

want to state that during this time the recovery-rate of State institutions has materially diminished. If then we advanced merely a new theory and could not show that the application of such a theory had had unusual results on our patients, we should then be classed with the theorists and our work considered interesting if true. However, we feel we have substantial grounds for considering that the application of these theories has produced results which, as Meyer states, "appear to have brought out palpable results not attained by any previous or contemporary attack on the grave problem of mental disorder.

"We will confine our statistics to the so-called functional group, which includes dementia præcox, manic-depressive insanity, paranoid conditions and the psychoneuroses. In this group, as a whole, for a ten-year period prior to 1918 the recovery-rate was only 37 per cent. of the admissions. Since 1918 the recovery-rate has averaged nearly 70 per cent. in the same group. Of 380 cases classified in this group in 1918 only 50 to-day remain in the hospital and 9 of these are criminals. A recent survey made of these 380 patients discharged in 1918 shows that after three years, with few exceptions, they are to-day normal in every respect. Over 1,000 patients have been successfully treated in the last three years, and it is gratifying to note that the proportion of readmissions to the State Hospital at Trenton has not increased during this time, and that many of the readmissions are cases that were admitted the first time prior to this period of intensive treatment. Our failures have been confined to the patients with a psychosis of over two years' duration. The cause for such failures we consider is due to the fact that the brain has become permanently damaged, and no amount of elimination of such infection has any effect upon the psychosis."

The Treatment of General Paralysis by Malaria; The Use of Speech Inscriptions for Early Diagnosis.⁽¹⁾ By E. W. SCRIPTURE, M.A., Ph.D., M.D. Munich, Physician to the Speech Clinic, West End Hospital for Nervous Diseases, London.

THE history of general paralysis records undoubted cases where the disease has for some reason or other seemed for a time actually cured so that the patients could return to work. Although such cases after a short time showed relapse whereby the disease then followed its usual course, this fact is sufficient to indicate the possibility of stopping the progressive paralysis in some way.

After the discovery of the syphilitic nature of the disease and the invention of salvarsan, many attempts were made to achieve a cure by mercury or salvarsan. The results were not encouraging. Nonne sums up the results by saying that salvarsan is permissible in very early cases, that where mercury has had a good influence but can no longer be used salvarsan is directly indicated, and that in advanced cases and in those where mercury has had no good results it is useless. Wagner-Jauregg states that, according to his experience, temporary improvement may be the result of antiluetic treatment, but that complete and permanent cures cannot be achieved, and, moreover,

⁽¹⁾ A paper read at the Quarterly Meeting held in London, November 23, 1922.

that a successful treatment cannot be expected from the use of specific treatment alone.

In 1890 Wagner-Jauregg used tuberculin injections on cases of this disease. Tuberculin and mercury produced very favourable results. The method was described at the Buda-Pest Congress in 1909. Writing as late as 1921, Wagner-Jauregg states that a number of cases on which he had reported twelve years before were still living and at work. One man who was a captain at the time had gone through the war and come out as a colonel.

Wagner-Jauregg also tried typhoid and staphylococcus vaccines. They were found to have objectionable qualities. Experiments with nuclein preparations showed no advantage over the tuberculin cures.

The tuberculin treatment was naturally a substitute for the method by which nature had been known occasionally to cure general paralysis, namely, that of adding a fever to the disease. Wagner-Jauregg observed that his best results occurred when the patient in the course of the treatment happened by chance to catch some infectious disease. It at once suggested itself that it would be still better to give every patient a real fever. In 1917 he inoculated nine cases with malaria tertiana. Six of them showed favourable results. Three of them were still at work more than four years afterwards and showed no signs of the disease. In 1919 the treatment was introduced into the Psychiatric Clinic as a routine procedure. Blood was taken from a case of malaria that had never received treatment with quinine. This was injected into a case of paralysis. From this patient blood was taken during the malarial fever and injected into another patient and so on.

