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INTENSIVE TREATMENT OF
SYPHILIS & LOCOMOTOR ATAXIA
BY AACHEN METHODS

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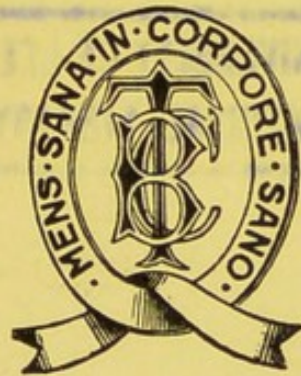
THE INTENSIVE TREATMENT
OF SYPHILIS & LOCOMOTOR
ATAXIA

BY

AACHEN METHODS

BY

REGINALD HAYES, M.R.C.S., ETC.



LONDON
BAILLIÈRE, TINDALL AND COX
8, HENRIETTA STREET, COVENT GARDEN

1914

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PREFACE

MEDICAL practice continually supplies us with instances of the maxim, 'All that is true is not new, all that is new is not true.'

Of this an apt example is furnished by the use of inunction in the many forms of spirochætal infection in which the administration of mercury may be considered necessary.

That this method, if properly applied, is followed by results better than those obtained by any other mode of giving the drug—and this without danger or pain—I shall endeavour to show in the following pages.

Let me emphasize at the outset that I do not look upon inunction of mercury in any way as a *rival* to salvarsan; both are of the greatest value. Each has its appropriate sphere, and of necessity its limitations.

I wish, above all, to lay the greatest stress upon the necessity of the proper carrying out and careful supervision of the rubbing, for upon this so largely

depends the success or failure of the treatment I am about to describe.

It is undoubtedly owing to the uncertain results obtained by unskilled or haphazard methods that injunction does not hold to-day in this country the position to which it is entitled.

The words, apparently superfluous, 'and locomotor ataxia' have been added to the title, because, though both the diseases mentioned are due to the same organism, the details of treatment differ in many particulars.

I desire to acknowledge the courtesy of the editors of the *Lancet*, the *British Medical Journal*, the *Practitioner*, and the *Guy's Hospital Gazette*, for permission to make use of articles by me which have appeared in their columns.

REGINALD HAYES.

93, CORNWALL GARDENS, S.W.,
August, 1914.

The Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods¹

MODERN ALTERNATIVES TO MERCURY.

IN spite of its many competitors now and in the past, during which it has been used for several centuries as a remedy for venereal disease, mercury (provided that it be adequately administered) may safely be said to remain, from an all-round point of view, the most generally satisfactory agent for the treatment of syphilis and of so-called 'parasyphilitic lesions'; for that diseases of the latter class (which Mott [1] suggests should be renamed 'parenchymatous syphilis') are directly due to the presence of the *Spirochaeta pallida*, or to some form of its life-cycle, recent investigation has clearly demonstrated. Now, of all drugs, ancient or modern, that have challenged the supremacy of mercury as an antisyphilitic, none

¹ By Aachen methods I mean the inunction of a mercurial ointment by the bare hand of skilled rubbers, under proper medical supervision, and in addition the use of sulphur water internally and externally, as administered at Aachen.

can compare in efficacy with Ehrlich's '606.' Yet its position at the present time—much as was claimed for it at first—may be described as that of a valuable assistant to the older remedy. In early syphilis—and it is there that the most brilliant results of salvarsan are seen, owing to the spirochætal infection being then chiefly confined to the blood-stream or vascular structures—it is now generally agreed that the best effects are obtained by giving it in conjunction with mercury. In late syphilis, in which the infection is often situated in parts which for anatomical reasons are not easily reached through the blood-stream—as, for example, the cerebro-spinal system, or in pathological non-vascular structures, such as gummata—salvarsan, owing to the transitory nature of its influence, due to rapid elimination, when safe doses are used, is of small utility. Here the superiority of mercury intensively administered is particularly marked. Moreover, there are certain conditions in which, while salvarsan is either useless or absolutely contra-indicated, intensive mercurialization remains our sheet-anchor, and can still be given both with a considerable probability of benefit and with practically no risk. As coming under the heading of these conditions may be mentioned a large proportion of those cases in which there is serious affection of the central nervous system,

