

agent was destroyed in many cases, as the progress of the disease appeared arrested and some are now earning a living. Nevertheless the patients did not become absolutely normal, as nervous physical signs remained and their mentality was dulled.

The method of treatment is a six weeks' course of neosalvarsan intravenously with mercurial inunctions and potassium iodide. Following the intravenous medication spinal drainage is instituted; in addition special attention is given to diet, excretion, exercise and occupation, and the general physical tone is improved by hydro- and electro-therapy. The author considers that no positive statement can be made regarding the eventual outcome without two years' treatment. Of the twelve cases treated for a year or more, four were unimproved, and the others showed various degrees of betterment, physically, mentally, or both; no one can be said to have actually recovered. In some cases the blood or spinal fluid Wassermann was diminished or became negative. Only two patients showed no reduction in the gold curve or cell counts; the latter reacts to treatment more quickly than the former. It requires three months to produce any great change in the gold reaction. Of the remainder of the eighty cases treated the period of time has been too short to draw definite conclusions.

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*Remissions in General Paralysis (Clinical and Serological Study)* [*Les Rémissions dans la Paralyse Générale (Étude Clinique et Humorale)*]. *Ann. Med. Psychol., March and April, 1922.*) Targowla, R., Badonnel, Mdle., and Robin, G.

During remissions in general paralysis, grosser signs of dementia and especially memory disorders disappear and the subject obtains partial insight into his previous condition. Physical symptoms, however, remain, and there is persistent weakness of the higher mental functions such as association and synthesis. The cerebrospinal fluid changes become attenuated in regular sequence. Cases least affected by the remission show only diminution of benzoin reaction; next occurs a greater benzoin reduction and diminished albumen; a later stage gives a negative Wassermann (except with special methods), although the blood is usually positive; later, Pandy's reaction is affected, and, last of all, there is reduction of lymphocytosis. Serological and clinical changes do not exactly correspond.

The authors admit the possibility on clinical and serological grounds of a genuine cure, with, in some cases, indefinite residual mental changes; but when the serological reactions are merely attenuated, even with apparent clinical cure, the case is a remission.

Remissions indicate an abatement, more or less lasting, of the pathological process. In "pseudo-remissions," where there is clinical improvement, but no attenuation of fluid changes, the rate of progress of the disease is not abated.

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*Serological Changes in Neurosyphilitic Patients during a Period of Non-treatment.* (*Arch. of Neurol. and Psychiat., June, 1922.*) Omar, H., and Carroll, P. H.

Specific treatment has been said to modify laboratory findings in paresis. In this observation a selected group of nine paretic

patients, who had not received treatment for several years, was studied throughout a period of seven months, during which time no specific medication was administered. The tests employed were for Wassermann of blood and spinal fluids, cell count, colloidal gold, and globulin. The reactions remained practically unchanged throughout the period, *viz.*, eight cases positive and one (said to be an arrested case after treatment) uniformly negative.

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#### 4. Treatment of Insanity.

- (1) *The Treatment of General Paralysis by Inoculation of Malaria.* (*Journ. Nerv. and Ment. Dis.*, May, 1922.) Wagner-Jauregg.
- (2) *Treatment of Paresis by Inoculation with Malaria.* (*Ibid.*) Delgado, H. F.

The treatment of general paralysis by inoculation with malaria is based on the discovery that the occurrence of infectious diseases in the course of the psychoses not infrequently led to their cure. As long ago as 1887 Wagner-Jauregg conceived the idea that the production of one of the symptoms of infectious diseases, *viz.*, fever, might possibly be found to bring about similar cures. With this object in view he tried a series of experiments in cases of paresis, first using injections of tuberculin and later Besredka's typhus vaccine. The results were encouraging in a certain proportion of the cases treated, but disappointing in others. It became obvious to the author whilst following up these experiments that the remissions were more complete and more lasting when, in the course of the treatment, an actual infectious disease had set in, *e.g.*, pneumonia, erysipelas, abscess, etc. Taking into consideration this fact Wagner-Jauregg, in 1917, inoculated some general paretics from a soldier suffering from tertian malaria. From these patients others were inoculated; in all nine cases were thus treated. The result was favourable in six of the cases. Three of them were still actively and efficiently at work at the time the author's paper was produced, *i.e.*, four years after the inoculations took place. This experience led to the treatment of other general paretics in 1919, and since that time the author has used this method continuously.

The technique employed consists in inoculating the blood of the individuals to be treated with recognised malarial germs. Attacks of malaria appeared 6-36 days after the inoculation. It would seem there are individuals who are immune to this inoculated form of malaria. The patient is permitted to pass through 8-12 attacks of fever, according to the amount of tolerance displayed, before the malaria is checked with quinine. It was found that inoculated malaria is much more sensitive to quinine than natural malaria. The blood should come from a malarial patient not yet treated with quinine. After treatment with quinine neosalvarsan is used in increasing doses. It is of great importance that the patient should undergo the treatment at as early a stage in the disease as possible. Wagner-Jauregg states that, in his experience, the treatment of general paralysis by malaria gives by far the most favourable results of all the methods