cent. specimens of placental blood were found positive by two observers using entirely different methods in different laboratories, and we presume to repeat that these results are highly suggestive of the prevalence of apparently undiagnosed syphilis in the general population.

In conclusion, both workers would like to express their great indebtedness to their laboratory assistants, C. F. Peckham and Corporal R. W. Jones, Central Hospital, Lichfield. The incidental expenses of the research were defrayed by a grant from the Medical Research Council.

Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF MYOCLONIC ENCEPHALITIS.

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THIS dramatic and fatal type of encephalitis is so uncommon that the following case seems worthy of being placed on record.

The patient was a man of 58, free from neuropathic family taint, with an excellent personal history, active, athletic, and of temperate habits. Jan. 17th: Patient complained of sharp pain in the left shin-bone, just below the tuberosity of the tibia. There was exquisite tenderness on slight touches over this spot, but no redness or swelling. Temp. and pulse normal; no history of any local injury. During the day the pain became so intense that bone disease was suspected. Local applications of iodine and later antiphlogistine were used and aspirin was given internally. Jan. 18th: The pain and hyperæsthesia had shifted to the outer side of the left knee and extended down the leg to the outer side of the foot. The old tender spot on the tibia had gone. The patient was now restless and excited and developed sudden jerking movements of the abdominal muscles and the proximal muscles of the arms and thighs. Jan. 19th: Pain in the leg disappeared and did not recur. He was mentally confused and showed a mild delirium of toxic type. He was occasionally disoriented, and had the idea that he was in the country visiting a friend, who had, in fact, been dead for a year. Temp. and pulse remained normal. Jan. 20th: Patient was more excitable, and his delusions were more vivid; he was excited and voluble. There were well-marked spontaneous sudden myoclonic jerks, chiefly of the abdominal muscles, but also affecting the lumbar, lower pectoral muscles, and at times the muscles of the upper arms and thighs. These occurred irregularly at the rate of 14-15 per minute, and produced sudden grunting respiratory movements. The optic discs, pupils, and cranial nerves were normal. There was no motor weakness of the limbs or trunk, but voluntary movements were abnormally rapid and jerky. The knee-jerks and ankle-jerks were normal and the plantar reflexes flexor. The abdominal reflexes were absent. Kernig's sign was negative and there was no cervical rigidity. The temperature was normal, but the pulse was beginning to rise and reached 112. Heart, lungs and abdomen, and urine were normal. It was attempted to induce a fixation abscess by means of 20 minims of oil of turpentine injected into one deltoid muscle. Urotropine, 10 gr., was administered by the mouth six-hourly. The temperature rose the same evening to 100°.

Jan. 21st: Patient was distinctly worse. T. 99°-102°; P. 120. He slept badly in spite of medinal, chloral, and bromide. The myoclonic jerks were more severe, and the delirium more intense. Incontinence of urine was now present. Jan. 22nd: T. touched 103° during the night, but after a hot pack it fell gradually to 99.8°. Patient still mentally confused and completely disoriented, but replied to questions and had no paralysis. The sudden myoclonic jerks were more marked than ever, occurring irregularly, chiefly in the abdominal muscles. Knee-jerks normal. On examination of cerebro-spinal fluid no excess of pressure was found. It contained 5.38 lymphocytes per c.mm. and was free from organisms. 10 c.cm. of the fluid was reinjected into the spinal muscles at the time of lumbar puncture in the hope of furnishing an autogenous vaccine. Later in the evening the patient became lethargic and the knee-jerks could no longer be elicited. Jan. 23rd: The temperature ranged between 104.6° and 101.8°. The pulse steadily rose to 160 and the respirations to 45-50. The myoclonic jerks diminished in intensity and disappeared. Jan. 24th: T. 104°, P. 160, R. 50. Later the pulse became uncountable, and the patient died with a temperature of 103°. No autopsy was obtained.

Remarks.

The foregoing case corresponds in all essential features with those already described in 1920 by Sicard and Kudelsky¹ in Paris and by Ellis² in London. Its

diagnostic phenomena are the intense initial root-pains, succeeded after a few days by acute myoclonus and delirium of toxic type, culminating in lethargy, coma, and death. The course of the disease in this case, from start to finish, was only seven days.

A NOTE ON THE RELATIVE ACTIVITY OF THE FAT-SOLUBLE ACCESSORY FACTOR IN COD-LIVER OIL AND BUTTER.

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THE therapeutic value of cod-liver oil, especially in the treatment of rickets, has long been appreciated by the clinician. The cause of this remarkable potency has not yet been satisfactorily explained, but the results of recent researches on the accessory food factors strongly favour the view that it is due to the presence of the fat-soluble factor in the oil. Professor Edward Mellanby's experiments with puppies point to the great probability that a deficiency of this factor in the diet is associated with the ætiology of rickets. Cod-liver oil, however, has shown itself always in the treatment of rickets to be superior to other substances which contain the fat-soluble factor. Results obtained by us in connexion with another inquiry seem to offer a possible explanation to this apparent inconsistency.

Our present knowledge of the distribution of the fat-soluble factor in nature is of a qualitative character. It is based on a technique which consists of feeding young rats on a diet adequate in every other respect, but lacking the factor. On such diet the animals decline, but on the addition of a substance containing the principle they resume normal growth. We have been engaged for some time in an investigation with the object of working out a method for the estimation of the fat-soluble factor on quantitative lines. From numerous experiments we have succeeded in ascertaining the necessary conditions under which results of a quantitative nature could be attained, and the method so far worked out, although not perfect, affords the opportunity of comparing the relative content of the fat-soluble factor in various substances with a reasonable degree of accuracy. In this investigation we had the opportunity of testing a variety of substances, and we were struck by the extremely high potency of cod-liver oil. This was specially marked in the case of a sample of crude unrefined cod-liver oil, which was found to be 250 times as potent as butter. The samples of refined cod-liver oil which we examined, although not so active as the crude oil, were also far superior in their activity to butter. It is our opinion that this superiority in potency of cod-liver oil to other substances is responsible for the remarkable results achieved with it therapeutically. Unfortunately, in order to satisfy the requirements of the public there is a great tendency to produce brands of cod-liver oil which retain little of the characteristic taste and which appear almost colourless. In order to achieve this, very drastic means may often be employed which conduce to the partial or even total destruction of the accessory factor. In this connexion one may point out the great instability of the fat-soluble factor when exposed to air (Hopkins, 1920, Drummond and Coward, 1920) and ozone (Zilva, 1920), the latter substance being very often employed as a bleaching agent in many industries. It is hardly necessary to point out the serious consequences which might arise if in the process of refining this exceptional activity of the cod-liver oil were to be vitiated or destroyed in the manipulation of certain preparations.

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References.—Drummond and Coward (1920), *Biochem. Journ.*, xiv., 734. Hopkins (1920), *Biochem. Journ.*, xiv., 725. Zilva (1920), *Biochem. Journ.*, xiv., 740.

¹ Bulletin de la Société Médicale des Hôpitaux de Paris, 1920, xxxvi., p. 94. ² THE LANCET, 1920, ii., 114.