disease of the circulatory organs, advanced age, and also that group where a marked idiosyncrasy against arsenic exists. Moreover, with salvarsan (not to mention minor difficulties) it appears that, even after taking the most elaborate precautions, there is still a risk to the individual, which is never quite calculable, owing to the toxic influence of the arsenic. This agent has caused death from hæmorrhagic encephalitis shortly after injection in some cases of non-syphilitic disease, a fact which must invalidate the endotoxin theory of Ehrlich, Wechselsmann, and others. We may assume, however, that with greater care in the selection of patients, the adjustment of dose and the preparation of the solution, likelihood of this unfortunate occurrence will be diminished. It should be noted that the use of adrenalin has proved of great efficacy in certain instances, both as a prophylactic and as a remedial agent after the onset of untoward symptoms.

Of the remote effect on the body of the newer arsenical compounds we know practically nothing, owing to the comparatively short time which has elapsed since their introduction. Many more years of experience will be necessary for their true value and their limitations to be determined, and our ignorance in the matter demands the greatest possible caution in their use.

The steady advance of medical science will, perhaps, eventually lead to the substitution for spirochæticidal drugs of a vaccine or serum. Already, indeed, something has been done in this direction by injecting salvarsanized serum into the cerebro-spinal fluid, by means of lumbar or cranial puncture, in those suffering from the later effects of syphilis of the central nervous system, such as tabes and general paralysis. This form of medication by injection into the cerebro-spinal fluid was suggested in 1911 by Marinesco, of Bucharest [2], for the treatment of general paralysis, and its application to tabes dorsalis elaborated by Swift and Ellis, of the Rockefeller Institute, in New York. This or some modification of the method has now been tried fairly extensively, with results which are said to be most encouraging in some instances. The good effect so obtained is attributed to the presence of antispirochæte antibody and minute traces of salvarsan in the serum, which can be prepared either from human beings or certain animals. A later plan—namely, the injection directly into the cerebro-spinal fluid of a solution of neo-salvarsan—has been given a trial by Ravaut [3], of Paris, who expresses himself as by no means satisfied with the outcome. Apropos of lumbar puncture, however, it may not be out of place here to remark that, apart from risk of myelitis, its indiscriminate use is to be most strongly

deprecated, as, indeed, is any avoidable operative interference in the case of tabetics, who should be protected so far as possible from shock and pain, to which they are peculiarly susceptible, and bear very badly. Two sufferers from tabes, under my care, in whom lumbar puncture was performed for diagnostic purposes by an expert, had their troubles considerably aggravated as a consequence. Up to the present time, however, serum therapy as usually applied has failed to be of service, owing not only to the lack until lately of a satisfactory method of cultivating the treponema outside the human body, but also, as indicated by Neisser [4] to the difficulty, if not the impossibility, of obtaining a mitigated virus. Recently, it is interesting to note, the cultivation of the spirochæte *in vitro* and in certain animals by Hideyo Noguchi and others appears to afford fresh possibilities in this direction. Or it may be, perhaps, that in the application of some newer discovery in the science of chemotherapy a more reliable curative agent will be found.

Meanwhile let us not abandon old and well-tested drugs in favour of new and ill-tested ones, but ever bear in mind that it is the part of wisdom—nay, our obvious duty—to insure that those which are trustworthy are put to the best possible use.

MERCURY AS AN ANTISYPHILITIC.

In the hope of furthering this purpose in regard to mercury as an antisyphilitic, I propose to discuss briefly the manner in which it is usually given at the present day. Unfortunately this necessitates going over some more or less familiar ground, as well as a certain amount of reiteration, for both of which the great practical importance of the subject and a desire to avoid ambiguity must stand as excuse. Having regard, then, to the conditions for which mercury is used, and to the urgent need for freeing the body from the causative organism *as rapidly as possible*, and with the minimum of danger, pain, and discomfort to its unwilling host, it behoves us to consider with all proper care and gravity the mode of administration we employ. That this consideration has not sufficiently been given is due among other things to the amazing variations in the course the disease may run, at one time seeming to get well spontaneously, at another proving refractory to all forms of treatment. Again, in this country the type of syphilis, in its earlier stages especially, is changing to one of a much milder kind than that seen a few decades ago. This may be accounted for partly by the fact that the disease is perhaps much more widespread than formerly, due to the greatly in-

creased facilities for travel. Other changes in our habits of life also tend to affect the type, chief among them, perhaps, being the diminished consumption of alcohol, greater personal cleanliness, and a growing conviction of the importance of thorough treatment. The possibility, too, of ancestors, recent or remote, having acquired the disease must also be considered in this connection.