For the inoculation blood is taken from the vein of a patient during an attack of fever. Of this 2 to 4 c.cm. are injected subcutaneously under the skin of the back of the next paralytic. Lately it has been found favourable to apply also a few drops of blood to the scarified arm as in ordinary vaccination. After a period of incubation that ranges from six to thirty-one days, attacks of malarial fever appear in which the temperature often rises to 40° or 41° C., beginning in the typical way with chills and ending with outbreaks of perspiration. As a rule the patient is allowed to have eight chills; only in cases where the fever is borne well ten or twelve chills are permitted. Then the malaria is cut short by giving the patient twice a day for three days 0.5 grm. of quinine bisulphate and then for fourteen days once a day 0.5 grm. In nearly all the cases there was no fever after the first dose.

At the same time with the quinine treatment neosalvarsan injections were carried on. Once a week for six weeks an injection was made, beginning with 0.3 grm. and proceeding to 0.45 grm. and four doses

of 0.6 gm. The neosalvarsan acts against not only the syphilis but also the malaria. The cure of the malaria was always complete. All plasmodia disappeared entirely from the blood after the first dose of quinine. Latterly silbersalvarsan has been used instead of neosalvarsan.

The results have been very favourable. In 1921 Wagner-Jauregg states that in cases where the disease has not lasted long it can be promised with practical certainty that it will be cured by this treatment. The previous duration of the disease is more important than its apparent severity. Complete cures have been obtained not only in cases with beginning dementia but also in severe maniacal conditions with delusions of grandeur and raving. Even in cases where the result did not seem to be complete it was observed that the improvement often went on afterwards until complete cure was reached.

The clinical signs of general paralysis often disappear completely during the treatment. The serum- and liquor-reactions, however, are influenced little or not at all. The Wassermann reactions in the serum or the liquor as well as the cell-count, the globulin reaction and the amount of albumen in the liquor often remain unchanged; sometimes they show a slight improvement, but just as often a deterioration; they never entirely disappear even in the best cases. These reactions have diagnostic but not prognostic value. After the treatment they become steadily less positive; the Wassermann often becomes negative.

Gerstmann has furnished a report of 25 cases treated from September, 1919 to early 1920. After a lapse of a year and a half 9 were found to remain completely cured; 5 others had passed from partial cure to complete cure; quite a number of others showed steady improvement.

Between September, 1920, and September, 1921, there were 116 treatments of persons of the most varied types—simply demented, maniacal, expansive, depressive, hypochondriacal, tabo-paralytic, etc.

Of these no improvement took place in 38 cases. They were mostly old or advanced cases.

Complete cures occurred in 48 cases. There was no sign of mental defect remaining and the patient was restored to full work. The disease had had a duration of a few months to 2½ years.

Great improvement but not complete cure occurred in 22 cases. They were restored to society but were found under examination to be not perfectly normal. The duration of the disease had been from a half to three and a half years.

Incomplete cures with persistent marked abnormalities occurred in 14 cases. The duration of the disease had been for several years.

Prof. Wagner-Jauregg's conclusions concerning the applicability of the various methods of treating general paralysis are the following :

The malaria treatment is the best. Unfortunately it is possible only where the blood of malarial patients can be obtained—that is, where malaria occurs often, or in institutions where there are sufficient paralytics to keep the strain going.

Where this method cannot be applied the tuberculin-mercury treatment is to be recommended. It can be applied not only in the hospitals, but at home and even among out-patients. Typhoid vaccine with mercury is still more effective, but slightly more difficult of application.

The nuclein treatment has no advantages over the tuberculin treatment ; it is often painful and very often followed by abscesses.

The intradural methods of Swift and Ellis, and of Gennerich, are cumbersome and not generally applicable.

Wagner-Jauregg lays the greatest of emphasis on treating the patient early in the disease. He gets, of course, only those cases that are severe enough to be sent to the asylum. But even then he promises complete cure to early cases regardless of their severity.

