

of that day. Further than this, Nierenstein's researches appear to invalidate Prof. Halliburton's statement that the cells lining the choroid plexus constitute an absolute barrier preventing arsenic from entering the cerebro-spinal fluid.

It might not be out of place to draw attention to the past literature on this subject, more especially to the period when inquiry into every form of therapeutics in connexion with trypanosomiasis was at the height of its activity. Consequent on important work on sera by Schilling (1905), Klein and Möllers (1906), Mesnil and Brimont³ studied this question and an extract from a review of their paper is as follows:—

"Action in vitro of the serums on the trypanosomes.—The trypanosomes of the last experiment after half-an-hour's contact with active serums showed a vitality as great as that of the control trypanosomes. It was thought possible that the effect of the serums might be evident later. Trypanosomes were therefore put in contact with active serums, inactive serums, and in the citrated water with which they were diluted, in each case at 18° and 37°. In a great number of trials no microbicidal action was observed; the active serums behaved like the inactive; in both the trypanosomes kept their vitality longer than those in the citrated water; it was kept longer still when heated serums were used. The protective power of the serums is therefore not due to trypanolytic action. The two properties, when they exist together, are independent. Nor did the addition of serum from the mouse to supply complement bring about trypanolysis. The agglutinating power of the serums was very inconstant, and never well marked; it exists also in some fresh serums; agglutinative power has no sort of relation to protective power. Anti-lewisi serum is the only one for which agglutination is characteristic, and here Laveran and Mesnil have shown the independence of agglutinating and preventive power."

Following on the work of Laveran and Mesnil, Goebel,⁴ among other conclusions, found that—

(1) Human serum digested at 37° with trypanosomes does not lose its preventive and curative properties. The parasites which have remained in it preserve their infectivity completely.

(2) "Human serum does not show any opsonic or cytotoxic property as regards trypanosomes. In any case it does not change the parasites so as to make them an easy prey for leucocytes."

Research undertaken by Levaditi and Mutermilch is described⁵ as follows:—

"The authors mixed trypanosomes from the blood of a mouse with serum from guinea-pigs killed in the course of a third relapse, and added complement. At 38° the degree of trypanolysis was proportional to the quantity of trypanocidal serum added. With certain quantities microscopical examination showed that all the parasites were immobile and had become round and transparent. It was thought that sterilisation was complete, but when some of these mixtures were injected into mice the animals became infected with trypanosomes and died. The authors suggested that those parasites which had succeeded in multiplying in the blood of the mice had become resistant to the antibodies with which they were in contact in the test-tube: experiment showed that it was so."

From the above it would appear that the blood serum of animals, whether suffering from trypanosomiasis or not, contains little if any trypanolysin, and that trypanosomes kept for some time in contact with such sera do not lose their infectivity; in fact, according to later researches, they become in certain cases resistant. The conclusions that Dr. Marshall arrives at and the hopes expressed that "in man prophylaxis and immunisation against trypanosome infection might be so attained"—i.e., by the use of animal serums—are certainly not supported by the researches of many eminent workers, and are also perhaps not without danger.

Regarding complement-fixation, Beck's experiments, like those of previous workers, led to no practical conclusions. He doubts whether complement-fixation will ever become of use in the diagnosis of human trypanosomiasis.⁶ As Dr. Marshall appears to have had such promising results, we trust that he will be given ample opportunity for continuing his

work, and if he can bring it to a satisfactory termination he will have achieved remarkable success. I am sure we all wish him the best of luck.

I am, Sir, yours faithfully,

Dar-es-Salaam, July 14th, 1921.

J. O. SHIRCORE.

* * Dr. Shircore's letter makes it clear that intrathecal serum treatment for trypanosomiasis was tried even earlier than was suggested in an annotation on Sept. 10th, p. 573.—ED. L.

NATIONAL PROVIDENT SCHEME.

To the Editor of THE LANCET.

SIR,—In the National Provident Scheme for Hospital and Additional Medical Services in London, as detailed in your current issue, is there intended to be any differentiation between earned income and income derived from capital? If there is no such differentiation, what is to prevent an individual, with an income of £250 derived from invested capital of £5000, from becoming a member at an annual subscription of £1?—I am, Sir, yours faithfully,

C. HAMILTON WHITEFORD.

Plymouth, Sept. 17th, 1921.

The Services.

WOMEN'S MEDICAL SERVICE FOR INDIA.

CERTAIN progressive steps are recorded in the annual report for 1920 of the Women's Medical Service for India (W.M.S.I.), incorporated in the report of the National Association for Supplying Female Medical Aid to the Women of India.¹ A deputation from 16 members of the Service, received by its President Lady Chelmsford in February, 1920, urged, in the interests of the Service, especially with regard to pay and status, that it should be taken over by the Government of India. Lady Chelmsford replied that though the proposal for a Government service was not at present practicable, the question of increased pay² was already under consideration and the desire for a more definite status would be met if possible. The Viceroy was officially approached by the Council in the following September with a view to obtaining for officers of the W.M.S.I. a place in the Warrant of Precedence in India, and meanwhile local governments were asked to accord to officers of the W.M.S.I. gazetted rank and to issue orders that they be treated on all occasions with the consideration paid to gazetted officers. This last request shows that the lack of official recognition in a country where precedence counts for so much has been felt, and for the dignity of the service it is to be hoped that the response of the Viceroy has been favourable. The United Provinces, alone of the Provinces, had replied when the report was issued and their answer was immediately to bestow gazetted rank on all officers of the W.M.S.I. Meanwhile, the service has altered its internal nomenclature more in accordance with the traditions of a government service, doubtless in hopeful anticipation of a change in the official attitude. Dr. M. I. Balfour, one of the joint secretaries of the service, is now its chief medical officer. The assistants to the surgeons-general or inspectors-general are now to be known as senior medical officers, and those engaged in hospital duties are graded as executive medical officers of the first, second, third, and fourth grades. The bestowal of certain executive powers on the chief medical officer is under consideration.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs.—G. D. Walsh to *Defiance*; C. H. Dawe to *President*, addl., for four months' hospital course; and F. H. Holl to *Renown*. Surg. Lieut.-Comdrs. C. F. O. Sankey to *Harebell*; and W. F. Beattie to *Ceres*. Surg. Lieut. J. F. Haynes to *Woodlark*.

³ Review in Bulletin, S.S.B., No. 6, 1909, p. 220.

⁴ Bulletin, S.S.B., No. 7, 1909, p. 259.

⁵ Ibid., No. 8, 1909, p. 330.

⁶ Ibid., No. 21, 1910, p. 350.

¹ Calcutta: Superintendent Government Printing, India, 1921.

² The scale of pay recorded in our Students' Number (August 27th) is the recently revised scale.