence was one in which some of these sordid incidents of life were not of infrequent occurrence. Twelve hours would in my opinion have been ample time for some recovery, and/
and I was surprised on visiting her the next day to find her in the same condition. For three or four days subsequently she grew worse; it became more difficult to awaken her, and her only complaint when she could be forced to speak was that her headache was aggravated; pupils remained contracted. There then began evidence of drooping of the upper lids. As time went on it was obvious that the illness was an alarming one and she ultimately passed into a state of coma. This would be a fortnight after my first attendance. Some eight days elapsed when consciousness gradually returned; she could answer questions, voluntarily move her limbs, her headache diminished, but a most distressing subjective symptom remained: her own words, expressive of her sensation after a critical illness, were: "I feel all right but I cannot open my eyes". This was in part due to the lethargy which still persisted, for she would reply only after being spoken to loudly and sharply, and showed no inclination, though her replies were relevant, to continue a conversation; and in part due to a double ptosis.

For a week or so no progress was to be observed except that she seemed to develop an inordinate appetite. The return of mobility in the upper lids was/
was an indication of approaching recovery and it was then observable that she developed a paralysis of the right external rectus; and lateral nystagmus in both eyes; it was also evident that she had slight bilateral facial paralysis. After an illness of more than a month's duration she got up weak and emaciated and ataxic in her movements.

Her temperature was never above 100; no albumin in the urine. Never any sign of bronchial or pulmonary complication.

The unusual physical signs and symptoms of this case made it plain that I had before me a disease of an unusual character; though no written notes were made in the period of treatment the outstanding facts were well remembered through having discussed the case with a friend staying with me at the time and making soon afterwards some observations in writing when my attention was directed to descriptions in the press - both medical and lay - of similar affections.

The patient has improved as far as I am aware, to a state of practical recovery. She has had a successful child birth since the illness; the ocular paralysis is still slightly present, and the drooping of the lids just perceptible.

The/
The symptoms and physical signs seem compatible with a lesion in the mesencephalon; in the region of the Sylvian aqueduct as it has apparently involved the nucleus of the 3rd nerve; the somnolence suggests an inflammatory disturbance in the Corpora Quadrigeminal area, where tumours or inflammation obstructing the iter and causing a hydrocephalus are known to produce that particular clinical phenomenon. (Buzzard).

The involvement of the 6th and 7th nerve may be accounted for by a dissemination of the infective agent (the disease is generally thought to be due to a causative organism) amongst their nuclei in the pons.

CASE II. The next case that came under my care was that of Mrs D., aet. 52, who consulted me at my rooms in the first instance for a feeling of malaise and exhaustion; after two or three attendances I was called to see her at her home on 20th April 1920 and found her suffering from severe headache, photophobia, nausea, and neuralgic pains; the first suggestion was an influenzal attack of moderate severity. Temp. 101. P. 80. She was subject to bronchitis and this condition/
condition was present but by no means accentuated and was never complicated by pulmonary involvement as is customary in the recent influenzal affections.

On 26th her mental condition showed signs of torpor; a question met with a rational but tardy response; on 28th her upper lids began to droop; and the patient showed signs of sleepiness; a great effort being necessary to draw her attention or procure a reply which was rendered in a languid slurring fashion. The pupils were contracted, and reacted slowly to light. Knee jerks not affected.

Drowsiness continued for a week, at the end of which time it abated somewhat; the patient sat up in bed and got downstairs; two days later, on 7th May, the lethargy again returned; she complained of falling to sleep at meals; on 8th I found her sitting in a chair in a somnolent state. She was roused on being loudly addressed, answered listlessly and returned to her sleepy state; she went back to bed, drowsiness passed on to coma from which she could not be awakened and death occurred three days later.

Urine:— No abnormal constituents. Slight nystagmus, no squint.

The case presented similar features to the one previously described, with somnolence and fever its principal/
principal phenomena, differing from it in the slight 3rd nerve disturbance of function; the period of remission, an exaggerated return, and a fatal termination.

It has been stated that "there is some difficulty in correlating the clinical phenomena (of some of these cases of Encephalitis Lethargica) with what is known of the morbid anatomy of the disease", so it would seem that an attempt at localising the area of infection in the brain except by Post-mortem methods is hardly more than a speculative procedure; but from what is apparently the involvement of the 3rd nerve nucleus in this case I would establish the lesion in the same district as the preceding example with a further diffusion into the floor of the 4th Ventricle and the nuclei there, where a derangement of function ended in dissolution.

CASE III. A girl C., aet. 14. I was called to see her and found her in bed complaining of headache on 10th May 1920. Temp. 100. Pulse 82. Dull in appearance. Tongue furred. Here again a diagnosis of Influenza was suggested. 11th - 13th May - no change. 14th - pupils contracted, patient drowsy, still headache; no Babinski, no/
no tache cerebrale, knee jerks normal; not inclined
to reply to simple questions. 17th. Internal squint
came evident, nystagmus present. 20th. Drowsiness
passed on to coma. The case corresponded with the
typical clinical examples described by Netter as
possessing three cardinal symptoms - fever, somno-
rence, ocular palsy. Death occurred on 22nd.
Seemingly a mesencephalic lesion spreading through
pons to medulla. No Pulmonary complication.

CASE IV. Young man, aet. 20., called at my consult-
ing rooms on 20th Dec. 1920 with his mother
who complained that for a week or so
"he had no life in him". He paid a second call on
27th with no progress to report. On 6th Jan. 1921
I was called to his house. After the experience of
the three preceding cases it was a simple matter to
form an infallible diagnosis in this case; it had
become possible in the interval to look up some
current literature on the subject and with the
assistance of a colleague I was able to record a few
more clinical observations.

The striking feature of this case was Rigidity,
which manifested itself among other places in the
muscles/
muscles of the face and gave him an inane expression, and an impassive countenance; this facial characteristic the disease shares with Paralysis Agitans. The patient complained of headache, inability to stand, loss of appetite. Temp. 99. Pulse 80.

Present:— Babinski's sign, ankle clonus, knee jerks exaggerated; supinator jerk; wrist jerk; triceps jerk; muscles of abdominal wall went into violent contraction on slight stimulation; so also those of the buttock and back:— glutel latissimus dorsi; trapezius; pectoral muscles; trismus.

I got the patient to try to walk and he did so with the stiff mechanical gait suggestive of a case of chronic tetanus (La Poupée gait) a universal muscular hypertonus, including facial, abdominal, pectoral, nuchal muscles, and those of the extremities. About a week after my first visit he showed symptoms of somnolence, double ptosis and nystagmus.