Much importance lies in making a correct diagnosis at an early moment. Here is where I wish to point out a method by which in many cases a final diagnosis can be made by instrumental methods often when the physician is still uncertain—that is, by the method of making speech inscriptions.

Many years ago I began to collect inscriptions of speech in general paralysis. With this method the patient speaks into a mouth-piece of a wide tube leading to an apparatus that registers the puffs of air and the waves of speech on a recording drum or kymograph. These curves of speech are then studied and measured under a microscope.

The cases of general paralysis show the most varied bulbar, cortical and mental signs of all degrees of severity. One sign, however, is never missing even in the lightest cases, whether any speech defect can be detected by the ear or not. This is the sign that I have termed "asaphia."

An inscription of *Peter Piper's peppers* by a normal voice is given in Fig. 1. Each bit of straight base line registers the time of stoppage of breath by the lips or tongue during the sounds *p* and *t*. At the end of each such occlusion there is a sharp upward jerk of the line which registers the explosive puff of air arising from the release of the lips or tongue. During *p* and *t* there are no waves because the larynx does not vibrate. For the second *p* of *Piper's* the line does not descend ; therefore the lips did not fully close. Moreover waves are present ; therefore the larynx continues to vibrate. Such a carelessly

made sound often occurs in normal conversational speech. The small waves seen throughout the inscription are derived from the laryngeal vibrations during the vowels. The rising line at the end registers a rather prolonged *s*. The *s* at the end of *Piper's* is weak.

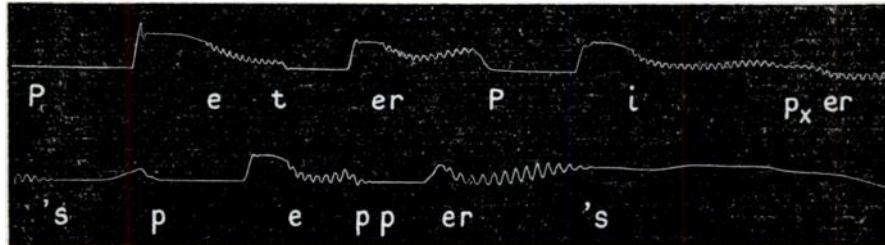


FIG. 1.—Inscription of *Peter Piper's peppers* by a normal voice. The sounds of *p* and *t* show pieces of straight line ending in upward jerks which are records of the occlusion and the explosion in each case. For *s* there is a slight rise of the line, small in one case but larger in the other. Instead of an occlusion with an explosion for the second *p* in *Piper's* there is merely a weakening of the vowel wave; this anomaly occurs occasionally in normal speech.

The inscription in Fig. 2 is from a patient with general paralysis. The most striking peculiarity is that although every occlusive consonant *p* and *t* has a perfect occlusion and a perfect explosion, yet the occlusions vary in length and the explosions vary in height. Every

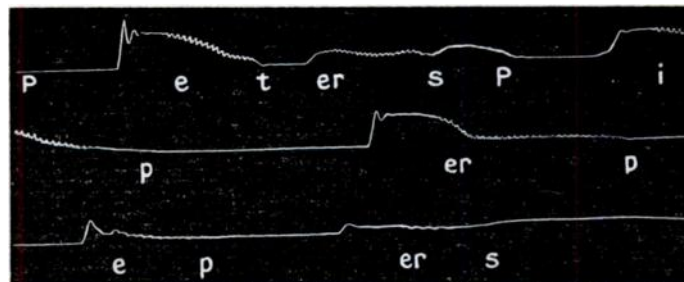


FIG. 2.—Inscription of *Peter Piper's peppers* by a patient with general paralysis. There are no marked defects in the sounds. Each sound is correctly made if considered alone; it can be found in normal inscriptions in various languages. The occlusions, however, vary from one another in length and the explosions vary in height. The characteristic of the record is thus a lack of precision in making sounds according to type—a condition that may be termed *asaphia*.

