V

SYPHILIS AND "THE MENTAL TREATMENT ACT"*

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SYPHILIS is to be found, on a conservative estimate, in 10 per cent. of the general urban population,¹ and in 15 to 20 per cent. of the male admissions to mental hospitals from industrial areas. In Winwick Mental Hospital (1931 to 1933) the incidence was 21 per cent.² Ferguson Watson found in the Manx mental hospitals 16.31 per cent. of male admissions and 15.43 per cent. of female admissions giving a positive Wassermann, and at the Argyle and Bute mental hospitals 21.08 per cent. male and 16.25 per cent. female were positive.³ It is usually stated that the incidence of syphilis in females is much less than in males; recent work has shown, however,⁴ that a syphilitic woman during her menstrual life may show a negative Wassermann, while after the menopause is established she may show a positive result.

Colonel Harrison is of the opinion that in spite of the provision of a venereal disease scheme in this country for the free treatment of early and communicable venereal disease, the incidence of fresh syphilis has been stationary since 1925, largely due to insufficient treatment of early syphilis.⁵ Poynder reports that the incidence of syphilis in male admissions to L.C.C. mental hospitals has shown a steady fall during the period 1913 to 1929, and that the admission rate of G.P.I. is also diminishing.⁶ Due to a number of factors, the number of male deaths from G.P.I. in England and Wales has fallen from a yearly average of 1,800 during the period 1907 to 1918, to 1,270 in 1920, 923 in 1924, and only 665 in 1931.

The fall had thus well set in before malarial therapy was introduced, and must in some degree be attributed to the early treatment of syphilis by "606" and "914."

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Out of 100,000 cases of British soldiers who contracted syphilis during the War, and received what is by modern standards a very inadequate course of "606" and mercury, only six cases were found in mental hospitals or Ministry of Pensions hospitals, etc., suffering from any form of neuro-syphilis. Harrison, at St. Thomas's, has had only one neuro-recurrence in 3,000 cases who received the full course of treatment for primary syphilis. Burke, at the Salford Clinic, has had no neuro-recurrence. Lees, at Edinburgh Royal Infirmary, out of 603 cases showing involvement of the central nervous system, found that only two had anything approaching adequate treatment during the early stages of syphilis.⁷ Sir W. Osler, writing as far back as 1898, states: "Syphilis is common in the community, and there are probably more families with a luetic than tubercular taint. The physician behind the scenes knows the countless instances in which syphilis has wrought havoc among innocent mothers and helpless infants, often entailing lifelong suffering. . . . When we consider that syphilis is one of the most amenable of all diseases to treatment; it is not cured in a few months, but takes at least two years, during which the patient ought to be under constant and careful supervision."⁸ E. T. Burke estimates that if syphilis appeared as often as it should on death certificates, if medical practitioners did not equivocate, as Osler has stated they do in regard to syphilis, then syphilis would be the real "Captain of the Men of Death," and responsible for some 12 per cent. of our total deaths. He estimates that syphilis is responsible for 60,335 deaths every year; tuberculosis is responsible for 50,389 deaths every year; cancer is responsible for 41,103 deaths every year. Cancer and tuberculosis freely appear on the death certificate; they are respectable diseases.⁹

Professor G. M. Robertson, in the seventh Maudsley Lecture on the Prevention of Insanity, writes in regard to syphilis: "These observations teach us two lessons. The first the success of modern scientific methods in preventing the most terrible malady to which man is subject, it attacks him in the prime of life, it obliterates every human attribute, it degrades below the brutes, and it finally kills him. Money spent on clinics for the treatment of venereal disease will in a few years be amply repaid by the prevention of this disease. The practical

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abolition of general paralysis would make a decided difference in the incidence of insanity among males in the middle period of life ; it is a consideration that may be attained within a generation." He goes on to remark that syphilis is infectious, and in the treatment of infectious diseases the treatment of the individual case is less important than the prevention of the spread of the disease. He too is of the opinion that the fall in the incidence of G.P.I. is due to the beginning of salvarsan treatment in 1910, and that owing to better knowledge of the effects and curability of syphilis, husbands are not infecting their wives to the same extent as formerly.¹⁰

The prophylaxis of neuro-syphilis is the early and adequate treatment of primary syphilis, for which ample and free facilities are provided in all our large centres. If only syphilis were diagnosed early by the general practitioner it would soon cease to be a matter of paramount and vital interest to the physical and mental health of the nation. It is now generally admitted that the problem of venereal disease is one of the major public health problems of to-day. Well has that great clinician Osler written : " Know syphilis in all its manifestations and relations and all other things clinical will be added unto you." ¹¹