I found him asleep every day I called, and his mother informed me that now at all events he slept also at night; his condition resembled in some respects the first two cases described. — a slow reply to questions, a return to sleep before the answer was complete. The patient had to be aroused to take his food and sleep would follow the conclusion of a meal. Having had two deaths in three cases, and reading of the high/
high mortality attributed to the disease, I sought the consultation of a Medical Officer from the Ministry of Health (the patient being an insured person) who diagnosed the condition at first sight; the object was to have him removed for what I thought would be more advantageous treatment at some institution. The patient refused to go and remained under my care to the end.

I now decided to take a specimen of his Blood and Cerebrospinal fluid, having them examined by the Laboratories of Pathology and Public Health who report as follows:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Number of white cells = 250 per ccm.</td>
<td>7000</td>
</tr>
<tr>
<td>Differential count of 300 Leucocytes:</td>
<td></td>
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<tr>
<td>Small Lymphocytes = 29.0) 37.0</td>
<td>30</td>
</tr>
<tr>
<td>Large Lymphocytes = 8.0)</td>
<td>8</td>
</tr>
<tr>
<td>Polymorphonuclears = 60.0</td>
<td>60</td>
</tr>
<tr>
<td>Eosinophiles = 2.7</td>
<td>2</td>
</tr>
<tr>
<td>Mast Cells = .3</td>
<td>0.0</td>
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<tr>
<td>100.0%</td>
<td>100.0%</td>
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</tbody>
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No abnormal features were observed during the count.

Note: - There was a clot in the bulb of the pipette therefore the total number of cells is probably underestimated. The films were received on slides/
slides stuck together. They were consequently very uneven and only a small area was suitable for counting.

(Sgd.) H.L.B.

Laboratories of Pathology & Public Health, 6 Harley Street. W.

Cerebrospinal fluid.
Total cells = 5 per com.; there were not enough cells to do a differential count.
No meningococci or other organisms were seen in the film. Globulin increase test positive. Reaction obtained in dilution of 1 in 2. Lange's Gold test is negative (0.0.0.0.0.0.0.0.0.0)

(Sgd.) H. McL.

Laboratories of Pathology & Public Health, 6 Harley Street. W.

There is as a rule no remarkable change in the blood in this disease, but in this case there is marked leucopenia which has been attributed to an error in preparation and transmission; the proportion of cells in the differential count shows no marked alteration from normal.

The specimens were taken with attendant difficulties and while the results of the Blood Examination are unfortunately liable to question, those of the Cerebrospinal Fluid are, I think, accurate enough.
The case now became a chronic one, the lethargy alternating between periods of remission when the patient would sit up for a few hours and take a lively interest in things around him, then drop asleep again, and periods of aggravation in which the sleep would last the entire day. A curious feature a little later was nocturnal wakefulness, when he became somewhat troublesome to other inmates of the house; at which time he had an extraordinary craving for cigarettes.

4th March:— Muscular rigidity gradually passing away; appetite fair; sleeps for about an hour during the day. The lethargy in this case never approached coma; for at the height of the disease his judgment and power of discrimination was quite good, as evidenced by his definite refusal on several occasions to be removed from home.

12th March:— Patient got out of bed three days ago; and is now walking about; greatly reduced in size; cheeks sunken. Muscles very much wasted; completely emaciated; a slight paralysis of both external recti; nystagmoid jerkings of the eyeballs; most marked at the end of an attempt at co-ordinate movement of the eyes.

Never any Bronchial or Pulmonary complication. His/
His recovery now 12 months after is fairly complete; his sleep is I understand normal. There is however some absence of alertness in his mind, and his former employer has dispensed with his services.

It would appear that the pathological change here was of an inflammatory nature, not very acute, spread over the cortex perhaps; at all events the mesencephalon; in the grey matter around the iter; and perhaps in the substantia nigra. The pyramidal tracts seem also to have been affected.

A curious incident in the course of his illness was that on the 18th March I was called to attend a younger brother; he was taken seriously ill with headache and acute pain in the epigastrium and left hypochondrium. Tenderness on pressure and nausea. Temperature 100. The symptoms suggested an acute catarrhal condition of the stomach but were not severe enough to warrant the diagnosis of perforated gastric ulcer. He also had a somewhat drowsy appearance.

I called the next day to find that he was dead an hour or so before my arrival. Of rapidly fatal cases I have seen no very definite record. The mother informed me that about 10 o'clock the previous evening/
evening (the day of my first attendance) he was somewhat brighter than in the morning for a couple of hours.

"C. Masseri has observed six cases of encephalitis in which the clinical picture was at first dominated by abdominal symptoms. Several of these cases were sent to hospital as abdominal emergencies and in one case laparotomy was performed."

While not inclined to consider this case in the series I think it is worthy of mention for the following reason:—the relationship between Encephalitis and Influenza will receive further consideration; but my recollection of the first case of the latter disease (my first of about 10,000) in the epidemics of 1918 and 1919, is that I was called to see a girl of 16 with symptoms similar to those described above; she had been to a party in the country on the previous day; her illness began about 5 a.m.; I saw her about 11 a.m.; she died at 2 p.m. The condition was to my mind a case of ptomaine poisoning, or a perforated gastric ulcer. I did not feel justified in giving a certificate and so notified the coroner. The autopsy was conducted by a highly qualified and competent local practitioner who gave the cause of death as Influenza. No evidence of ptomaine poisoning, no breach/
breach of continuity in the intestinal tract. The epidemic was in its initial stages, and it would seem that this was one of those erratic cases that occur at the beginning or end of a prevalence.

A week after this the father also took ill and was confined to bed for three weeks with pains in the limbs and back, severe asthenia which lasted six weeks without any very definite cause. Urine:—no abnormal constituents.

McNalty describes mild or abortive types of the disease with or without localising signs in the central nervous system, though he says they are extremely rare. Buzzard mentions two cases in the same family; other instances of a plural incidence in the same household are mentioned by De Laroche (Paris Med. 25th Sept. 20) and Levy (Bull. de Paris 15th July 20).

CASE V. I saw this man on 12th April 1921. His wife told me he was quite well up to a month previously when he had an attack of Influenza that lasted for a fortnight. Temp. 99. Pulse 84. He recovered sufficiently to go about but lacked his former energy, remained dull with a tendency/
tendency to fall asleep at any period of the day; the persistence of this symptom caused some alarm, and she called me to see him. I found him sitting in a chair with a facial resemblance to that of Case IV; general muscular hypertonus, exaggerated reflexes; in his case the mental condition was distinctly affected; to every question there was a bland smile and an irrelevant reply, labored, and ending in sleep. His pupils were contracted and reacted sluggishly. But for the clinical symptoms a cursory examination would have suggested a case of General Paralysis but I had seen him about six weeks previously in good health and vigor. No pulmonary complications. The state of somnolence passed into coma and he died two days after. A lumbar puncture was made and a specimen of blood taken.