METHODS OF ADMINISTRATION OF MERCURY.

The characteristics of syphilis mentioned above, in addition to its frequent tendency to become latent, to which mercury given in inefficient quantities contributes, making it appear that all is well when all is not well, have made it a difficult matter to estimate the relative value of the many ways in which the drug has been given. Social considerations, convenience, a desire for secrecy, ignorance or carelessness on the part of patient or doctor, the perennial hankering after something novel in treatment—all these have at one time or another had their share in confusing the issue and making it difficult to give a definite answer to the question, as important now as ever, What is the best method of administering mercury to free or assist in freeing the body from the causative organism in the *safest and most rapid manner?*

We must never lose sight of the fact that, in the light of our present knowledge, rapidity in the process of sterilization, combined, of course, with safety, should be our principal objective in treatment, and is worthy of sacrifice in other directions. Rapidity is especially desirable in order to curtail the infective period, to prevent the formation of a resistant strain of organism, and to allow no time for its entrenchment in the deeper parts, for it is now recognized that this can occur very much sooner after infection than was formerly supposed.

Continuous Oral Administration.—The current modes of giving mercury in syphilis may broadly be classified as the continuous and the intermittent. Of these, the first has enjoyed during the past two or three decades—indeed, until quite lately—a very marked degree of popularity, the drug in small doses being taken by the mouth several times daily, in the form of pills or liquid mixture, so as to keep the patient mildly under its influence. Given thus, especially according to the formulæ advocated by the late Sir Jonathan Hutchinson, it undoubtedly marked a decided advance on previous fashions of prescribing.

To-day, however, it may be said that evidence from a variety of sources, which has taken many years to accumulate, has thrown the gravest

doubt upon the desirability of its continued use, if other means can possibly be employed. For instance, as the responsibility of carrying out this treatment must often be left to the patients themselves, it cannot be regarded as altogether satisfactory, especially in view of the very prolonged period during which medication should be continued, as well as of the age at which as a rule it is required.

A further disadvantage is its marked tendency to upset the gastro-intestinal tract, as evidenced by the diarrhœa and cramp which frequently result. This is due, or at any rate partially due, to direct chemical irritation, which often necessitates the simultaneous exhibition of opium, thereby causing interference with many of the normal functions, or even entailing the complete cessation of treatment for a time.

Moreover, however mercury may be taken, it is always in part excreted by the bowel, which it is therefore of supreme importance to keep in the best possible condition during the administration of the metal. To expect the gut simultaneously to excrete and absorb the drug is unreasonable, both *a priori* and on clinical grounds. When mercury is ingested, it is a matter of common knowledge that the patient is brought under its influence only by slow degrees, clinical and laboratory evidence on this

point being both ample and complete, and this fact renders the method absolutely unsuitable in the presence of urgent symptoms, as in the case of cerebral syphilis, when every hour counts. It may be added that the experience of many authorities tends to show that in syphilis the use of small doses of mercury given by the mouth is not protective against secondary and tertiary mischief. Head [5] mentions four cases in which pills were actually being taken under guidance of an expert at the time that serious nerve syphilis supervened. Case 2 (p. 45) in my series presented similar features.

Sir Felix Semon [6], in dealing with this question, has stated that almost every patient he has seen with severe tertiary affections of the upper air-passages had undergone mercurial treatment *per os* in the early stages of the disease—not a few of them for the two years enjoined by Sir Jonathan Hutchinson. Workers in such special departments as those dealing with disease of the eye, ear, skin, nervous system, and mind, are all agreed as to this not uncommon failure to prevent late symptoms—a matter, be it remembered, affecting the safety and well-being of both present and future generations. My own experience in the treatment of tabes and nerve syphilis quite accords with this expression of opinion.

It is thought also by some to predispose to buccal lesions, especially to glossitis of an intractable form, with all its attendant dangers.

