EXPERIMENTS UPON THE NEW SPECIFIC TEST FOR BLOOD.

(PRELIMINARY NOTE.)

By GEORGE H. F. NUTTALL, M.A., M.D., Ph.D.,
University Lecturer in Bacteriology and Preventive Medicine, Cambridge
ASSISTED BY

E. M. DINKELSPIEL, B.Ph., M.D.,
of San Francisco.

(From the Pathological Laboratory of the University of Cambridge.)

THE recent discovery of specific precipitins which act upon various bacterial products—milks, peptone, egg albumen, and different kinds of blood—has led us to undertake the investigations which are here presented in abstract. A complete review of the literature of the subject, as also a detailed report upon our experiments, will appear in the forthcoming number of the *Journal of Hygiene*.

We have injected rabbits intraperitoneally with horse, dog, ox, sheep, and human serum, and have been able to observe the formation of specific precipitins in their blood. The antiserums from these animals have been tried on twenty-four different bloods with uniformly negative results, when we except the slight action exerted by the antiserum for human blood upon the blood of two species of monkey. In this case a slight reaction was obtained which could not be compared in intensity with that shown on the addition of the antiserum to human blood. A slight clouding was produced by the antiserum for ox blood when added to sheep's serum and *vice versa*. Some animals already gave an effective serum after the third injection.

Bloods which had been dried for two months and preserved at room temperature, either in the dark or exposed to diffuse daylight, or in the dark at 37° C., as also such as had been exposed for a week to the action of sunlight, as also serum from a blister the result of a burn, all gave a positive reaction when tested with their particular antiserum. Some human blood which had undergone putrefaction for two months, when diluted 1 in 100 with normal salt solution, gave a marked reaction with the antiserum for human blood, which it did not do on the addition of other blood serums. A rabbit which was treated with some old antidiphtherial horse serum preserved with tricresol in a corked bottle for two years and seven months, yielded a specific precipitin for horse serum. Positive results were also obtained by treating a rabbit with a pleuritic fluid which had been kept in the laboratory for five to six months, and preserved by the addition of chloroform. A slight but distinct reaction was obtained with human nasal and lachrymal secretion.

Dilutions of human blood (1 in 100) mixed with an equal volume of dilutions of the blood of the ox, sheep, dog, and horse, and tested for human blood, all gave a positive reaction, and *vice versa*. Control experiments with normal rabbit serum, as also with non-homologous antisera, gave negative results.

The investigations we have made confirm and extend the observations of others with regard to the formation of specific precipitins in the blood serum of animals treated with various serums. We conclude that these precipitins are specific, although they may produce a slight reaction with the serums of allied animals. The substance in the serum which brings about the formation of a precipitin, as also the precipitin itself, are remarkably resistant. The new test can be applied to a blood which has been mixed with that of another animal.

We have in this test the most delicate means hitherto discovered of detecting and differentiating bloods, and consequently we must hope that it will be put to forensic use.¹

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, March 30th, 1901, p. 788.

THE *New York Medical Journal* states that Dr. W. Parsons Read of Philadelphia, formerly an Assistant Professor in the Jefferson Medical College, took part in the capture of Aguinaldo. It may be mentioned that the Philippine leader himself is said to have studied medicine, though we believe he did not proceed to a degree.

RESPONSIBILITY AND CRIME.

By ALEXANDER ROBERTSON, M.D.,
Professor of Medicine, St. Mungo's College, Glasgow.

THE leading article on the above subject in the *BRITISH MEDICAL JOURNAL* of April 20th, recalls several cases in my experience which fully bear out the statement that epileptics are not infrequently really unconscious of doing apparently purposive acts of a criminal nature, though such acts may appear to be done consciously and with evil intent. Many years ago, when resident in charge of the Glasgow Town's Hospital and Asylum, I was sent for to a hospital (not asylum) ward to see a man who within an hour after an epileptic seizure had made a violent and unprovoked attack on a fellow patient. On getting to the ward, about ten minutes after the occurrence, I found the assailant standing composedly by the fire, but with a somewhat dazed expression of countenance. Addressing him very quietly, I said, "Why did you strike—?"—mentioning the other patient's name. He, in reply, simply repeated the words of my question, then sprang forward and tried to catch me by the throat. A struggle ensued, but, with the assistance of the nurse, I succeeded in overpowering him without either of us sustaining any injury. So far as I could judge he was quite unconscious of either of these acts, and had no recollection of them afterwards.