Lees, of Edinburgh, remarks : " Untreated or partly treated venereal disease has a profound effect on the health of the community, and even more so in the next generation, by increasing the number of abnormal or subnormal people."¹² Devine considers that the action of syphilis on the nervous system is toxic as well as degenerative, and that it is difficult to estimate the full extent that syphilis plays in the production of mental disease and mental deficiency, and while we are largely in the dark as regards the prophylaxis of the other psychoses, we are not in the dark as regard syphilitic ones.¹³ Kraepelin and Mott have pointed out the blastophoric effect of syphilis ; it devitalises especially the male germ plasm, and is a potent factor in the causation of dementia præcox, epilepsy and congenital mental deficiency.¹⁴ Writing on the medico-social importance of nerve syphilis, Milian and his co-workers state that syphilis is frequently the cause of degeneration and constitutional psychosis, as well as confusion and acute maniacal delirium, and is responsible for the majority of

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the mental disturbances of childhood, juvenile criminality, infantile hemiplegia and epilepsy. Wale found 57 per cent., and Drouet and Hamel 90 per cent. syphilitics among psychopathic and delinquent criminal children. They further state that the best method of decreasing the number of mentally defective and criminal children is to fight syphilis.¹⁵ Ludwig Spitzer, during thirty years of practice, observed 702 couples, one or other of whom had syphilis. The number of 'normal children born from these unions was very small, the worst cases were those born without manifest symptoms of congenital syphilis.¹⁶ Pascal regarded epilepsy and paranoid states as often individualised forms of ancestral syphilis.

In recent years much evidence has been produced which goes to show that latent and neuro-syphilitics, including G.P.I.'s, may be infective and capable of causing active syphilis in others. Spirochætes have been found in the semen and in the inguinal glands of this type of case, and rabbits have been successfully inoculated from them.^{17, 18, 19, 20}

Bearing these facts in mind, it is evident that it is unsafe to discharge a neuro-syphilitic or endo-syphilitic without having taken steps, by intensive anti-syphilitic treatment, to kill the *treponema pallidum*. Every year numbers of syphilitics who have received malaria and perhaps other forms of pyro-therapy and specific treatment by tryparsamide are discharged from mental hospitals, perhaps to spread fresh infection.

Buckley Sharp, in his text-book on neuro-syphilis, sums up the opinion of modern syphilologists thus: "The writer is of opinion that the persistence of changes in the cerebro-spinal fluid characteristic of syphilis is an indication for the continuance of treatment in the absence of any clinical signs, and even in the absence of a blood Wassermann. It is not possible to set any limit to the period of treatment and observation required in neuro-syphilis."⁷ Henderson and Gillespie stress the importance of the follow up of discharged G.P.I.'s, and the importance of treating the mesoblastic as well as the parenchymatous syphilis,²¹ as also does Meagher in his Board of Control report on the treatment of general paralysis.³³

Malaria alone may bring about a reversal of pathological changes to normal in a small number of cases.²²

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My experience has led me to believe that it is more difficult to bring about a normal blood serology unless intensive anti-syphilitic measures by arsenic and bismuth are also used. Changes in the cerebro-spinal fluid are most marked after a period of four years from treatment has elapsed and specific tests in blood and fluid may be found negative.²²

Colonel L. W. Harrison, in an article on the treatment of late syphilis, states: "If it could happen that all persons with a history of syphilis could have their spinal fluid examined at intervals, or even if the medical profession had learned to have the fluid examined whenever a patient showed the least signs of central nervous disease, I think we could save many a household from the misery, the financial loss and, I may add, the shame, which general paralysis brings." He stresses "the importance of thorough treatment in the first stage to prevent late sequelæ of syphilis, and the thorough treatment when the patient has been allowed to develop these crippling and deforming late manifestations of syphilis, which have made it the dread disease it is."²³ B. H. Shaw, in the course of the R.M.P.A. discussion on general paralysis, states he would treat general paralysis as a variety of syphilis, and would rely on the same tests for cure.²⁴

Colonel Burke, Director of the Salford Municipal Clinic, states: "In my view the minimum standard of cure is (a) a negative result with a Wassermann and two other supplementary tests, such as the Kahn and Meinicke on the blood, after provocation, carried out every twelve weeks for at least two years after the cessation of treatment; (b) negative cerebro-spinal fluid during these two years; (c) absence of clinical and radiological signs."²⁵