No sugar, no albumin in urine; no heart lesion; he had extensive arteriosclerosis. Nystagmus and double ptosis. Report on Blood and Spinal fluid as follows:-
Blood.

Number of white cells of mixture as received = 14,000 per ccm.
Normal 7000.

Differential count of 300 white cells.

<table>
<thead>
<tr>
<th>Cellular Type</th>
<th>Percentage</th>
<th>Normal</th>
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<tbody>
<tr>
<td>Small lymphocytes</td>
<td>18.3%</td>
<td>30.0</td>
</tr>
<tr>
<td>Larger lymphocytes</td>
<td>4.4%</td>
<td>8.0</td>
</tr>
<tr>
<td>Polymorphonuclears</td>
<td>75.3%</td>
<td>60.0</td>
</tr>
<tr>
<td>Eosinophiles</td>
<td>0.6%</td>
<td>2.0</td>
</tr>
<tr>
<td>Mast Cells</td>
<td>1.4%</td>
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The red cells appeared normal in size and shape and abnormal cells were not seen.

Cerebro spinal fluid.

Cytological examination shows the number of leucocytes per ccm. to be nil.

No bacteria were found in a gram stained film from the centrifugalised deposit.

Globulin increase test = Strongly positive, giving a reaction in a dilution of 1 in 7.

(Sgd.) H.L.B.

Laboratories of Pathology & Public Health, 6 Harley Street. W.
CASE VI. I saw this case by proxy for a colleague on holiday. A woman (an insured person) left work in April with Influenza; went to bed in first week in June with headache as chief symptom, vomiting, delirium, could not be kept awake. I saw her in the second week in June when she had an internal squint on left side; lateral nystagmus; double ptosis. In her case too there was muscular hypertonus for according to her mother's statement in the first few days of her illness "she went stiff and her legs and arms were jumping". I had not an opportunity of observing this case throughout its history but took it to be one of this group of conditions, and on the return of the practitioner in charge, he agreed with my diagnosis and notified the case as one of Epidemic Encephalitis. (All the cases here described except the first were notified to the local authority). I saw the woman in December, and found the strabismus persistent, with nystagmus, hesitant speech and a slight ataxic gait.

This case I have included in my series because it shows a definite symptom not exhibited in the others - a stage further than rigidity. The frequency of this symptom in recorded cases led to the adoption of a separate classification for the group of instances/
instances where it occurs - the myoclonic variety.

In this case the disease seemed to have been limited in its area of incidence; apparently being restricted to the upper part of the mesencephalon around the aqueduct and possibly affecting the Substantia Nigra and Crusta as is commonly stated to be the case.

CASE VII. Boy, aet. 13. Mother said he was quite well the night previously; went to bed singing and whistling as usual. I saw him at 10 a.m. lying on a couch in a state of stupor; he could be awakened to protrude his tongue; he had complained of headache; he was slow in answering though he was usually a bright boy and perfectly healthy; tache cerebrale present, knee jerks slightly exaggerated; Babinski slight. Pupils contracted; slow reaction. There was a history of a fall two months before; this circumstance was to my mind hardly causative either directly or otherwise of the boy's condition; but I was able to use it at a later stage to some advantage. I thought the case an interesting one of Epidemic Encephalitis and asked my colleague to see him an hour later; he did so and concluding likewise called at about 4.30 p.m. to take/
take a specimen of blood and spinal fluid; but found the patient dead.

I considered the case a fulminant variety of the disease, a very violent toxic condition, which it appeared to be on further examination.

The history of the fall was a subterfuge for a post-mortem, for which permission is very difficult to obtain under ordinary circumstances and it was performed by me by order of the coroner.

(Out of 127 cases 9 had a history of injury to the head. Hamer).

Result.

No sign of disease in thoracic, abdominal, nor pelvic organs.

Lumbar Puncture:- 15 cc. of almost pure blood aspirated; a second puncture produced the same result.

Brain:- There was dilatation and engorgement of the vessels of the pia, and numerous small haemorrhages under the pia in the whole extent of the cerebrum and cerebellum. On detaching the brain below the medulla and examining the under surface the same condition was to be observed. The whole brain was abnormally soft to the touch.

On section, when the ventricles were opened one large clot was found in the body of the ventricle extending/
extending up the anterior and down the posterior and descending horns, the condition apparently corresponding with the state of affairs in the spinal canal; on lifting up the clot the lining of the ventricle was torn in parts, giving the impression that the hemorrhage came from the choroid plexus which was bleached in appearance. (P. Guizetti describes a fatal case of hemorrhagic encephalitis. Giorn. di Clin. Med. March 1920; German Pathologists have also described cases of hemorrhagic encephalitis).

There was softening, necrosis of all the tissues in the walls of the ventricle, notably the caudate nucleus and optic thalami of both sides with small hemorrhages in their substance; possibly the result of "vascular occlusion" as described by Greenfield.

An attempt to take away the brain for more careful examination was defeated by the watchfulness of the mortuary attendants, with the objection that "it might do some harm if it got about"; still with the obsession that the situation most implicated is usually the mid brain, pons and medulla, from the frequency with which these parts are associated with the lesion in the majority of the written descriptions of the pathology of the subject, this portion with the cerebellum was detached (with the tacit consent of the custodians) and sent to be prepared for microscopic/
microscopic sections.

Description: The changes seemed to correspond with those described in the literature of the pathology of the disease; the preparations were stained with Eosin and Haematoxylin. There is dilatation of the blood vessels, most marked in the pia, evident also in the vessels of the brain substance; extensive sub-pial haemorrhage and haemorrhages here and there in the tissues of the brain.

The walls of the vessels show much thickening, oedematous or hyaline in appearance. In the vicinity of the vessels (peri-vascular lymphatics) there is extensive lymphocyte infiltration; slightly evident in a specimen from the medulla; more marked in two from the pons; and not so intense in two from the crus. In all the specimens the brain tissue (lymph spaces) shows this infiltration with the same variations in intensity.

The nerve cells seem to show gradular changes.