In another case an elderly man subject to epilepsy, but who was not seen to have a fit, in the middle of the day when the nurse and many patients were in the ward, got out of bed and lifted the chamber-pot from below the bed as if to pass urine. He then suddenly let it fall, turning towards a patient in the adjoining bed, while exclaiming, "You —, I'll do for you!" and made a determined and seemingly murderous attack on him. The other patients succeeded in seizing the epileptic before any material injury was inflicted on the young man assaulted. I was speedily informed of what had happened, and at once went to the ward. I found the old man standing by his bed, pale and agitated, but quite intelligent. On speaking to him about his conduct he said he did not know that he had tried to injure anyone. In saying so he had the aspect of a man who was speaking the truth. I made careful inquiry as to the relations of the two men with each other while in the ward, but could not find the slightest evidence of quarrels between them; indeed, I was assured that they had scarcely spoken to one another since their admission.

The following incidents are illustrative of the same general proposition that the apparently deliberate acts of an epileptic may be done while the ordinary consciousness of the actor may be in abeyance. They are of greater interest from the fact that the patient was a medical man of good intelligence, which was not appreciably affected during his illness, though he was more irritable than before its occurrence. A. B., aged about 50, was under my care during several years on account of epilepsy. The form of the disease from which he suffered was almost purely the *petit mal* or epileptic vertigo. He ultimately recovered, but died about two years afterwards from disease of the heart. While the epileptic condition lasted he had many strange experiences; once when going to a railway station he had reached a central square in the city when his mind became a blank, and he had no consciousness of anything till he found himself back in his consulting room. The distance he had walked in this state of mental automatism was about three-quarters of a mile, and he had safely threaded his way amongst pedestrians and vehicles of various kinds, crossing in his course some of Glasgow's busiest streets.

On another occasion, when examining a patient with the stethoscope, he abruptly stopped without saying a word, then lifted his hat, and left the house, requiring to walk down a stair before he reached the street. Thereafter he went home, his full consciousness having returned on his arrival there. He was afterwards told these circumstances by the patient's friends.

These two experiences, besides others of a similar kind, were told me by the doctor himself; his wife related the following occurrence to me: When the family were all seated at dinner one day, her husband, who had begun to ask a blessing before the meal, took one of his "turns," as they called the seizures, with whose general indications they were

only too familiar. However, he proceeded, repeating the usual words of the "grace" quite correctly, and stopping at its close. A few seconds later he recovered consciousness, and took his dinner as if nothing unusual had happened. She had not spoken to him about this incident, as it distressed him to hear of his taking these "turns."

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

THE TREATMENT OF DYSENTERY.

I QUITE concur with Mr. Watkins-Pitchford's remarks in his paper on the treatment of dysentery on the inefficacy of most of the drugs he used. During the time I was attached to the R.A.M.C., I was, after leaving Dundee, stationed at Fort Napier, Pietermaritzburg, from December, 1899, to the end of March, 1900; and during the latter two months I treated a great number of cases of dysentery. From there I was transferred to "Tin Town," Ladysmith; there I remained two months. During the time I was at Ladysmith I was in charge of four wards—two for dysentery, 25 beds in each; and two for enteric, 25 beds in each. The only treatment I found of any avail was the magnesium sulphate, with a combination of quinine sulph., acid sulph. dil., tinct. opii, hyd. perchlor., etc. I used the following formula: R. Mag. sulph. 3j; acid sulph. dil. ℥x; quinine sulph. grs. i; tinct. opii ℥x; hyd. perchlor. gr. ʒi; aq. menth. ad ʒss; every 3 hours.

This treatment I have now used in South Africa for the last four years after all other methods fail. During the time I was at Fort Napier I had no death from dysentery; at Ladysmith my death-rate was very small, as when the patients were convalescent they were moved to another ward. The deaths occurred chiefly amongst those patients who had enteric and dysentery running concurrently, or cases which had been in Ladysmith during the siege. Mr. Watkins-Pitchford also states that he found antiseptic irrigation to be productive of great distress and no proportionate benefit. I personally have found quite the reverse; combined with the mag. sulph. combination I find patients derive great relief from the irrigation with a solution of boracic acid (3j to Oj), and in a number of cases the patients have asked for the irrigation to be used more frequently than ordered. I found the tenesmus greatly relieved by the application of turpentine stapes repeatedly applied.

The magnesium sulphate mixture was not effective amongst the Indians, so I usually gave them: R. Ol. ricini ʒss, tinct. opii ℥20, followed in two hours by pulv. ipecac. ʒj; this in the majority of cases often being sufficient. If not, the powder was repeated the following day.