Many of our general paralytics discharged from certificate owing to their mental improvement, and the presumable quiescence or cure of their parenchymatous syphilis, are yet left at the best with meningo-vascular or endosyphilis.³⁷ O'Leary, in spite of having found negative spinal fluids in 32 per cent. of his cases after malaria and tryparsamide, stresses the importance of further trivalent arsenic and bismuth to prevent relapses and cardiovascular degeneration.³⁶

All syphilitic discharges require at least two years' further intensive anti-syphilitic treatment, followed by two years of observation for signs of mental, neurological

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or serological relapse. If they are not treated, there is a serious risk, not alone of relapse, but of fresh females being infected, subnormal children born, and the patient ultimately being returned to a mental hospital to die.

Up to the passing of the Mental Treatment Act of 1930, the only way that mental hospitals could keep an eye on their G.P.I.'s who showed mental remissions and did not require attention under certificate, was to discharge them "on trial," with the recommendation that they should consult their own doctor, or a venereal disease clinic, for further treatment: during a month's trial they might attend for treatment, but with the certificate from their own doctor that their mental improvement was maintained they usually passed out of the sphere of the psychiatrist.

The Mental Treatment Act, with its provisions for after care, out-patient departments co-operation with voluntary hospitals, clinics, research and joint agreements between local authorities, opens up the possibility of at last providing adequate treatment for this class of patient under the supervision of a psychiatrist.

Any scheme for the necessary co-operation between mental hospitals and those who are likely either to meet incipient cases of syphilitic psychosis, or to have the further necessary treatment of syphilitic cases discharged from hospital, is worthy of serious consideration.

The L.C.C. mental hospitals have already fully recognised this important problem and have made provisions for the follow-up of their discharged neurosyphilitics by a special medical officer, and their attendance at mental clinics for periodical mental, neurologic and serologic examinations. It is, of course, difficult for isolated mental hospitals to attempt such work on a large scale, but under the provisions of the Mental Treatment Act it might be possible for a *number* of mental hospitals, on a regional basis, to make provision for this very necessary and rate-saving branch of the Public Health Service. Consultation with the Medical Officer of Health of the district will often enable use to be made of the existing provisions for the diagnosis and treatment of syphilis. The venereal disease provisions already in existence allow for public authorities providing free diagnosis, for the examination of pathological material (blood and C.S.F.), and the free issue of approved drugs

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for the treatment of early and communicable cases of syphilis; whether these provisions can be extended to include our neuro-syphilitics may be a controversial point, but it is surely well worth serious consideration, for many mental hospitals are unable to make provision for the examination of blood and spinal fluids.

To avoid overlapping and to make for cohesion and a maximum of efficiency and economy, close co-operation between the mental health and venereal disease authorities is very desirable.

The majority of cases of syphilis in the rate-aided classes are now treated at V.D. clinics; many patients go on their own initiative, some are sent by general practitioners. The patient is entitled to choose his own clinic, and may go to any one in England. The treatment is free, and is given under conditions of secrecy.

"As good an authority as Fordyce holds that G.P.I., tabes, and other forms of neuro-syphilis, originate during the first year after infection, and there is much evidence to support this."^{27, 28, 29} There is almost unanimous agreement amongst syphilologists that if the spinal fluid is negative five years after infection, there is very little chance that a person, even with a positive blood, will develop general paralysis.³⁰ The prognosis of a case of syphilis depends largely on the amount and duration of treatment given in the early stages. Little and insufficient treatment with arsenicals, etc., is worse than no treatment from the point of view of neuro-recurrence.³¹ I am strongly of the opinion, as the result of five years' observation, that the prognosis is much worse, and the serology more resistant to treatment, in cases of cerebral syphilis who have received insufficient anti-syphilitic treatment during the early stages of the disease; our best remissions among G.P.I.'s have been in cases who were never treated before admission to a mental hospital.

There is an overwhelming consensus of opinion among psychiatrists, which is fully endorsed by Professor Wagner Jauregg, that the earlier the treatment of general paralysis is started the better the results. Reid, writing of the results of malaria at Whittingham, found that the prognosis was better in cases where symptoms were of less than seven months' duration.³⁵ As in most pathological conditions, delay in the bringing under active treatment

of any case of cerebral syphilis seriously affect the ultimate chance of any amelioration.