These conclusions from the clinical side alone point strongly to the untrustworthiness of the method of internal administration; but they are both supplemented and explained in the most convincing manner by laboratory workers with the Wassermann reaction. For instance, it has been found by H. W. Bayly [7] that after taking pills for six months there was either no effect at all, or only the feeblest, as shown by the test, and that as compared with injection or inunction internal medication is very much the least effective method. These results have been confirmed by a number of other observers, and must lead to the reflection that in many cases the use of internal medication is little more than a placebo, and that, be it noted, in a condition urgently requiring the promptest and most vigorous attempt at thorough eradication.

Taken together, then, this experience, gained after many years of trial from such a variety of clinical sources, and supported as it is by delicate modern laboratory investigations, may be assumed to constitute a contra-indication to continuous or internal treatment of a character so imperative as absolutely to preclude its use whenever it is possible to apply any other.

The Intermittent Mode of Administration.—Having discussed, then, the continuous, or oral, mode of administration, let us now consider the second, or intermittent, line of treatment. Of those who adopt this method—now most generally in vogue—the majority give the drug as it were by schedule, in definite courses and at regular intervals; and at other times in addition if there is any obvious manifestation of the disease.

To enable the body to recover its auto-defensive mechanism, a period of medication is followed by one of rest, further treatment being given in accordance with a procedure which has proved to yield the best results. Clinical experience is now, of course, supplemented by the Wassermann or Noguchi's luetin test, preferably the former, which afford information of the greatest value, both as to the necessity for active therapeutic measures and as to their duration. The investigations, just referred to, of practically all workers with the Wassermann test tend to demonstrate the superiority of the intermittent over the continuous method. It has the further distinct advantage of insuring direct supervision by the medical adviser. This method is now usually employed in one of three ways:

1. By intramuscular injection of soluble salts in aqueous solution, or of metallic mercury or calomel suspended in an oily medium.

2. By calomel fumigation.

3. By inunction of the skin with a mercurial ointment.

Injection Methods.—Judged by the standard of convenience and by clinical and laboratory results, the various injection methods, if properly carried out, not infrequently have much to recommend them. In some rare instances, indeed, injection may be the only satisfactory manner of employment, as, for instance, where time is very limited and financial expenditure is of great consideration, or where certain skin conditions render inunction impossible. It has its uses also as an adjunct to that treatment. We must not overlook, on the other hand, certain disadvantages more or less incidental to all forms of injection. Even in the most skilled hands these include the possibility of severe pain, troublesome induration, hæmatoma, abscess, and embolism, as well as the inability to control the effect of the drug after introduction. This inability may cause in the case of the insoluble preparations the condition known as mercurial stasis, which can be followed by such appalling results. The patient's dread of the needle, too, must be taken into account; nor must we ignore the fact that cases of death, both sudden and remote, due to injection have been and continue to be recorded. Hæmophilia is an absolute bar to its use. In view of these considerations it is

scarcely necessary to urge the unsuitability of injection for general or indiscriminate application.

Calomel Fumigation.—This method was at one time much practised, and is still occasionally of service, especially in certain skin manifestations. It has, however, largely fallen into disuse of recent years, its effects being uncertain and somewhat difficult to control.

Inunction.—For the third, or inunction method, if applied in properly selected cases by skilled rubbers (an essential point) and controlled by careful supervision, may be claimed safety, potency, and painlessness, with exemption from most of the drawbacks which we have seen to attend other kinds of treatment. It is with this method that for many years the name of Aachen has become associated.

Impressed by the benefits (subjective and objective) derived from a sojourn there by a number of patients coming under my observation, most of whom had previously taken mercury by the mouth for long periods without benefit, or had tried injection, auto-inunction, inunction at other spas, or the application of the drug by means of glass rubbers or gloves, the latter being the method in favour at Hot Springs in America, I resolved to investigate on the spot the technique as well as the results obtained.

While there, thanks to the courtesy of the late Dr. Feibes, I had the opportunity of observing

the effect of the measures used on a number of patients suffering from many forms of the disease, not a few presenting symptoms of tabes, these latter forming, as usual, a considerable proportion of those undergoing treatment. Of these latter many had been told by authorities of acknowledged eminence that they must resign themselves to the discomforts incidental to their condition as inevitable and incurable; yet after having been in some cases reduced to most crippling degrees of ataxia, they were sufficiently restored to health by prolonged courses of baths, waters, exercises, and inunctions, to be able not only to walk, but to enjoy an existence of modified activity. Improvement was shown, moreover, in numerous other ways, as, for example, by disappearance or decrease in the severity of the pains, crises, and other tabetic complications, to which matter fuller reference is made later on (p. 28 *et seq.*). A substantial proportion of these visitors return year after year for a further course to insure against relapse. This, they will tell you, is done not only under advice, but because their own subjective sensation of improvement, after undergoing a cure, satisfies them as to the desirability of such action.