During the time I was stationed at Fort Napier the majority of the C.M.O.'s used the magnesium sulphate without any combination, but from inquiries that I made of several the results were rather disappointing.

RICHARD A. MATE, L.R.C.P. & S. Edin.

Dundee, Natal, South Africa.

CONGENITAL HEPATIC CIRRHOSIS.

THE interesting account of this rare disease in the BRITISH MEDICAL JOURNAL of March 30th, by Drs. Rolleston and Hayne, induces me to publish the following note of a family in which the disease has up to the present abolished any male offspring.

The parents are healthy working people, past middle life. The mother has had five confinements, and has reared one child, the eldest (a female). The last two babies were male, and attended by myself, and both died with symptoms of extreme jaundice. No examination was allowed. The two previous infants died with symptoms—if we may believe the mother's account—pointing to the same cause. The mother attributes the trouble to the fact that she was very sick at the time she was pregnant, and I am inclined to think that there is a good deal in the idea, for it fits in with the theory of the causation of the disease by some poison absorbed from the maternal placenta. She is at the present time pregnant, and has promised to come for

treatment directly any sickness sets in, so that it may be seen if drugs producing intestinal antiseptics in the mother have any effect in warding off the catastrophe in the infant.

The first child was a girl now about 14 years of age. When dressed after birth she was noticed to be yellow, but the colour faded away in a day or two. She was born at 7½ months, and the mother was sick all the time of that pregnancy. The second was a boy. He was yellow when born. He lived four days and died in convulsions. He had no colour when dead. The mother was sick all the time. The third child was a boy; it was dead when born; it was the colour of coal-tar soap, and had a lump on its back which discharged a fluid of the same colour. The mother was sick as before. The fourth confinement in 1898 I attended; it was quite natural, and the child healthy and strong. The cord, dusted with boric acid, came away naturally. Jaundice slowly set in and deepened, and he died of convulsions in three weeks' time, treatment being of no avail. The mother sick all the time of pregnancy.

Last year she had her fifth confinement, which was natural and rapid. At birth the baby seemed all right, but was found to be yellow on being washed. The colour slowly deepened, marasmus and sickness set in with convulsions, and death occurred in rather more than a month from birth. The mother was sick all the time of her pregnancy, and on one occasion I gave her some bismuth, etc., which did her good, but she did not continue it, and preferred living on Liebig's extract, as she was not sick when taking that. The persistent sickness did not seem to have any very marked effect on her general nutrition.

Sevenoaks.

JAMES E. BLOMFELD, M.B. Oxon.

TREATMENT OF ERYSIPELAS WITH CARBOLIC ACID.

E. P., aged 5, was suffering from an ulcer of the arm near the bend of the elbow, as a result of a burn. On January 15th the sore appeared dry, the surrounding skin puffy and a little red. The next day the child was very sick, with dry brown tongue and rapid pulse. Its temperature was 100.8° F., and there was now an erysipelatous inflammation extending down to the wrist and up to the anterior fold of the axilla. A circle of pure carbolic acid was painted around the arm at the upper limit, and when the skin had turned white it was painted with absolute alcohol. At the wrist the same was attempted, but, having a very small drop of the carbolic acid, it was imperfectly done over the back of the wrist.

On January 17th the temperature was 99° F., and the patient was very much better in every way. The appetite had returned and the tongue was cleaner. No further extension of the disease occurred upward but there was a slight spread downward. It was as if a gate had been left at the back of the wrist where the painting with carbolic had not been sufficient to turn white, and through this the erysipelas spread. The same treatment was repeated, with the result that no further extension occurred.

By January 19th, just four days from its first appearance, every vestige of redness had disappeared, and the child was as well as before.

St. John's, Newfoundland.

N. S. FRASER.

DIPHTHERIA ANTITOXIN ADMINISTERED BY THE MOUTH.

As it is thought that for success diphtheria antitoxin must always be injected hypodermically, the following may be useful:

E. C., a girl aged 14, having both tonsils covered with a thick, soft, white pellicle, with slight enlargement of the related lymph glands, and a temperature of 38.2° C., with no symptoms but "sore throat," was given antitoxin, 1,500 units (Burrroughs and Wellcome's dry serum, 20 months old), dissolved in water. A swab from the throat was examined by the medical officer of health, and found to contain the diphtheria bacillus. Within 20 hours of giving the antitoxin the right tonsil was quite clear. No application was made to the throat. On the third day there was no pellicle to be seen; and the temperature was 35.8° C. On the fourth morning the temperature was 37° C.; a slight recurrence of the pellicle, on the side more affected at first, being seen, another