Cases of neuro-syphilis, other than general paralysis, are now treated in mental hospitals by malaria. Clinically, pathologically, and serologically, it is often impossible to draw a hard and fast line between mesoblastic and parenchymatous syphilis,²¹ and Harrison is of the same opinion. Hamilton Marr states that 9 out of 10 cases now diagnosed as general paralytics are cases of syphilitic pseudo-paralysis.²⁴ Recent work has shown that the paretic colloidal curve on which so much importance is laid may occur in cases of severe meningeal syphilis without any involvement of the cerebral parenchyma.^{23, 56} The border-line between psychosis with meningeal vascular syphilis and G.P.I. is often impossible to define ante-mortem. It may be of interest in view of prognosis, but it is of very little moment as regards treatment, which is really what matters. Purvis Steward and G. W. B. James, among many others, have suggested the abolition of the term general paralysis and the substitution of progressive syphilitic meningo-encephalitis.²⁴ If this change would focus attention on the really important aspect of cerebral syphilis, namely, the treatment of syphilis, it would be well worth while. No doubt many of our so-called deaths from general paralysis are due to the rapid meningo-vascular syphilis, which Harrison holds to be perhaps the most fatal form of syphilis.

Surgeon Rear-Admiral Meagher, writing in the Board of Control Report on General Paralysis, says: "The diagnosis of the disease in its early stages requires expert medical knowledge and laboratory resources. Our general hospitals provide these requirements, but few of them undertake the special treatment required, and nearly all of them decline to receive mental cases as in-patients. The psychiatric and neurologic clinics abroad, with their easier conditions of admission, thus appear to possess advantages well worth considering."³³

No longer must the incipient general paralytic be sent to a poor law institution to await the development of certifiable disorder of mind before he can receive malarial therapy. He may enter a mental hospital as a voluntary patient for the treatment of mental illness.

The Mental Treatment Act does not define mental illness, each medical superintendent deciding for himself

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if a patient is suitable for admission ; patients may be sent to the mental clinic or direct to the mental hospital, neither a recommendation from their own doctor nor from a V.D. clinic being necessary. These patients who know of their condition, and are as yet in a state to co-operate in treatment, often require, as the Law allows, secrecy in regard to the nature of their complaint and of the treatment they are receiving. It would appear that mental hospitals have no right in this class of case to communicate the diagnosis to any relative, even husband or wife. Crookshank, writing on the Law on Venereal Disease, states : " An officer of an Institution may not communicate his diagnosis to any person but those concerned with him in the management of the case." " It is actionable in Law to impute to any man the pox." ³⁴

It may be permissible, in the case of a certified patient, to inform the nearest relative that a man has general paralysis, but it leaves one open to legal action if one communicates the diagnosis of syphilis in the case of a voluntary patient, except where there is a legal duty, such as exists in connection with death certificates. If justification and privilege are pleaded, it would appear necessary to have strictness of proof sufficient to satisfy a jury ; unfortunately, in this country at present, it is only necessary to do a blood and spinal fluid Wassermann at a recognised laboratory. Such examinations as the colloidal-gold and similar tests, of course, cannot be held to be diagnostic of syphilis to a reliable degree, ⁵⁶ but the Wassermann alone, without such more sensitive tests as the Kahn, or Meinicke, seems hardly adequate.

Buckley Sharp writes : " In every disorder of the nervous system it is necessary to investigate for syphilis. ³¹ Dr. W. B. James has suggested that failure to do a lumbar puncture and venepuncture by general practitioners in doubtful cases might come to be considered as equivalent to not doing an X-ray in a suspected fracture. ²⁴

W. D. Nicol pointed out that in his visits to mental hospitals in connection with the supply of infective mosquitoes he was struck by the absence of physical signs and the vagueness of many cases who had gone so far as to need certification. ²⁴ Dunker, in America, found that the most common symptoms of early cases were emotional irritability and restlessness, and states that anyone between the ages of thirty and fifty with an

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indefinite neurotic complaint ought to be regarded as a potential G.P.I. Biologic changes almost always precede clinical symptoms.

Hence all patients at a mental clinic in industrial areas should have their blood examined as a routine measure. A good percentage will require spinal fluid examination, and about 10 per cent. will require syphilitic treatment of one form or another. The ordinary syphilitic can most conveniently be referred to the venereal disease department, as also the earlier neuro-syphilitic, but there will be left a number of cases in need of in-patient treatment by malaria and/or other forms of pyro-therapy. Many will be admitted to mental hospitals either as voluntary, temporary or certified patients.

