of pulse, and looseness of the bowels, but in no instance did a seizure of either type ensue. This specific action enabled the differential diagnosis between the idiopathic and hysterical types to be readily made without having recourse to a period of prolonged observation.

The above test was carried out on 87 cases in which it was desired either to establish or to eliminate the possibility of the presence of idiopathic epilepsy. The following Tables summarize the results obtained.

TABLE I.—Results in Cases in which Presence of Idiopathic Epilepsy was Suspected from the History or Clinical Features but Existence of which was Denied by Patient

Cases treated	..	..	..	..	..	..	..	..	..	..	..	49
Positive results	..	..	..	..	..	..	..	..	..	..	..	45
Failure to react	..	..	..	..	..	..	..	..	..	..	..	1
No. stopped	..	..	..	..	..	..	..	..	..	..	..	3
Test result verified by subsequent history	..	..	..	..	..	..	..	..	..	..	..	39

TABLE II.—Results in Cases in which Presence of Idiopathic Epilepsy was claimed by Patient in Absence of Supporting Clinical Evidence

Cases treated	..	..	..	..	..	..	..	..	..	..	..	38
Positive results	..	..	..	..	..	..	..	..	..	..	..	8
Failure to react	..	..	..	..	..	..	..	..	..	..	..	28
No. stopped	..	..	..	..	..	..	..	..	..	..	..	2
Test results verified by subsequent history	..	..	..	..	..	..	..	..	..	..	..	7

TABLE III.—Results showing Position in Course of Test at which Seizure Resulted

Cases Treated	Positive Results	No. of Pitressin Injection									
		1	2	3	4	5	6	7	8	9	10
87	53	2	1	2	4	19	17	0	0	2	6

In every case the patient was kept in hospital under observation for a period of one month after the termination of the investigation for the purpose of obtaining corroborative evidence, or until such time as a seizure resulted if this period was less than one month. In those cases in which no evidence was available at the expiry of this period the patient was discharged and the subsequent medical history was followed up through the medium of the family doctor.

The above Tables show that only 1 out of 49 susceptible cases failed to react, and that of the 45 cases which gave a positive reaction 39 (86.6%) were later found to furnish corroborative evidence of the accuracy of the test. In the second group, positive evidence was afforded by means of the test at the expiry of 72 hours in 8 cases, which would otherwise have required a prolonged period of observation; of these 8 cases 7 later furnished corroborative evidence in the light of the subsequent history. In only one case of the series did a positive water balance fail to be established and result in ending the investigation, while 2 cases had to be terminated on account of the nausea which persisted in spite of various forms of treatment. Three cases had to be terminated, on account of non-medical factors associated with home circumstances, before any definite result could be obtained.

These findings are in keeping with Jacobsen's original investigation of 40 patients, mostly children and known epileptics, in whom a seizure was induced in every case by the use of pitressin after the water balance had been satisfactorily established. Clegg and Thorpe, under similar conditions, obtained positive evidence in a group of 16 adult epileptics.

As experimental water intoxication in animals results in the onset of convulsive seizures and vomiting, and although epileptic phenomena can be more readily produced in animals than in man, it is reasonable to deduce that some relation exists between the water balance of the body and the onset of the actual seizure. The epileptic's nervous system appears to be unstable and easily influenced by minute changes in the osmotic pressure of the body fluids. As water retention is accompanied by a lowering of the osmotic pressure of the blood serum it is considered that the factor precipitating the actual seizure is the resultant exudation of fluid into the intratrabecular spaces, which are loosely supported, and that subsequent to the seizure the osmotic pressure of the blood serum returns to its normal level. The specific *modus operandi* of the antidiuretic effect of pitressin is not yet fully under-

stood, but water elimination is probably retarded by a change in the permeability of the cell membrane and the establishment of a new balance between water loss and water concentration. Whether the precipitating factor is controlled or influenced by psychological, dietetic, allergic, endocrinic, or other factors has not as yet been ascertained, and further work along parallel lines will be required before a definite statement can be made as to the actual cause of the seizure. This finding has been claimed to be of therapeutic value by certain observers, who state that beneficial effects follow the use of a diet with a minimum fluid intake. To be effective, however, the course of treatment must be prolonged over a number of years, and this is apt to cause the patient a degree of distress, with a consequent discontinuance of the routine.

Summary and Conclusion

A method of investigation suitable for use in cases of suspected idiopathic epilepsy has been advanced. The method has been found to possess the advantage of enabling a fairly accurate opinion to be given in a short time. In the average case this period will be 72 hours, consisting of 48 hours for the establishment of a positive water balance and a maximum period of 24 hours for the actual investigation. The advantage of this in the grading of Service cases at the present time can be appreciated, while it offers certain economic advantages to hospitals and out-patient centres.