THE AACHEN METHOD.

With the methods of inunction as usually carried out in England I was, of course, familiar, but I was very favourably impressed by the contrast in the technique adopted at Aachen. The close attention paid there to detail is most striking. A thorough and exhaustive physical examination is made before beginning the treatment. The heart, lungs, kidneys, nervous system, and teeth are each in turn carefully considered, for contra-indication to intensive mercurialization may exist, or modification of it may be required in cases of albuminuria, glycosuria of non-syphilitic origin, advanced valvular disease, pyorrhœa, etc.

To describe the usual procedure: The morning is begun by drinking from one to three glasses of the sulphur water. Next comes the bath, which is carefully adapted to the condition of the patient, the temperature and length of immersion being cautiously regulated according to the type of disease from which the patient is suffering.

Thus, a vigorous young subject with active early syphilis may with advantage be given a bath of longer duration and higher temperature than would be suitable for an enfeebled and elderly tabetic, in whom the pains may be started or aggravated, and to whom much discomfort or worse may be caused

by neglect of this apparently trivial detail. The bath is succeeded by a rest and breakfast in bed, to be followed soon after by application at the hands of an expert rubber, as a rule for twenty to forty minutes, of a $33\frac{1}{3}$ per cent. mercurial ointment, the quantity and site of inunction varying according to circumstances.

The thighs, calves, arms, and back are usually treated in turn from day to day. The groins and axillæ are avoided. Though in this country these parts are frequently submitted to inunction, a very short experience will clearly show that they are quite unsuited for a thorough and prolonged application of the remedy.

Stress is laid upon mouth hygiene, the removal of stumps and tartar being insisted upon as a preliminary measure. A soft toothbrush is used after meals, and a mouth-wash at intervals during the day. These precautions permit mercury to be administered, if need be, even to the point of causing a condition of general lassitude and drowsiness or intestinal cramps, without the occurrence, save very rarely, of salivation or gingivitis, which are almost invariably associated with failure to observe these directions.

The necessity for such care, as well as the potency of inunction as compared with internal medication, is illustrated by instances in which the presence of a stump or neglect of the mouth toilet for even a day

or two has rapidly caused gingivitis during its application, and this sometimes in patients who had previously taken courses of mercury by mouth for months without buccal discomfort.

Nevertheless, it appears to me that as a rule the occurrence of salivation and gingivitis does not form anything like an accurate index to the amount of metal absorbed, nor is it of value in calculating the effect upon the spirochætal infection. This, it is true, is contrary to the views generally held on the subject. It requires, however, only a limited study of this special branch of practice to learn that these symptoms may be induced by quite small doses of mercury internally in susceptible individuals, especially if the resistance of the mouth be lowered by the presence of tartar, stumps, or pyorrhœa. On the other hand, I have known patients undergo with great benefit, where due care is exercised, courses of from 100 to 250 rubbings, without the supervention of any mouth trouble whatever. This idea that 'touching of the gums' is indicative of the limits of physiological tolerance having been reached, or even that the patient is well under its influence, seems to be responsible over and over again for failure to get the best possible result from mercurial administration.

Auxiliary Methods.—Articles of diet calculated to produce looseness of the motions, such as white

wine, fruit and vegetables (if in an uncooked state), are forbidden. Early hours and moderate use of, or complete abstinence from alcohol and tobacco are enjoined, especially when the mouth or throat is affected. Plenty of fresh air and exercise short of fatigue are found also to contribute in no small degree to the attainment of a good result. It should not be imagined, however, that Aachen treatment and treatment at Aachen are convertible terms, for, owing to the varying types of patient and manifestations of the disease, the ritual there is modified according to the needs of each individual. Salvarsan, for instance, is often now given during the course, every case being considered on its merits in the matter of dose and frequency.

It is recognized, moreover, that a rest cure, with overfeeding, massage, and perhaps electricity, frequently proves a most valuable adjunct to the rubbing in certain instances where nerve symptoms are prominent, and in all serious cases is to be strongly recommended.