The stigma attached to venereal disease is only a degree greater than the stigma unfortunately attached to people who have been in mental hospitals, affecting not only the patients but their families. Again, to quote Crookshank : "The very persistence of the term venereal disease suggests a still lingering belief in a special order of diseases contracted only during wrongful exercise of the sexual function, existing for the visitation of penalties on the immoral : and differing essentially, though mysteriously, from other communicable disorders." ³⁴

There is a marked tendency to minimise the medico-social importance of syphilis, a veritable conspiracy of silence ; unpleasant facts are never easy to face, and in the problem of syphilis and psychosis the social order tends to repress the urgent necessity of "getting on with the job." The mental and V.D. services were never less popular objects for the expenditure of public money. Up to 1930 the Ministry of Health paid 75 per cent. of the cost of V.D. clinics, the local rates only 25 per cent. ; this sum from the Ministry is now merged in the block grant, and every endeavour ought to be made to ensure that there is no falling off in the already inadequate provision for treatment.

Since the introduction of Wagner-Jauregg's malarial therapy to this country by Clark of Whittingham in 1922, malaria, in spite of the increasing use of other pyrexial agents, such as diathermy and sulphur and other forms of non-specific therapy, is the one most in demand for treating cases of parenchymatous cerebral syphilis. General practitioners and neurological specialists have

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no hesitation in referring cases to mental hospitals for treatment, recognising full well that psychiatrists have the most experience in this, so-called dangerous, method of treatment.

The work of James, Nicol and Shute at Horton Mental Hospital has proved that the British mosquito (*Anopheles Maculipennis*) is not capable of carrying the Indian strain of benign tertian malaria, as it is only infected by the Italian strain. This discovery ought to lessen the inability of outside hospitals to give malarial therapy. It is also worthy of note that in the passage of malaria from man to man by blood infection the strain loses its power of infecting any type of mosquito owing to the non-development of forms necessary for the cycle in the mosquito.

The paper of R. Cranston Low on the use of non-specific protein therapy is of interest. He briefly reviews the various agents used to produce protein shock, or pyrogenic therapy, and includes artificially produced diseases such as malaria. He states that the administration of mercury, iodides, arsenicals, colloidal metals, etc., may act by producing a breaking down of inflammatory tissue with resulting protein absorption; ultra-violet light treatment is also included by him under the indirect methods of protein therapy. Non-specific protein therapy in any form has, he states, a definite effect on the Wassermann and other serologic reactions; even hot baths alone may influence serology.⁴²

The work of Power and others has shown that much of the good effect of malaria and sulfosin follows from altered metabolism and stimulation of the reticulo-endothelial system.⁴⁵ Non-specific therapy alone may, in some cases, bring about complete reversal of the blood and spinal fluid Wassermann or other serologic reactions.⁴² Low, in the conclusion of his paper, writes: "It is, therefore, evident that all forms of protein shock treatment, especially if a temperature is induced, will influence the early stages of syphilis beneficially, but not to such an extent as to warrant their adoption generally, either alone or in combination with drug treatment. The position is quite otherwise in the later stages of syphilis, and especially in neuro-syphilis where anti-syphilitic drugs alone are usually unsatisfactory."⁴² He considers malaria dangerous and difficult to give, and

this is an opinion shared by most neurologists, syphilologists and not a few psychiatrists. I am of opinion that malaria given by a person with a reasonable experience of its action is one of the easiest and most reliable forms of therapy for parenchymatous syphilis. It, alone, may bring about amelioration almost amounting to a cure mentally and serologically of even the most advanced types; I have never yet seen a case who has lived a reasonable length of time after treatment by malaria and yet has not shown some serologic improvement.

