Summary.

Three cases of frontal lobe tumour are described, in two of which the growths were bilateral.

The only observed clinical signs which were common to all three cases were mental changes and tremor.

In two cases severe generalized convulsive attacks constituted the first definite symptom.

Attention is drawn to a peculiar exaggeration of the plantar reflexes encountered in two of the cases.

TUMOUR OF THE BRAIN SIMULATING ENCEPHALITIS LETHARGICA.

BY

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THE rarity of a cerebral tumour giving rise to the clinical picture of encephalitis lethargica in its early and penultimate stages is so marked that the following case deserves attention.

A man, aged 57, had a mild attack of influenza in April, 1926, and was reported as completely well in the third week of the following month. Four weeks later an insidious onset of drowsiness and lethargy began, and was followed in a few days by dimness of vision for near objects. The drowsiness gradually deepened for four weeks, and the patient complained of double vision; the temperature during the same period oscillated between 98° and 100° F. The period of stupor reached its height at the end of July, and was followed by marked improvement in the patient's condition, as shown by his taking an increasing interest in his surroundings and in the disappearance of diplopia. Except for spasmodic twitching of his legs he had almost regained his normal health in September. In October and December, 1926, and April, 1927, he had relapses which were followed with marked improvement, although it was noticed that each successive improvement left the patient a little more stuporous. In June, 1927, he became markedly lethargic, and on July 13th he was admitted to hospital for treatment, his condition having been definitely diagnosed by a neurologist as encephalitis lethargica. On admission his temperature was 98° F., and his pulse 74. He continued in a stuporous condition, but when awakened his mental condition appeared quite clear and he was able to answer questions in a rational manner. The face was smoothed out and expressionless, the eyelids were in a condition of ptosis, his voice was monotonous, but not indistinct, his right eye showed an internal strabismus, and on being questioned he said he saw two fingers instead of one which I held before him. There was dimness of vision for near objects, the pupillary reflex to light was absent on the right side and sluggish on the left; reaction to accommodation was normal. The tendon, abdominal, and plantar reflexes remained unaffected.

Although signs of improvement were occasionally manifested the stupor gradually deepened, and the vision of the right eye diminished so rapidly that a more detailed ophthalmological examination was made. The ocular reflexes had not altered since the previous examination; there was paresis of the external rectus on the right side, associated with well-marked papilloedema of the right optic disc, and the retinal veins of the left fundus appeared slightly swollen. These findings pointed to the probability of a neoplasm localized to the right frontal region of the brain, producing pressure on the right second and sixth cranial nerves and causing the papilloedema.

A cerebral gumma being suspected as the cause of the mischief a Wassermann test of the blood was performed; the reaction was positive. Antisyphilitic treatment, in the form of potassium iodide and liquor hydrarg. perchlor. internally, and neosalvarsan intramuscularly, was started at once, but there was no response, and the patient died on November 30th, 1927, eight weeks after the commencement of the treatment.

The autopsy revealed a spherical tumour, two inches in diameter and gelatinous in consistency, lying in a smooth walled cavity of the right frontal lobe of the cerebrum; posteriorly between the tumour and the wall of the cavity was a clot of blood an inch long and a quarter of an inch broad.

The points of interest in the case are:

1. The earlier symptoms—namely, gradually progressing drowsiness, dimness of vision, diplopia, ptosis of eyelids, and occasional slight rises of temperature—were identical with the clinical manifestations in a large group of cases of encephalitis lethargica.

2. Complete absence of headache and vomiting, which are almost invariably present in the later stages of cerebral tumour.

3. The importance of ophthalmoscopic examination of the eyes in every case pointing to a lesion of the central nervous system.

It is very much regretted that there was no histological examination of the tumour; perhaps an expert in neuropathology would venture an opinion as to the nature of the neoplasm.

ISOLATION OF *B. TYPHOSUS* FROM SEWAGE AND SHELLFISH.

BY

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THE danger of consumption of sewage-contaminated water, shellfish, watercress, etc., is a cardinal article of the hygienist's faith, but hitherto it has not been possible to find objective evidence by the cultivation of the typhoid bacillus from the sewage. By the use of a new technique I can now demonstrate on an average the presence of one typhoid bacillus in each cubic centimetre of Belfast sewage.

Sir Alexander Houston¹ in 1913 and 1914 examined 23,353 non-lactose fermenting colonies developing on plates inoculated mainly with samples of London (Barking) or Hendon sewage, and also with individual samples from Dublin, Belfast, Edinburgh, and Aberdeen. He was unsuccessful in isolating a single *B. typhosus*, and concluded that the typhoid bacillus is not uniformly present in 0.00066 c.cm. of crude sewage, and that this amount of sewage contains 704 excretal bacteria per cubic centimetre. Dealing with the difficulties of the task Houston writes:

"Sewage contains such an enormous number of bacteria that it is quite impracticable to examine more than a very small amount of this material. For example, to examine one cubic centimetre of crude sewage for typhoid bacilli by the direct plating method would mean making at least 1,000 special plate cultures and at least 20,000 primary subcultures, not to speak of the secondary and other cultures for the purpose of differentiation. It is, however, quite practicable to work with as much as 0.01 c.cm. of sewage spread over from 10 to 20 special plates, and therefore to make 200 to 400 primary cultures."

Non-lactose fermenting organisms are so common in sewage that many thousands or hundreds of thousands of such colonies would require to be examined in order to isolate a single typhoid bacillus. For example, in Belfast sewage I find that on an average 400,000 to 500,000 organisms develop from 1 c.cm. on MacConkey lactose bile salt agar plates, and that of these more than one-half are non-lactose fermenters. In such sewage I have found about one typhoid bacillus in each cubic centimetre, so that, using the MacConkey medium, there would have been a chance of isolating the bacillus if 250,000 non-lactose fermenting colonies had been tested. In all probability, even after such a Herculean effort, failure would have resulted, as the chances are that the typhoid bacillus would not have had a clear space on the plate to develop, and its growth would have been obscured and inhibited by the coliform colonies. The addition of brilliant green to the medium would doubtless render the isolation of *B. typhosus* from sewage not quite so difficult, but even so the chances against a non-lactose fermenting colony being composed of typhoid bacilli would be many thousands to one. In the examination of sewage for the presence of *B. typhosus* I therefore made use of the glucose-sulphite-iron-bismuth-brilliant green medium of Wilson and Blair,² the efficiency of which depends on two original observations of mine: (1) *B. typhosus* in the presence of a fermentable carbohydrate is able to reduce a sulphite to a sulphide, and so to form a black colony in the presence of an iron salt. (2) Bismuth sulphite in the presence of a certain excess of sodium sulphite suppresses the growth of most coliform bacilli; in the presence of brilliant green the selective action is intensified. This medium has in my hands rendered the isolation of *B. typhosus* from enteric stools one of the easiest procedures in applied bacteriology, and recently by means of it B. A. Adams³ has isolated the same bacillus from the excreta of seagulls.

When 0.5 to 1 c.cm. of sewage is poured over the surface of a plate of the medium and allowed to dry, and is then incubated for twenty-four hours at 37° C., black colonies with a metallic halo are developed, and also light green colonies of *B. proteus*. It is among the black colonies that *B. typhosus* is to be sought. All the black colonies, if subcultured on MacConkey or Endo medium, will be found to consist of non-lactose fermenters, so that these media are not very helpful in distinguishing between colonies of *B. typhosus* and those of other reducing bacteria. It was found that a very large proportion of the black