Balneo-Therapy.—While the peculiar efficacy of the Aachen method is undoubtedly due largely to the thoroughness and close attention to detail which I have already remarked upon as distinguishing its performance there, the employment of balneo-therapeutics as an adjuvant must be credited with an important share in the results.

The rôle of sulphur water, unless it directly assisted the mercury, would be of secondary importance. But there is strong evidence that it does so assist. The modern view is that mercury, shortly after its introduction into the body, is converted into an insoluble albuminate, and is subsequently stored in the tissues as a partially inert body. The H_2S of the mineral water, however, unites with this, and converts it into an active soluble compound, which circulates freely and is easily eliminated. This reaction between the organic salt and the gas has only comparatively recently been demonstrated *in vitro*, for it does not take place without the addition of blood-serum. Thus, in conjunction with sulphur water, mercury can be given freely, the ease with which it is eliminated being shown by the amount recoverable from the urine.

At the end of a course of mercurial treatment, without sulphur water, the amount of the metal excreted in the urine has been measured for a series of days; and subsequently during a similar series of days while the patient was taking sulphur water by mouth. During the second period the amount of mercury recovered was noticeably in excess of that recovered during the first.

Sulphur waters augment nitrogenous metabolism, and so give rise to increased excretion of urea and

sulphates. They cleanse, as it were, the whole system, promoting diuresis and catharsis, increasing excretion by the skin, checking bacterial growth, and facilitating the discharge of toxins. The appetite is stimulated and gastric digestion restored, while the flow of bile is notably increased.

We see, then, that sulphur facilitates the employment of an intensive treatment by flushing the tissues with a soluble mercurial salt, and at the same time insuring its rapid elimination. Consequently, large doses of the metal may be given with the certainty that on the one hand they will not prove therapeutically inert, and on the other hand their toxic effect will be minimized. It is a matter of common observation that temporary cessation in taking the waters during an Aachen cure is often followed by a train of symptoms, such as lassitude, cramp, and so on, all of which disappear upon resuming them in proper quantity.

DURATION OF TREATMENT.

The length of treatment generally considered necessary for a case of uncomplicated syphilis during the first two years has until recently been about six months, taken in courses of from four to six weeks, with intervals of rest. During part of this time some preparation of iodine or a tonic was

usually prescribed. Many authorities, however, dissatisfied—as they had reason to be—with the results so obtained, and as an outcome of their practical experience, have regarded with favour a further short course yearly for three or four years, or possibly longer, even in the absence of clinical manifestations.

How wise this advice of certain experts of pre-Wassermann days has been conclusively demonstrated by recent tests and investigations, which show the frequent latency of infection long after apparent cure. Since the invaluable discovery of the serum reaction and the introduction of salvarsan, old methods and formulæ are to a large extent in the melting-pot. For this reason it is impossible, at the present time, to be dogmatic as to the length of treatment required in a case of ordinary syphilis. Each case must be specially considered in the light of modern clinical and laboratory methods before making a decision. Dark-ground illumination and the use of the ultramicroscope enable the necessity for treatment frequently to be determined at a much earlier stage than was possible for the older clinicians, and the use of one or other is to be most strongly advocated in investigating all doubtful sores and abrasions. In later stages guidance must be sought in clinical symptoms and the Wassermann test. Once the diagnosis of syphilis

is certain, an attempt to effect the so-called *therapia sterilisans magna* of Ehrlich should be made as soon as possible, unless serious contra-indications exist.

Destruction of the Site of Inoculation.—First of all, where it can be done, it is advisable to destroy the site of inoculation by excision or the actual cautery, and to inject a solution of hydrarg. perchlor., in isotonic saline solution (strength, $\frac{1}{5}$ grain in 5 c.c.), into the surrounding tissues; or local calomel inunction may be employed. Ionization with mercurial salts is also useful for this purpose. The patient should then be submitted to a course of intensive mercurial treatment for ten weeks, given in conjunction with as full doses of '606' as may be considered safe, administered intravenously at the beginning, middle, and end of the period. By this means, or a slight modification thereof, the rapid disappearance of primary and secondary manifestations,¹ with the conversion of

¹ In a patient of my own where the presence of the spirochætes in an abrasion was demonstrated by H. W. Bayly by means of the ultramicroscope within forty-eight hours of inoculation, nine weeks' Aachen treatment, in conjunction with three full doses of salvarsan, effected what may be considered a probable cure. No further symptoms of any kind developed, and after cessation of all treatment, the blood test, performed every three months for a year, was negative. A similarly good result was obtained by the same procedures in another case, where a primary sore had developed, with marked adenitis in the groin, before treatment was begun.

the blood test from positive to negative, has frequently been effected. This condition of things has remained in a fair portion of cases up to the present time (April, 1914), a period in some instances of fifteen months having elapsed since cessation of all treatment. Every reason is thus given to hope on clinical grounds and laboratory evidence that the disease has been thoroughly eradicated [8].