Nicole and myself, in the *American Journal of Syphilis*, have analysed the changes that occur after malaria, the principal observations being (1) specific tests in blood and spinal fluid may become negative, (2) four years are required before marked changes are noted.²²

The results of malaria are good, of malaria and pentavalent arsenicals (such as tryparsamide) better, but the best results are obtained by a combination of malaria, pentavalent arsenic, bismuth in its anionic form and a trivalent arsenical of the 914 group (stabilarsan, neosilversalvarsan, sulphostab or metarseno-argenticum). Iodides are more effective given intravenously than by the mouth. Harrison, writing in *St. Thomas's Hospital Gazette*, states: "The therapeutic effect of any of the arseno-benzol group is always better when given intramuscularly or subcutaneously than when the same dose is given intravenously." In choosing the trivalent arsenical it is advisable to select drugs that can be given intramuscularly, as the intravenous technique is often difficult in patients who will not co-operate. Drugs which cause a slough, if the vein is missed, are on the whole better avoided unless the A.M.O. has good experience of intravenous technique at a venereal disease clinic. Acetylarsan and sodium-stovarsol have had a vogue recently; I have given both an extensive trial, and I am of the opinion that tryparsamide is the most powerful drug of the pentavalent group in the treatment of cerebral syphilis, and that its alleged danger of causing optic atrophy is overstressed; with suitable dosage and intervals between doses, as in all specific treatment, complications can be avoided in the majority of cases. W. A. Caldwell states: "Malaria is still the best pyretic agent," and he recommends a short course of tryparsamide and "914" after malaria, followed by a further course of

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tryparsamide if the mental, neurological or serological findings require it. He stresses the importance of following up treatment with arsenicals. With "914" after malaria, 10 per cent. better results are obtained.⁴⁰ Henderson and Gillespie stress the importance of supplementing malaria with tryparsamide and arsenobenzol compounds.²¹

Buckley Sharp reports excellent results with tryparsamide, but in patients with meningo-myelitis tryparsamide at first often causes an exacerbation of symptoms.⁷ Lees gives to all neuro-syphilitics tryparsamide and bismuth, and to general paralytics malaria as well. The longer he uses tryparsamide the better he likes it.⁴¹ The extensive literature on the treatment of neuro-syphilis shows all but unanimous agreement as to the value of tryparsamide in general paralysis. Tennant found better results mentally and serologically in cases treated by malaria and tryparsamide than in those treated by malaria alone. He found the highest serologic changes 2 to 7 years after cessation of treatment.⁴² Power states that it is not an exaggeration to say that the beneficial effects of malaria in general paralysis are as gratifying as those of liver in pernicious anæmia and insulin in diabetes.⁴⁵ At Rainhill Mental Hospital, up to 1927, malaria alone was given, and general paralysis of the insane was responsible yearly for 30 to 38 per cent. of the male deaths. Following the addition of tryparsamide to malaria in 1927, the percentage fell to 17.95 per cent. in 1928, and 12.24 per cent. in 1930.⁵⁴

There are two main schools of treatment concerning the administration of these drugs: the concurrent school (arsenic and bismuth together) and the alternating school, in which the arsenic and bismuth follow each other. A good summary of the merits and disadvantages of both schools will be found in Buckley Sharp's book.⁷

For cerebral syphilis, the alternating method is perhaps the best. It is the more economical in time and money, and rest periods are not required, so that a constant attack on the *treponema pallidum* is possible. The patient does not become so easily intolerant to a drug, and complications are less likely to arise. The recent tendency is to recommend twice-weekly doses, equal to the previous once-weekly injection, and instead of the usual 3 grammes of tryparsamide, 1.5 grammes twice a

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week is worth a trial. There is a school of opinion which holds that tryparsamide should be given during the period of malarial rigors; others have a preference for starting tryparsamide after the completion of the malarial course.

Every method of treatment ought to be given a chance, including the difficult Swift Ellis cisternal technique, before a patient is allowed to be labelled Wassermann fast. I have found, in obstinate cases, that auto-hæmo-injections of blood drawn from the patient within half an hour of exposure to ultra-violet ray will in some cases bring about negative results in long-standing cases of positive serology. The technique is briefly as follows:—

- (1) An erythematous exposure of ultra-violet light.
- (2) Inject 2 gm. of tryparsamide intravenously; without withdrawing the needle take 10 c.c. of blood.
- (3) Inject this blood intramuscularly.

The course consists of two exposures and two injections a week for at least two months. This is a modification of Rajkas technique.⁴⁷

Acetylarsan (diethylamine stovarsalate),⁵⁰ and sodium stovarsol,⁵¹ are often used as a substitute for tryparsamide in debilitated cases or in cases hypersensitive to this drug. They are best given subcutaneously or intramuscularly. Advanced bedridden cases with kidney trouble have improved sufficiently after the use of these drugs to be able to stand a course of malaria. The use of stovarsol by the mouth is dangerous, and its value in advanced syphilis is almost negligible. Hanzlik and his co-workers in America advance the claim that bismuth in an anionic form (iodo-bismuthate of quinine) has a very high penetrative power of the central nervous system.⁵³ Harrison states: "I.B.Q. is the only form of bismuth used in this country which is anionic, and it would appear to be the bismuth preparation of choice in the treatment of parenchymatous neuro-syphilis."⁵² Stabismol or bivitol (cationic-bismuth) are excellent preparations for the adjuvant treatment of the meningo-vascular lesions. Recent work by Levaditi and others at L'Institut Pasteur shows that anionic bismuth is not superior to liposoluble cationic bismuth in its power of penetrating the central nervous system. Mercury is now almost obsolete in the treatment of syphilis.