Netter, Hibbac and others have stated that the virus of encephalitis like rabies, is present in the salivary glands even of healthy contacts, sialorrhoea being one of its multiform symptoms. Levaditi and Harrier drew attention to the existence in/
in the saliva of a normal person of a virus capable of giving rise to Acute Encephalitis in the rabbit. A swab of mouth and pharynx (p.m) was taken from this case; the result of the examination was: "growth of staphylococci and streptococci on culture".

On the cerebro spinal fluid the report is as follows:

**Cerebro-spinal fluid.**

The specimen consists mostly if not entirely of blood.

**Microscopical Examination.**

The proportion of white cells present is not excessive, as compared with that of the red blood cells present.

No bacteria were found.

**Cultural Examination.**

A scanty growth of a staphylococcus was obtained. On account of the large proportion of blood present it is impossible to form any conclusion as to the presence or absence of meningitis. If the specimen contained any considerable proportion of cerebro-spinal fluid the absence of any definite excess of white cells is against a diagnosis of meningitis. The few staphylococci found were very likely the result of post-mortem contamination.

(Sgd.) G.D.D.

Public Health Laboratory,
Manchester.
A subcutaneous and intra-corneal injection was made on a rabbit in my possession; the experiment was as illegal as it was crude; the result was negative as regards clinical symptoms for over four weeks; in keeping however with the negative and inconclusive results obtained by a number of authorities who did not succeed in inoculating rabbits with cerebro-spinal fluid of undoubted cases of Encephalitis. Death in this case seemed to be due to a virulent toxaemia.

Three definite symptoms occurring regularly in the cases described above - fever, lethargy and ocular palsy - mentioned in the order of their occurrence have sufficed to get this condition separated clinically at least as a disease from a number of other conditions, some analogous like influenza, others entirely different, like tumors of the mesencephalon, cerebro-spinal syphilis and hemorrhage; in these the phenomena do not occur in combination or series and have other distinguishing features; the characteristic syndrome - somnolence - has given this type of inflammation of the brain the name in common use and first invented by Economo-Encephalitis Lethargica - in this regard a great deal of/
of controversy has arisen, but using the term encephalitis as a generic expression to indicate the seat of the disease (spinal manifestations are recorded in the literature but they seem either doubtful or rare and secondary), the striking appearance and frequency of this form seems to justify the attribute coupled with it as a useful clinical classification.

CASE VIII. The last of the series is that of a woman, aet. 56, who called at my rooms in Sept. 1921. She gave a history of "influenza" two months before; a contracted pupil reacting sluggishly to light on the left side and coarse tremors and involuntary rhythmic movements of all the fingers of the left hand, left knee jerk slightly more responsive than right, diplopia, slight ptosis. The movement of the hand occurred only at periods of inactivity and on making an effort to use the hand, either diminished considerably or entirely disappeared. Right eye showed no changes in fundus. Left eye slightly choked disc. Nystagmus, speech hesitant and slurred. Wasserman was negative. She has been under treatment for five months but shows/
shows no sign of improvement. The case differs from the rest of the group in the absence of lethargy and seems to belong to the milder or ambulant variety with occular and irritative symptoms.

The interest of this type of cases in general practice lies principally in the recognition of their clinical appearances; it becomes of vital importance to the patient that such a disease where the prognosis seems on the whole unfavourable and the treatment so far empirical, should be differentiated in its early inception from conditions like cerebrospinal syphilis, tetanus, haemorrhage, opium or alcoholic poisoning, etc. for some of which there are established and efficient methods of treatment with an assurance of successful recovery when an opportune diagnosis is made.

Eight cases have come under my observation; four have terminated fatally. Of the remainder, Case I has made the most satisfactory recovery. In two others, IV and VI, sequelae in the form of persistent occular palsy are present; they are both mentally slow and not able to concentrate their attention. Case VIII is still under treatment for what seems to me to be a permanent disability.
Buzzard says "many of the palsies arising from this disease are undoubtedly permanent ....... on the other hand my experience leads me to think that the involuntary movements although they may last a few months, show a disposition to clear up. I am hopeful that they may be regarded as a temporary though distressing complication."

Scheels also says that the transitory character of the paresis is of diagnostic import. At all events it seems that a range of results from complete recovery in ambulatory cases which may last months or even years (Ely; Petit; Turettini and Pilowski) or a fatal termination in the severest forms of the disease, the myoclonic (the more acute) and the lethargic (the more protracted) is to be expected.

The mortality is variously estimated by some as high as 50%, by others 33%; Pneumonia is a complication commonly intervening. I did not see an instance in any of these cases, which feature was a point of difference from any cases of influenza where bronchial symptoms were nearly always present in the milder forms, and pulmonary complicated the later stages or the more severe varieties. Periods of intermission with an acute return of the predominant symptom have also been noted and cases of actual relapse were not uncommon. (Buzzard).
Mental symptoms are frequent, especially in children, from "dulling of the higher intellectual faculties" to cases resembling epilepsy and mania.

In the attack on cranial nerves individually or collectively, a number of symptoms occur. The optic nerve only occasionally suffers.

Choked disc (Riverchon & Worms - Bull. et Mem. des Hop. de Paris, 13th May 1920) and optic neuritis (Woods - Archives of Ophthalmology, Nov. 1919) have been described. In an examination of six cases the optic nerve showed no change. (Dameno - Rev. Sud. Amer. di Endocrin, 15th Aug. 1920).

Paralysis of associated movements of the eye was a very commonly observed symptom. (Denechan & Blanc - Bull. et Mem. de Paris, 30th Dec. 1920).

Extrinsic ocular paralysis is stated to be more frequent than intrinsic, the 3rd, 4th and 6th nerves being affected in various cases as well as the 7th. (Hassin, Strangl & Bailey - Journ. Nervous & Mental Diseases, Mar. 1921); (Horace Woods - Archives of Ophthalmology, Nov. 1919).

"It is impossible to imagine the occurrence of such a widespread lesion of the mid brain", says one authority "without some ocular manifestations being present.

The/
The oculo-motor nerve was the one most frequently affected in Dameno's cases; in no case did the lesion affect the whole nerve as in syphilis; the ocular paralysis is more of the nature of a paresis than a true paralysis (Zuccola - Il Morgaegni, 28th Feb. 1921). Boveri also states that the paralysis of eye and facial nerves is incomplete and variable like diminished function. Rigidity of the pupils is emphasized by Hassin & Bailey; Riverchon & Worms state that 3rd nerve paralysis is common.