one of the kinds of these occlusive sounds is the normal one in some language or dialect. The *p* with a long occlusion is the correct one in the dialect of Zurich. The *p* with a weak explosion is the correct one in French. The *p* with a prolonged blowy explosion is correct in Irish and the Scandinavian languages. This patient made the

first *p* in the typical English way, but he did not stick to the type he had learned in his mother tongue. This uncertainty in regard to type is a product of the disease. A normal person might use a long *p* or a short one; he might make the explosions strong or weak. But whatever he did he would stick it for a while; he cannot vary from one sound to the next. Although the defects appear so clearly in the inscriptions, they are so minute that they cannot be heard by the ear except in advanced cases. This particular kind of speech defect may be termed *asaphia* or lack of precision in regard to type. It is found in the speech of every case of general paralysis whether any speech defect can be detected by the ear or not (*Quarterly Journal of Medicine*, 1917, vol. x, p. 20). It does not occur in any other disease yet studied.

The important features of this method of inscriptions as a means of diagnosis of this disease are these: In the first place it is automatic. The inscription can be made by any skilled assistant quite ignorant of the disease. Likewise the presence or absence of *asaphia* is a matter of fact to be determined by the study and measurement of the curves. Since there is no chance for a personal opinion to enter, the test is as automatic as a sugar test or a Wassermann. Since *asaphia* has been found in every case of general paralysis so far studied and has been found in no other disease, the presence of this sign is positive for general paralysis. The absence of *asaphia* cannot yet be asserted as proof of the absence of general paralysis although a consideration of the nature of the disease renders this highly probable. The great value of the test lies in its early nature, whereby the disease can be diagnosed at a time when it is often confused with neurasthenia or is entirely overlooked.

Only a few years ago general paralysis was an incurable disease with a fatal ending after a few years. "General paralysis of the insane" or "progressive paralysis" were quite appropriate names for it. Now we can say that only the old cases are to be considered as quite hopeless. Most cases can be helped. To early cases we can, with Wagner-Jauregg, promise complete cure. By the use of speech inscriptions we can detect the cases at a very early date.

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Clinical Notes and Cases.

A Case of Insanity Associated with Pregnancy and Previous Exophthalmic Goitre.⁽¹⁾ By G. ERNEST PEACHELL, M.D.
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THE case I am about to describe seems of sufficient importance to bring to your notice, as it presents many points of interest.

F. F—, æt. 34, married, was admitted here on August 23, 1920, suffering from acute mania, and eight months pregnant.

History of case.—The history obtained personally from the husband and the family doctor and others was as follows: Married eight years; two children, æt. 12 and 6. While pregnant with her second child and while the husband was serving in the army she developed exophthalmic goitre of rather a severe type. She then showed no mental symptoms with it, and was treated in 1915 and 1916 at the Boscombe Hospital and at one of the London Hospitals with X ray and radium for eighteen months with much benefit. Most of the symptoms disappeared except the exophthalmos, and although in reduced health she did her housework well and looked after the children well up to June, 1919, when slight mental symptoms developed, but she continued to look after her home fairly well till three months ago, since when she progressively got worse and was in bed the last fortnight previous to admission in an acute state—sleeping little and extremely restless, but taking food readily. She became pregnant about eight months ago.

Family history.—No insanity, except the mother is stated to have had a slight mental attack in India, but was not certified. She is now quite well.

The medical certificate on admission stated: "I can get no sense out of her. The open window has on it a lot of articles, boots, dishes, etc., which she says is a gift of God. The husband says that she is stranger in her ways, threatens her children, is excited and throws the furniture out of the window and goes out of doors in her night-dress."

⁽¹⁾ Paper read at S.W. Divisional Meeting held at the Dorset Mental Hospital on April 28, 1922.