The prognosis of neuro-syphilis, especially important

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in voluntary patients, depends on (a) the early recognition of the disease, (b) the age of the individual, (c) the pathological type, and (d) the amount of treatment given. Each case of neuro-syphilis must be treated according to the individual needs of the case. Voluntary cases may only require a few months' institutional care, during which time malaria can best be given. In certified cases, when mental improvement sets in after three or four months, relatives often take the case home. Assuming that the average stay of a neuro-syphilitic in a mental hospital is twelve months, the following course of treatment based on suggestions of Lieut.-Col. E. T. Burke, Director of the Salford Municipal Clinic, would appear to yield the best results in the average case :—

After admission, say 1st to 4th week, while waiting for malaria, subcutaneous sodium stovarsol grms. 1 three times a week ; 5th to 12th week, malaria ; 13th to 20th week, tryparsamide ; 21st to 28th week, I.B.Q. (bismuth) ; 29th to 36th week, trivalent As. (stabilarsan), iodides by mouth ; 37th to 44th week, stabismol or bivatul ; 45th to 48th week, tryparsamide, acetylarsan or sodium stovarsol ; 49th to 52nd week, neo-silver-salvarsan, iodides. Ultra-violet ray treatment being given throughout the course.

This scheme represents the maximum treatment that can be given in a year provided no complications occur. The type of further treatment necessary depends on the blood and spinal fluid serology at the end of the year, adopting the standards of cure quoted earlier.

Malarial, or other forms of pyro-therapy require skilled knowledge and the provision of in-patient beds which in many areas can only be provided in mental hospitals. In some areas municipal and voluntary hospitals are dealing in a small way with the treatment of parenchymatous cerebral syphilis with incipient mental signs. There is a very real danger that if and when some of these cases relapse and require certification their diagnosis may be almost impossible owing to the changes already produced in the spinal fluid by previous treatment. I have under my care at present cases treated in other mental and general hospitals whose only significant serologic change is a weak positive blood, the cerebro-spinal fluid being negative to the usual tests. (Colloidal gold, cell count, globulin and Wassermann.)

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Venereal disease clinics are bound to secrecy, but, if mental hospitals and venereal clinics were fully regarded by the Ministry of Health as an integral part of the venereal disease scheme, information should be available to the medical superintendent of a mental hospital. A mental patient discharged from mental hospital care and requiring further anti-syphilitic treatment ought in all cases to be referred to the Medical Officer of Health for such treatment, preferably at a venereal disease clinic.

At the start of malarial therapy in this country, it was laid down in administrative instructions from the Board of Control that the Medical Officer of Health was to be informed whenever a malarially treated patient was discharged. He was given the name and address of the discharged patient, this information being given to the M.O.H. in view of a possible spread of malaria. This practice has fallen into abeyance in some areas. Yet here is the necessary machinery for letting the M.O.H., who is responsible for the venereal disease service, know that there is a person likely to require further anti-syphilitic treatment. It can no longer be presumed that the treatment, no matter how efficient, given in a mental hospital, is sufficient to render unnecessary a further periodical overhaul. On the contrary, clinical and mental symptoms will have to be watched for and the patient brought under active treatment if and when necessary. Especially will cases discharged "on trial" or discharged "recovered" with a positive blood or spinal fluid Wassermann have to attend at a venereal disease clinic for further treatment, and at a mental clinic for periodical examination. Extended periods of trial are desirable in cases of the syphilitic psychosis; suitable cases might be found who could be boarded out and required to attend a venereal disease and mental clinic; at present many of our remissions are sufficiently stabilised to be on parole and useful workers. If these patients could be under some supervision, their discharge from hospital would help to mitigate in a small way some little part of the over-crowding which is due to the prolonged period of life of "hospital fast" general paralytics.