4th Nerve:— Rouchetti (Il Policlinico, 21st June 1920) records 4th nerve paralysis in typical cases. Zagari (Ref. Med. 6th Mar. 1920) in the upper mesencephalon type as well as 3rd nerve lesion. Horace Woods also records interference with function of the 4th nerve.

5th Nerve:— Foci of inflammation in the Gasserian Ganglion has been described (Guisetti—Ref. Med. 4th Sept. 1920). Neuralgia in the course of the Ophthalmic division of the 5th is noted by Riverchon & Worms (Bull. et Mem. des Hop. de Paris, 13th May 1920.)

6th Nerve:— Horace Woods mentions cases with sixth nerve involvement; and Michael paresis of the internal rectus. Grozz describes a case with paralysis/

7th Nerve:— Horace Woods records three cases in which the 7th nerve was implicated. Somnolence and ocular paralysis were present in all cases, and some other cranial nerves, especially the facial, says Netter, in describing some cases at a meeting of the Academie de Medecin in Jan. 1920. Bandiera. (Il Policlinico, 19th April 1920) records one with supra nuclear paralysis of left facial, though Lincoln (Il Morgagni, 28th Feb. 1921) states that the right facial is the one most often affected. Weyeforth & Ayar (Journal Amer. Med. Assoc., 5th July 1919) describes involvement of several cranial nerves, notably the oculomotor group and the facial.

8th Nerve:— seems to be rarely implicated. A Labyrinthine form of the disease has, however, been described recently.

9th Nerve:— Palatal paralysis has been recorded in a number of cases, sometimes as the only evidence of the disease (Dufourmental - Revue de Laryng. d'Otol et de Rhenol. 31st Aug. 1920.)

10th Nerve:— Death has been ascribed to implication of the vagus in many cases where there have been no pulmonary complications.

11th/
11th Nerve:- The muscles it supplies have been very markedly affected in the myoclonic variety - trapezius, sternomastoid.

12th Nerve:- Netter mentions involvement of the hypoglossal in three of five cases.

Phrenic Nerve:- Toxic irritation of the phrenic nerve is supposed to be responsible for the hiccough in some cases of encephalitis. (Konings)

The cranial nerve paralysis occurring sometimes in groups according to the situation of the disease in the mid brain has led Zagari to divide the cases clinically into an upper mesencephalic type with third and fourth nerve involvement and a lower mesencephalic variety with interference of function of the others - 5th to 12th.

The disease suggests itself to me as being due to a specific organism belonging to a group of which the virus of Influenza and Poliomyelitis are members, but possessing a selective capacity for the grey matter in the brain, its toxins affecting the afferent and efferent nerve tracts. A selective incidence of certain toxins on special nerves is not unknown in the pathology of some diseases. The virus may affect the cortical cells as is indicated in the histological changes/
changes that have been described in them; the basal ganglia, or the nuclei of the cranial nerves; in a case of lesser severity the organism may settle in the nucleus of the third nerve, in the neighbourhood of the Sylvian Aqueduct - a favourite site according to many writers on the subject - and interference with third nerve function will be a common symptom. A complete paralysis of all the muscles of supply may not necessarily ensue, but along with their paresis, there is apt to occur a diminution or alteration of functioning power of other nerves, the 4th, 5th, 6th, 7th, 8th and 9th, by their communications with it through the Posterior Longitudinal Bundle; the intimate anatomical association of this bundle with the third and fourth nerve nuclei (more especially with the former) makes it seem more than a likely contingency that this tract will nearly always by pressure or by a toxin be affected in a lesion in those nuclei with which it lies in close relation. Its precise function or distribution is not known, but that it sends fibres into and receives them from a group of cranial nerves is definitely established, as it is that it functions in the direction of harmonious movements of the muscles of the eye by its connexions between the 3rd, 4th and 6th, and the part of the 7th that supplies/
supplies the Levator Palpebrae Superioris and Corrugator Supercillii (Cunningham). In the infection of grey matter at the base of the brain it may be possible that the nucleus of the Posterior Longitudinal Bundle itself in the subthalamic region, in the fore part of the Sylvian Gray matter of the mid brain is affected.

It has been sometimes stated that the disease has a predilection for the nuclei of the oculomotor nerves, which explains the paralysis of associated movement and diplopia which is recorded as a very common symptom. Buzzard explains that this symptom is to the patient the most disconcerting subjective phenomenon that occurs in the milder interference with function of the cranial nerves. Diplopia and vertigo have been described by him and others as a frequently occurring syndrome in the less severe or ambulatory type of cases "which must have been numerous during the last three years when the physical signs were trivial and would easily have escaped notice without any but careful examination."

Indeed in these mild or ambulatory cases altered vision was the only means by which a retrospective diagnosis of the disease could be made (Taylor).

Still diplopia and vertigo I have found very common/
common and somewhat inexplicable symptoms in the commencing stages of most acute illnesses, especially where cerebral irritation is indicated independently of mid brain localisation.

A symptom associated with the myoclonic variety, but of which I have not seen a definite example, is that of persistent hiccough; it has been recorded by continental observers principally in an epidemic form and as a monosymptomatic manifestation; it has been known to be more than occasionally present in epidemics of Influenza; the writer himself in personal experience of this latter disease having two very disagreeable symptoms - one an excruciating headache, the other an intractable hiccough of about six hours duration.

It has been described too in epidemic form when Encephalitis was prevalent and I am reminded of the fact that a colleague of mine, who was at the time a house surgeon in a general hospital, came to see me while there was a case of Encephalitis in his wards. He had never had hiccough previously, but was bored with it the day before his arrival at my house and it lasted a couple of days after. The paroxysms continued for three or four hours on end; except for a feeling of malaise he was not otherwise affected.
The circumstance is at least a coincidence, perhaps irrelevant, but worthy of observation.

In an epidemic of Influenza now present (Jan. 1922) I have had two cases of persistent hiccough; one of four, the other of six days duration, and no other symptoms except that of exhaustion; as it interfered with the taking of food and with sleep, it was distressing enough to cause both patients to send for Medical assistance; neither had ever had a previous attack; neither was addicted to excessive indulgence in alcohol.

Landi (Il Morgagni, 5th Nov. 1921, and Giorn. di Med. Practica, May 1921) says that other symptoms of encephalitis often follows the hiccough.

The general myoclonic symptoms have by some been stated to be due to an affection of the pyramidal tracts.

"Whether the inflammation excites these movements or whether it allows their occurrence by interfering with their normal control is a question I find too difficult to answer" says Buzzard.

These myoclonic movements have been called by some "irritative", a positive evidence of nervous energy; others think it a negative symptom due to the interference with or removal of "normal control" (Jackson).