In the absence of clinical symptoms, the occurrence of which calls for repetition of the course, treatment should be withheld for three months, when the matter of further therapeutic measures is decided by the Wassermann test, repeated subsequently at regular intervals. The general scheme here advised is that in use at Rochester Row, where the mercury is given by injection; but for reasons I have already quoted I think it highly advantageous in private practice to substitute skilled inunction for the injection method. In this connection it is worth recording that Colonel Gibbard, R.A.M.C., who was publicly congratulated¹ on the effect of his measures by Professor Ehrlich himself, has told me that he thinks the only objection to the routine use of inunction in the Service is the absolute impossibility of insuring the necessary constant personal supervision over the men carrying it out. The

¹ At the International Congress of Medicine, London, 1913.

professional rubber depends for his living on bringing his cases to a successful conclusion. This is not so with the non-commissioned officers and men who do the regimental rubbing, and it is found that they require continual watching in order to get it properly performed. Moreover, while deeply impressed with the excellence of these results, I would suggest that we do not forget that the youth and high standard of physical fitness of army patients generally, the facilities for supervision, their discipline and the skilled attention which they obtain, make them more than usually favourable subjects for treatment by injection.

CURE AND MARRIAGE.

Everyone is aware of the pitfalls attached to the word 'cure,' especially in connection with syphilis; nevertheless, questions concerning eradication of the disease and fitness for marriage are always arising, and as some definite pronouncement on the subject is expected by the public, we must be prepared to give it with all due caution.

Emery [9], I think, puts the matter of cure tersely and well thus:

'If in a patient we know to have had a positive Wassermann reaction we find it to remain absent for a year after cessation of treatment, we may

assume with a high degree of probability that he is completely and radically cured.

‘To insure a higher degree of certainty give a provocative dose of salvarsan (0·2 gramme), and do the test in two and five days.

‘If the reaction does not reappear, the chain of evidence probably is complete.’

Marriage should not take place till cure is effected.

SYPHILIS OF THE NERVOUS SYSTEM.

Knowing as we do the large percentage of apparent cures in which the disease is merely latent, it is interesting now to note that Henri Pelon [10], some time prior to the invaluable discovery of Wassermann and the more recent demonstration of the spirochæte in the brain and spinal meninges by Noguchi, advocated a considerable increase in the period devoted to mercurialization, on the ground that though tertiary conditions have their apogee at three years, they may continue much longer. He further laid stress on the fact that general paralysis, beginning about the fourth year, becomes progressively more frequent up to the tenth year. Cerebral syphilis is common between the fourth and eighth years. Tabes reaches its culminating point between the fifth and ninth years. Thus, from the fifth to the tenth year—that is to say, when treat-

ment has usually been abandoned—the patient is peculiarly liable to the three worst complications of syphilis.

In tabes, especially, the experience of Brandis and Feibes [11], extending over a long period, points to the advisability of a prolonged course of rubbings on consecutive days, 100 to 200 not infrequently being needed. They urge that scrupulous attention should be directed in the meantime to maintaining the general tone, an end to which exercise, fresh air, galvanism, and arseniate of strychnine, are valuable as adjuncts. In cases of this class they found, as may be imagined, that improvement was generally slow in manifesting itself. Whether a particular case would do well or not time alone could show. Some progressed favourably; others, though apparently in the early stage and presenting an eruption, lost ground in spite of all therapeutic measures.

In certain instances coming under my direct observation, amendment has been sufficiently remarkable to justify one in strongly advising resort to the method in all such cases, ever bearing in mind, let me urge again, the supreme necessity of most carefully considering the requirements and susceptibilities of each individual, for in tabes especially mercury must be given in no rule-of-thumb or haphazard fashion.