A patient who goes to a V.D. clinic gives his name and address to the reception clerk; this information is entered on a confidential register and he is allotted a number by which he is known to the medical officer and others

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associated with his treatment. If he defaults from treatment the patient may be sent a letter marked "private," asking him to call at the M.O.H.'s office at the Town Hall or elsewhere on an urgent health matter. On discharge on trial it would therefore be possible for the patient's M.O.H. to be informed and information in the possession of the mental hospital (*re* diagnosis and treatment) could be passed on to the V.D. clinic undertaking further treatment.

The person responsible for the treatment of any case of syphilis requires a full history of the case and the complete record of previous pathological findings and treatment. The mental hospital ought to know what the V.D. clinic has done and the V.D. clinic has a similar necessity for information. It is necessary in the patient's interest and in the interest of the health of the community that this weak link in the preventative health service of the nation should be considerably strengthened. The late Colonel Lord wrote: "General paralysis destroyed annually a small army of the most virile and useful section of the community, the go-ahead active fighters in every walk of life, men who enjoyed life to the uttermost. To reduce that waste of life was the particular object of the G.P.I. sub-committee."²⁴ Without any great expenditure of public funds, provision could be made for the necessary after-treatment of discharged paretics, and such efficient treatment of syphilis would result in a very appreciable diminution of the number of subnormal and psychotic invalids who now constitute so heavy a drain on the national purse.

The Board of Control already requires that every case who has ever had syphilis shall have that factor recorded on the medical register, a copy of which is forwarded to it every year. It also requires yearly returns of all cases of general paralysis treated by malaria. It has thus, in its files, information of considerable importance, as many discharged G.P.I.'s are often readmitted to mental hospitals other than the one in which they had previous treatment by malaria; in some of these cases it may be impossible on pathological grounds, owing to an improved spinal fluid, to make a diagnosis of general paralysis. It would be a great help if the Board of Control could pass on information from its files to the medical superintendent in charge of such cases.

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The treatment of incipient cases of syphilitic psychosis may take place in venereal disease clinics, municipal or general hospitals, or in mental hospitals and mental clinics under the provisions of the Mental Treatment Act; patients may pass from the V.D. clinic to the municipal hospital and thence to the mental hospital, receiving different stages of their treatment in each of these different institutions. The cases admitted to mental hospitals may be received as voluntary, temporary or certified. A patient admitted as a voluntary patient for malaria treatment may require to be transferred to the temporary or certified class. Cases have been treated by malaria in voluntary hospitals, and in the course of the rigors the patient has become restless and confused. The voluntary hospital will, as often as not, have to pass on the case to the municipal hospital; the municipal hospital keeps the patient awaiting a vacancy in a mental hospital. It is in such cases that co-operation is necessary to prevent a harmful interruption of treatment. For example, it may be impossible to reinfect the patient with the strain of malaria available. We have recently had a case who, in spite of repeated injections of malaria, did not develop rigors. The reason was only discovered on making inquiries from his relatives which elicited the information that he had been in a voluntary hospital. On making further inquiries still, it was found that he had one rigor in the voluntary hospital, and owing to acute mental symptoms developing, he had to be transferred to the mental wards of a poor law institution. He had been given quinine and it was impossible to reinfect him. What might have been a good recovery if full and continuous treatment had been given, developed into an incurable general paralytic.

Close co-operation between the mental hospitals and venereal disease clinics will no doubt result in the earlier discharge of many certified general paralytics, as in any stage of his treatment after malaria he could be referred to the venereal disease clinic for the necessary continuance of anti-syphilitic measures. The voluntary patient's stay need be very short and his absence from home in early and favourable cases a matter of only a few months.

The venereal disease clinic, apart from sending cases of incipient syphilitic psychosis to its mental clinics, will refer those cases of phobias and obsessions of venereal disease for

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psycho-therapeutic measures which can alone bring about recovery.

As a physical scourge, syphilis has long ranked high among the evils with which our civilisation is beset, and of recent years we are beginning to appreciate the dread insidiousness with which it attacks the highest organ of man—his mind. Whether our attempts are directed to preventing the mental disasters that can result from syphilis, or whether we are devising the best means and places for effecting a cure, or whether we plan for a prevention and—failing that—an early treatment of possible relapses, we require to make the fullest use of all the services that deal with syphilis in any shape or form, and it is not unreasonable to hail the "Mental Treatment Act of 1930" as a measure that will allow and encourage the development of efficient co-operation far in advance of that hitherto possible.

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