Hemiplegia/
Hemiplegia, Hemianaesthesia, Meningeal and Mental symptoms also occur.

The choice of a name for a discovery of science is often a matter of some difficulty; so too with this "new disease in the making" the various controversies with which it has been associated have not escaped its nomenclature. It was Economo who first drew attention to it in recent years; the primary fact of pathological significance that it was an inflammation of brain tissue led him to call it an encephalitis; he was interested too in the striking phenomenon of somnolence that was so common and added the adjective lethargic to describe the disease as a whole. When it became apparent that lethargy was an inconstant symptom he reverted to the pathological changes frequently present post-mortem and called it Encephalitis Haemorrhagica; this was an indeterminate method of describing the condition by pathological appearances that were known to occur not only in these cases, but also in those of influenza in those instances where the localisation of the lesion was mainly cerebral; in fact this haemorrhagic form of encephalitis was considered by some to be characteristically influenzal, and a point of differentiation from the form of encephalitis with/
with which we are concerned and which was said to show no evidence of gross haemorrhage. With such a perplexing variety of symptoms as are present it was becoming a frequent practice for observers to maintain the term encephalitis and qualify it with a name that indicated a predominant symptom or group of symptoms that characterised the type; but with a condition where "the symptom complex is an extremely variable one" where the clinical evidences of the disease are spoken of as protean, only confusion would arise from the adoption of names by this procedure; for from its localisation in the central nervous system and the great diversity of altered function that is likely to result in such an organ, the multiplicity of type to be recorded would only impede a proper interpretation of the disease; this is particularly the case when, as previously stated in a number of instances, the clinical evidences are not easily reconciled with our current knowledge of its morbid anatomy.

Encephalomyelitis, myeloencephalitis, and encephalo myelo meningitis, are some other descriptions of the disease from a pathological point of view.

Perhaps the commonest and most useful appellation
which has been given it is that of Epidemic Encephalitis; it is descriptive in part of the pathological change and at the same time suggests the gravity of its presence in a community.

DIFFERENTIAL DIAGNOSIS.

In its initial symptoms the typical case is ingranvescent and is most apt to be mistaken for influenza, especially so in an epidemic of the latter; many a case of encephalitis however has a history of antecedent influenza.

Poliomyelitis: the paralysis of encephalitis is gradually increasing; in poliomyelitis instant and maximal; it is said to be transient in most cases of encephalitis and permanent in poliomyelitis; the latter is commoner in children, the former in adults; there is also said to be a difference in the seasonal incidence of the two.

The cerebro spinal fluid in Poliomyelitis is increased in amount; cells increased in number; 90% being small mononuclear; in very early stage polymorphs/
polymorphs may predominate (a diagnostic point in distinguishing Poliomyelitis and Tubercular meningitis from Encephalitis - Greenfield).

Tubercular Meningitis:— The more chronic cases resemble tubercular meningitis; but in this latter disease cells increase in cerebro spinal fluid, range from 30 to 150 per com.; mostly small lymphocytes; polymorphs also found; a leucocytosis in the fluid is now accepted to be present in some cases of Encephalitis in the early stage; it was at first considered always absent and a point of distinction; the condition is transient and disappears where the prognosis is favourable.

The occasional presence of tubercle bacilli may be helpful.

Meningococcal Meningitis:— typical clinical symptoms of meningitis present; increased pressure of cerebro spinal fluid; leucocytes 50 to several thousand per com.

Pneumococcal and Streptococcal Meningitis:— the organisms.

Influenzal Meningitis:— cells 100 to 400 per com.; polymorphs entirely as a rule.

Other conditions are:— Cerebro spinal fever, Syphilis of the Central Nervous System. The Wassermann test and Colloidal Gold test will differentiate.
Trypanosomiasis: - the presence of the trypanosome.

Disseminated Sclerosis: - Colloidal Gold Test.

Paralysis Agitans: - a disease of the aged; involvement of the cranial nerves will differentiate. Those cases of Encephalitis with tremors and mast like rigidity due to lesions in the Lenticular nucleus resemble Paralysis Agitans (Wilfred Harris).

Acute Mania: - some cases resemble acute mania, especially where the mental symptoms predominate.

In my cases the conditions to which the disease bore a resemblance were.
Alcoholic poisoning - Case I. Meningitis - Case IV. General Paralysis - Case V.

Tetanus: - I attended a case of chronic tetanus, after an injury two months previously, which suggested encephalitis. The case was sent to the Infirmary for antitoxin treatment, which it received and made a good recovery.

Hysteria: - I was called to a young woman who was obsessed with the idea that she could not keep awake; this occurred while I was in attendance on one of my cases and a few other cases had been reported in the district; she showed no other symptom. The/
The condition to my mind was purely hysterical, and she needed no further attendance after I informed her that she would be better in a day or two.

MORBID ANATOMY.


The histological appearances of the brain in the only case of the series available have been already described; the mid brain was the part selected but, as Bramwell stated in B.M.J. 20th Nov. 1921, it is somewhat unfortunate in the study of the Pathology of the disease that attention has been focussed generally on that locality almost to the exclusion of other parts. The macroscopic appearances of the case described supports that view; it seems in reality that no part of the Central Nervous System is secure from the morbid changes that occur, and Greenfield states that evidences of the disease (in early fatal cases) were very diffuse and could be traced from medulla to cortex. Capillary dilatation and small celled infiltration were/
were constant appearances and a common feature was infarction of the brain due to thrombosis of smaller and larger arteries.

Neuronophagy has been described (Greenfield - B.M.J.: Grozz - Wein Klin. Wach. 26th Feb. 1920). Mott has found it only exceptionally; he also described infiltration of the walls of the vessels with mononuclear cells. (Proceedings Roy. Soc. Med. Vol. XII, 1919); Guisetti describes foci of inflammation over the whole Cerebro spinal axis; so does Mott; with numerous haemorrhages and proliferation of neuroglia. Epidemic Encephalitis he says is "an acute inflammation of the subadventitious perivascular lymphatics characterised by naked eye haemorrhages in pons, medulla, peduncles, and around the third ventricle."

Buzzard says the lesion is in the efferent system of the mid brain and brain stem. Maggiore describes punctiform haemorrhages in the brain, especially the grey matter.

The parts apparently most commonly affected according to the literature are the Basal Ganglia, forming the paralysis agitans type of cases; Mesencephalon; substantia nigra and tracts; changes have also been recorded in the red nucleus through which/
which the fibres of the 3rd nerve pass; the iter; the nuclei in its vicinity; Floor of 4th Ventricle: nuclei of pons and medulla.