The accuracy of diagnosis as verified by a subsequent follow-up of cases has been placed at 86.6%, after a prolonged investigation of 87 unselected cases of average adult age.

The method possesses the advantage of simplicity in application and interpretation of results. The period of observation is reduced to a minimum, and the method need only be subsequently utilized in cases in which a positive result has not been obtained at the end of the period.

A suggestion as to the mode of producing the actual seizure has been advanced and further lines of investigation have been indicated.

ADDENDUM.—For some years past it has been recognized that the electro-encephalograph furnishes a ready and accurate means of diagnosing the presence of idiopathic epilepsy on account of the abnormal waves which are met with in these cases. While it is not suggested that the method outlined above should replace that of electro-encephalography, it affords an accurate gauge and may be utilized by all classes of practitioner, to many of whom the facilities afforded by the former method are not readily available.

Medical Memoranda

Diphtheria during Immunization

At the present time, when so many children are being immunized, the following case is of some interest.

CASE RECORD

A child aged 5 was inoculated with the first dose—0.2 c.cm.—of diphtheria prophylactic. She was a perfectly healthy child and had had no previous illness of any significance. The inoculation was done with the usual aseptic precautions, and the phial was well shaken in order to mix the contents thoroughly. The inoculum used was alum-precipitated toxoid (A.P.T.). This preparation was chosen because it is particularly useful in children under 8 years; it provides a high degree of immunity, and reactions from it are rare; in older children and adults reactions may be somewhat severe.

In this case, as in many others of the same age, there was no local or general reaction to the inoculation. In the third week following the first injection the patient was seen again on account of general malaise and listlessness. She was inclined to lie down and sleep, complained of a feeling of nausea, and appeared to be generally "out of sorts." On examination there were no physical signs in any system and no symptoms apart from a furred tongue; the throat was clear. The mother remarked that the child appeared to be "sickening for something," as indeed she was. She was confined to bed and given a light kind of diet and drinks, and a simple sodium bicarbonate mixture.

In two days she developed what appeared to be an acute follicular tonsillitis, with a few punctate septic spots on both tonsils. The tongue was dry and furred, she complained of thirst, and had vomited occasionally. The temperature was raised to 103.5°, the pulse was rapid, the face flushed, and she presented the usual general febrile condition. In the course of routine examination of all systems the knee-jerks (which are often absent in early diphtheria) were present. The urine was albumin-free. In the treatment advised, milk drinks were curtailed (in order to lessen the amount of methionine, which inhibits the bacteriostatic action of sulphonamides), and streptocide was prescribed—half a tablet (0.25 g.) three-hourly. The following day the patient was very much improved; she was much brighter and was sitting up in bed, the temperature had fallen to 99°, and symptoms generally had abated. The throat had cleared considerably except for a small patch on the left tonsil about 1/8 in. in diameter.

Both tonsils had been swabbed, purely as a matter of precaution; a negative swab was not anticipated owing to (a) the absence of a definite or suspicious membrane, (b) the fact that the knee-jerks were present, (c) the typical sharp rise of temperature suggesting an acute streptococcal throat infection. A positive result for K.L.B., however, was notified from the laboratory; by then the patient was sprightly and apparently fairly well.

COMMENT

The phenomenon of diphtheria following shortly after the first stage of immunization would lead one to consider whether administration of toxoid activates any dormant infection such as that of a carrier at the time of inoculation. One suggestion may be that there is a greater susceptibility to infection—the so-called “negative phase” following inoculation—and that a dormant bacillus, whether virulent or avirulent, may be activated indirectly or assume a comparatively virulent form in an organism of lowered resistance, producing toxic symptoms. There is thus good ground for indicating that a valuable procedure would be to swab all throats before inoculation and administer antitoxin until one obtains negative swabs—at least, in those cases in which virulence tests demonstrate a “gravis” type. Adoption of this routine would be of more value than Schick-testing, which, as suggested by Leete (*B.M.J.*, 1942, 2, 121), can be dispensed with provided one intends ultimately to immunize with a reliable antigen.

In this particular case the streptococcal infection was evidently cleared by streptocide, and it is probable that the streptococci enhanced the virulence of K.L.B. in a mixed infection.

Liverpool.

G. A. GARRETT, M.B.

Removal of Filaria Worm from Eye

The following case may be rare enough in this country to merit description.

I was asked recently in the mess by a middle-aged officer who had spent a considerable period of his life in Nigeria if I knew anything about tropical diseases. Upon my saying that I had them all at my finger-tips, he asked without further preamble, “Then can you take a filaria out of my eye, Doc?” I decided either that he was suffering from delusions brought on by too much probing into textbooks or that if he spoke the truth my assumption of knowledge had been rather too glib. However, a short examination showed a marked injection of the conjunctiva of his right eye, with a worm wriggling underneath towards the outer canthus.