Less frequently the cerebral cortex, spinal cord (long projection tracts), and peripheral nerves.

I have not seen a recorded instance of cerebellar involvement.

The Hypophysis of the pituitary is said to be affected in some cases and obesity is noted as an after effect.

Changes are described in Ganglia - the Gasserian Ganglion - nerve trunks and tracts. Rubro spinal tract - Bramwell. Nerve cells show chromatolysis, and "hyaline bodies of unknown significance" have been described by Boyd and Beattie.

Da Fano has described bodies with a halo found both in the nerve cells and in the cells of the salivary glands; this suggests an interesting etiological association, that may lead to definite results.

A disease in horses of the Argentine has been observed in the summer for several years and "characterised histologically by an infiltration of the cerebral vessels"; it is known as Encephalitis Enzoolica or Borna's disease.
2. Blood. An examination was made in cases IV and V. No satisfactory conclusion can be drawn from the figures in these two instances. The apparent leucopenia in Case IV has been called into question and is explained by an error in preparation of the specimen. The leucocytosis of Case V is striking.

In less than 10% of cases of Influenza uncomplicated by Pneumonia one observer found a leucocytosis of between ten and twenty-one thousand; Leucopenia was the rule, as low as 1,700 or 22,000 in 60.9% of cases; in a series of 64 cases (I can find no figures in the case of Encephalitis).

In Case V the variation from normal figures of the small and large lymphocytes and the low percentage of eosinophiles is noticeable. At any rate information of little value has been obtained from the examination of the blood in this disease.

3. Cerebro spinal Fluid.

In Case IV Globulin increase is "positive"; the colloidal gold test was negative.
In Case V:- globulin increase is "strongly positive" but the colloidal gold reaction was by an oversight not performed though it was requested.

A/
A relatively high value is placed on this test by some authorities, a positive reaction being associated with the presence of syphilitic affections of the Central Nervous System:— Tabes, Dementia Paralytica, Parenchymatous Neurosyphilis; also it is positive in Disseminated Sclerosis, Tubercular Meningitis, Lead poisoning, Myelitis and Brain tumours.

The reaction is generally considered to correspond with increased globulin content though stated by J. Kyle to be quite independent of it. It is not surprising therefore in spite of the increased globulin content in Case IV to find the gold reaction absent, as there was no reason to suspect syphilis in that case, and the condition was an undoubted one of Encephalitis. In Case V however, although the clinical signs were to the contrary as there was a suspicion of a late syphilitic lesion in the presence of a strongly positive globulin presence, the colloidal gold reaction may have been interesting to record.

In Dr Finlay’s cases, described at the Royal Chirurgical Society of Glasgow, 5th Nov. 1920, it was found that a positive Lange was got only when excess of globulin was present.

The fluid is stated to be usually clear in this disease; slightly higher pressure if any change, no fibrin nor polymorphs (Greenfield). Claude (Bull. et Mem./
Mem. de Paris Soc. Med. 29th June 1920) found a great increase in albumin and cells. The absence of cells in the cerebro spinal fluid in cases apt to be confused with meningitis was thought to be diagnostic of Encephalitis but it has been shown recently that a pleocytosis - a cell count of more than 5 per com. is to be recorded in the early stages of the condition and disappears in those tending to recovery.

In Case IV the cells were 5 per com.; in Case V nil. In Case VII "there was absence of any definite excess of white cells". "In encephalitis following acute infectious diseases such as pertussis and measles the cerebro spinal fluid is increased in amount and pressure; cells are either normal or slightly increased in number. .......... In the recent epidemic of Encephalitis Lethargica the cerebro spinal fluid was colourless and showed a slight increase in cell count and globulin content". Levinson.

At all events the cytological changes here, as in the blood, are of little significance.
ETIOLOGY.

It is now generally accepted that the disease is of an acute inflammatory type, and it is then natural to look to some form of organism as playing a part in its causation.

In the Glasgow cases of Dr Finlay, the presence of a spirochete was suggested because of the changes in the cerebro spinal fluid.

A coccus having the same morphological character as that of Poliomyelitis is considered to be associated with though it has not been proved to be causative of the disease; it has been found in the cerebro spinal fluid of patients who have been affected with or died of the disease; it is a pleomorphic coccus, gram positive it is sometimes said to be; other times gram negative; some state it may be preserved in glycerine, others that it grows best in broth and sugar agar and does not develop in gelatin; it is of the filter passing variety stated generally to be incapable of culture on ordinary media; it has been cultivated by the Noguchi method.

Some again have associated the disease with a haemolytic coccus; the very presence of such an organism would be a strong suggestion to some that it/
it is pathogenic of the case in which it occurred.

Experimental evidence is likewise conflicting. The cerebro spinal fluid in some instances only, reproducing symptoms similar to those of the disease in rabbits and monkeys; emulsion of brain tissue produced the same results; in other cases no result was obtained with the same species of animal; some species apparently show an immunity as do some individuals of the same species; injections of filtered fluids in some cases unsuccessful subcutaneously, gave positive results in others; intraocular, intravenous and intracranial inoculations also showed a variety of effects. After a successful inoculation by one method, cross inoculation has been performed and the germ carried through several generations. Some Italian Bacteriologists have isolated from broth cultures of the blood, a small gram positive diplococcus which was agglutinated in a dilution of 1 in 100 by the serum of the patient from whom it was isolated and by that of other patients and convalescents from the disease. (Beattie)

The bacteriological findings and experimental results are up to the present inconclusive.
MODE OF ENTRY. Mott in his consideration of the disease as a form of Poliomyelitis thinks the point of invasion in the Bulbo Pontine type along the lymphatics of the vertebral artery from infection of the nose and throat, and in the encephalitic variety along the internal carotid artery; others consider a direct infection of the brain along the cribriform plate of the ethmoid and ethmoidal sinuses a method of invasion into the system; as has been definitely established in the case of Poliomyelitis the pharynx is considered by some to be the primary seat of infection in this disease.

RELATIONSHIP WITH POLIOMYELITIS AND INFLUENZA.

Authorities are divided into two principal groups in regard to the association of these diseases. That there is a relationship is admitted by the majority who favor a separation and classification of encephalitis from the other conditions; there is a section who prefer to group them all together in their endeavour to identify them, regarding them from the point of view of their epidemiology; in their opinion a number of cases at one time called poliomyelitis before attention was focussed on the recent epidemics/
epidemics, are just what would now be called encephalitis; the clinical symptoms indicating that the lesion in these particular instances was in the brain and not the spinal cord. Poliomyelitis, Influenza and Encephalitis are by them regarded as one mass disease where the real epidemic is influenza as we know it, though itself presenting little variations, and the other two conditions what might be described as atypical forms, "some foci in an epidemic" having especial characteristics, and "some cases in a focus" showing their own individual features. They suggest that the "epidemic constitution" of Sydenham should be invoked, and this, viewed in the light of modern science, would give us a better comprehension of these diseases which they maintain may be present for months, years, or centuries in one form or another, taking on a particular aspect - the syndrome of the clinician - in varying years, or in different individuals, and that the determining factor of this variation is the point to which attention should be directed; as distinct from the laboratory method of isolating an organism from individual cases, or groups, successfully cultivating it on special media in unnatural conditions, and after fermentation or other experimental tests describing it as a specific cause of a condition established with/
with prejudice. This "unitarian concept" is however not a novel one in medicine and has its counter part in dermatology in the history of "eczema"; the science of epidemiology, one of the youngest of the branches of medicine, may only be reflecting the spirit of the age, if it be impregnated with ideas of Communism; progressive science is analytic; in its onward march an essential aim is the discovery of individual characteristics.

A third point of view is a consideration of these diseases as entirely separate and unassociated in any way.

The disease too has been thought to be a form of botulism, and has been associated with rabies in the earlier investigations in this country.

A number of neurologists, Mott for instance, hold that the disease is nothing more than a Bulbo Pontine manifestation of Poliomyelitis or Heine-Medin disease; epidemic encephalitis is thought to have a selective capacity for the grey matter of the brain, especially the nuclei of the cranial nerves; many of these - the mesial nuclei of origin - correspond with the basal portion of the ventral horn of grey matter in the spinal cord, which is the elective seat of lesion of the virus of Poliomyelitis.

Crookshank/
Crookshank among the epidemiologists says: -

"Although the clinical differences between Encephalitis Lethargica and Poliomyelitis have been repeatedly referred to, I am unable to gather that there are any to be put forward which are qualitative rather than quantitative".

Some eminent authorities are still undecided. Netter who "though a great believer in specificity" still admits a polioencephalitic form of encephalitis and an encephalitic form of poliomyelitis: - a very non-committal view. Yet the relationship of these three conditions may be the usual one of epidemics which have a "tendency to follow one another in series or cyclic order as has been suggested by Sydenham in his observations of 1661 to 1676, among which were prevalences of cerebro spinal fever and epidemic encephalitis (Goodall - Proc. Roy. Soc. Med. Vol. XII, 1919.)

There is no doubt that epidemics are governed by certain laws; modern science is now able to predict their advent, their type and course, with something of the accuracy of meteorological prog nostications; the encephalitic variety of inflammation may perhaps be a featural character that has persisted after the great pandemics of 1918 and 1919; individual cases/
cases in great number with grotesque and erratic symptoms have been known to occur at the beginning or end of every great prevalence. Probably the more modern method of experimental investigation of Topley and others, may prove the truth or otherwise of Sydenham's theories, and give us a better understanding sooner or later of the nature and causes of epidemics.
Some of my cases seem to have recovered in spite of treatment; no credit can be given to any particular drug in this series of cases.

Hexamine in large doses was used and has been recommended by others; so were bromides and strychnine; potassium iodide too.

Serums have been used with unconvincing results; Netter does not find them useful; he advises subcutaneous abscess formation – fixation abscess. Preparations of arsenic – Salvarsan, etc., have been freely employed; all these substances and a number of others that seem to bear no relation in their therapeutic action to the cause, symptoms or effects of the disease.

Recent years have seen new successes in the treatment of affections, some obstinate enough to be almost the despair of therapeutics; the advances of this science and the rapid comprehension of disease that bacteriology and pathology can now afford, makes one venture the hope that even for a "new" condition a rational and successful method of treatment can be speedily available.
The clinical appearances common to this and other conditions associated because of a contemporary or subsequent occurrence in epidemics, or by reason of the similar morbid changes they produce, have been responsible for their classification in the same group. The subject of discussion in its milder form may show only one symptom; a triad in what is understood to be a typical case in its more severe expressions, evidence of extensive invasion and destruction of nervous tissue that may terminate fatally. Assuming it to be a disease sui generis, or even as an erratic manifestation of a commoner disease, it would seem to me, engaged in the general practice of medicine, from the increasing frequency with which cases have recently occurred, either individually or in groups, that it is a condition interesting enough to attract attention and study; the more so as by the implication of one of its many names it may take on the nature of a prevalence and as such comes in the category of those diseases which may be amenable to the precautionary measures of preventive medicine. But while we should possess a more certain acquaintance with/
with its epidemiology, its mode of invasion into the system, its spread, its seasonal incidence; whether it is to be accepted as a legacy of the pandemic of influenza, or as a disease that has been always with us but has passed unrecognised; it seems that the condition is an acute infection, and that the best method of approach is in its bacteriological study. It is in that direction one is inclined to look for help in the satisfactory treatment of this and other analogous diseases though the serums and vaccines tried in various cases have given only equivocal results. From most points of view it presents a close relationship with Influenza; this latter is a condition that changes type; in the recent epidemics (1918 and 1919) pulmonary complications were predominant; (the comparatively mild epidemic of Nov. and Dec. 1921 and still prevalent, is characterised by the great number of gastric and nasopharyngeal cases).

It has been suggested on clinical and bacteriological grounds that we have here a form of Influenza with a special incidence on the Central Nervous System; but if either as a variant manifestation or as a separate entity with similar epidemiological features we are afflicted with it in the universal visitation that characterised the records of that plague, the spectacle/
spectacle of its ranges, say, in the typical lethargic form, would make a lurid picture in the pages of medical history.

The epidemics of '18 and '19 brought many a reproach on the impotence of medical science in its apparent inability to deal effectively with what was generally considered to be a mild affection; they emphasized the inconsistency of the claims of medicine to discuss in detail rarer and more benign conditions when it appeared to neglect the consideration of a malady, epidemics of which are said to be recorded as early as 415 B.C.; and whose severe morbidity and high mortality have been known through the ages.

The memory of my own incompetence in the treatment of thousands of cases has prompted me to make these observations on a subject closely akin; they have been made in the activities of a varied experience in general practice; observations on this disease have been requested, and in the literature of the last two years have been given some prominence independently of the reputation of the names associated with them.

These are brought to the notice of those best qualified to judge their value. What little there is original in them is here presented for the first time.

* The references to foreign writers are not from the original.