We went to sick quarters, only about five minutes' walk, but by that time the worm had disappeared. It was decided to wait, and in half an hour it had come into view again in the fornix of the lower sac. The eye was cocaineized, and, in the absence of ophthalmic instruments, the worm was removed with dental tweezers through a small hole made with a bistoury, the patient applying vigorous traction to the lower lid himself. He made an uninterrupted recovery from this major operation, except for some bruising of the lower lid from his own enthusiastic co-operation.

The worm was 32 mm. long on measurement. Microscopically it was identical with the textbook description of the female worm of *Loa loa*, except that the fully grown female is described as being 50 to 70 mm. long.

The history leaves little doubt that this was a *Loa loa* infestation, although the patient had been four years in this country since serving in Nigeria. Whilst there he twice had worms removed from his right eye, and once suffered from typical “Calabar swellings” on his wrist. He never suffered any other ill effects between the appearance of these worms, and had been perfectly fit since his return to this country. He does not remember the original bite, presumably by a mango-fly.

My thanks are due to Dr. Skeoch of the County Laboratory for his interest and co-operation.

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Squadron Leader, R.A.F.V.R.

Reviews

SURGICAL CARE BEFORE AND AFTER
OPERATION

Surgical Care. A Handbook of Pre- and Post-Operative Treatment. By R. W. Raven, F.R.C.S., Major, R.A.M.C. (Pp. 271. 10s. 6d.) London: Edward Arnold and Co. 1942.

Since the war began there has been almost a spate of textbooks on pre- and post-operative treatment. The most recent wanders rather widely from the course which its title might lead us to expect; thus, opening it at random, we find a micrograph of a tubercle, a reproduction of an x-ray film of tuberculous disease of the hip, and then four consecutive illustrations of syphilitic lesions, all of which might seem a little wide of pre- and post-operative treatment. There is, however, much useful advice on the care of surgical patients. Some of the author's statements will not be acceptable to all. It would seem a little unnecessary, perhaps even a little harsh, to prevent patients operated upon for toxic goitre from seeing any visitors for as long as three days afterwards. Some chapters are short descriptions of the subject with but brief reference to pre- and post-operative care: thus Chapter 19, on hernia, has six pages on the different varieties of hernia and their treatment, on the complications of hernia, and illustrations of trusses; and but a few lines on pre- and post-operative care relating to radical cure and to strangulation. Not only does the author of this little book skim adroitly over the field of general surgery, but he enters the specialties, with chapters on eye, ear, nose, and throat operations, on anaesthetics, and on gynaecology. The author's hope, expressed in the preface, that the book will be helpful to “all who are engaged in the management of the surgical patient, both nursing and surgical,” is perhaps somewhat ambitious, as the book would appear to be too advanced for the one and perhaps rather elementary for the other, while the medical student is already well provided with handbooks of everyday surgery to use in connexion with his larger textbooks. The best and most useful chapters are those on wounds, shock, transfusion and infusion, and oxygen administration.

TWO BOOKS ON PSYCHOLOGY

Psychiatry in Medical Education. By Franklin G. Ebaugh, M.D., and Charles A. Rymer, M.D. (Pp. 619. \$3.50 or 20s.) New York: The Commonwealth Fund; London: Oxford University Press. 1942.

Psychology for Individual Education. By Lois Barclay Murphy, Eugene Lerner, Jane Judge, and Madeleine Grant. Edited by Esther Raushenbush. (Pp. 306. 18s. 6d.) New York: Columbia University Press; London: Oxford University Press. 1942.

These two books from America both deal with psychology but are in interesting contrast in method and purport. Prof. Ebaugh and Dr. Rymer in their *Psychiatry in Medical Education* look at the subject from the professional point of view, and their study is based on a wide survey of the methods practised in many medical schools. It must be remembered that in America the word “psychiatry” includes all that was formerly grouped as medical psychology, whereas in England it is still restricted by many to the treatment of definite psychoses. The authors quote Abraham Flexner's dictum, “The medical curriculum cannot aim at producing physicians ready for practice; it can at best so train the student that experience will in time mature and equip him”—a fundamental truth that is too often forgotten in medical education. They refer to the need for some standard of selection of students suited for a medical career: a subject which will inevitably demand attention if the overcrowding of the schools continues. Moreover, at present many of these fall by the wayside, whether through disinclination or incapacity. The authors make the significant point that the teaching ability of a man is rarely considered in making appointments, and is usually unknown by his colleagues though it is accurately assessed by his students. Some courses are even given by men who themselves fail to grasp the fundamental ideas of psychiatry. As to the syllabus, they agree with H. A. Murray that academic psychology has contributed practically nothing to the knowledge of human nature and is, therefore, useless in medical education. With Prince they feel that what is wanted at the pre-clinical stage is an explanation of the mechanisms that determine mental processes.