Among the remarkable results I have observed during and subsequent to such a course may be mentioned the lengthening of time between attacks of gastric and rectal crises, or even their complete cessation. Knee-jerks have returned or become more brisk. Oculo-motor troubles have disappeared or been improved. The functions of bladder and bowel have been to a large extent restored, pains ameliorated, weight, vigour, and general sense of well-being increased—everything, indeed, pointing to the fact that the progress of the disease has been slowed or checked, and the patients placed in a position to benefit to the full by the necessary re-education of their motor tracts by judicious exercises—preferably in the manner advocated by Frenkel and Foerster—which must naturally never be neglected. Case 3 is a good example of the sort of result one may not infrequently obtain, provided the diagnosis is made early enough, while even in fairly advanced conditions the change for the better which sometimes results from a thorough and prolonged application of this combined treatment is really amazing. This is shown by Cases 7 and 8.

Demonstration of the spirochæte in the meninges in tabes, and the discovery that the cerebro-spinal fluid may show a positive reaction to the Wassermann test when the blood remains negative, give

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definite, and it seems to me unanswerable, weight to the opinion of those who advocate prolonged and oft-repeated intensive mercurialization for this condition. In these circumstances, even though absolute extermination of the spirochæte may not be possible, at least the progress of the disease may in a great number of cases be rendered stationary. A good simile I have seen mentioned somewhere is that, even if we cannot put the fire out, at least we can prevent it doing more than smoulder. We know, of course, that improvement or cessation in the progress of the disease under treatment may with reason sometimes be attributed to mere coincidence, as it is a matter of common knowledge that such a favourable turn may occur now and then in cases left quite to themselves. That, however, in the light of the excellent results obtained by a number of well-accredited observers, can hardly be said to form a sound argument for withholding a thorough trial of this simple and potent method.

Unfortunately, it is most difficult to get these people early enough, for at the onset the tabetic origin of their troubles is often overlooked, and symptoms only are treated, valuable time being thus wasted. Victims of early tabes not uncommonly make complaint of obscure abdominal pain, giddiness, neuralgia, rheumatism, neurasthenia, bowel atony, or simply obstinate dyspepsia, so that

unless great care be taken in investigation the true significance of their sufferings is lost sight of. As a result of mistaken diagnosis the patients are occasionally actually submitted to exploratory abdominal operations, while quite frequently advice is given them to try spas and health resorts, which they do, in some instances on and off for years, naturally with little or no benefit. On the contrary, the baths, douches, and vibrations which many undergo not only may prove directly harmful, but also may tend to make them lose faith in and patience with treatment of all sorts and kinds. This is especially unfortunate in the case of sufferers from tabes, who require therapeutic measures of such a protracted kind, and in whom hope and confidence are such valuable assets.

Again, I have known several instances of transient oculo-motor paresis attributed to 'liver' or error of refraction, where a more thorough examination would have clearly demonstrated its tabetic origin. In spite, then, of the protean character of its manifestations, it is hardly an exaggeration to say that, with past experience and careful application of modern methods to guide us, there is little or no excuse to-day for failure to diagnose tabes in an early stage.

No value should be placed upon the patient's denial of having acquired syphilis. Among some of

the worst cases of tabes treated by me in recent years have been a number of medical men, who, denying all knowledge of having acquired the infection—as, I believe, in quite good faith—gave a positive reaction to the Wassermann test, and benefited by prolonged inunction. Even a negative blood test does not by any means serve as a contra-indication to mercury, for, as is well known, the cerebro-spinal fluid may still in such a case give a positive reaction. Though one cannot give a scientific explanation of the good effect in this latter class, in view of the inaccessibility of the subarachnoid space to drugs circulating in the blood, it may be said that the best justification of the means used is the excellence of the results obtained.

Naturally one is unable to tell clinically, except by a thorough trial of therapeutic measures, whether the initial and possibly curable state of cellular infiltration has or has not been succeeded by the graver condition of fibroid degeneration. It may be, indeed, that true tabes is not really amenable to antisyphilitic treatment, and that not true tabes, but a spinal syphilis presenting similar symptoms, has existed where good results have been obtained. Differentiation between the two in early stages is sometimes impossible.

As already mentioned (pp. 10 and 14) when dealing with the disadvantage of oral administration, I have

frequently observed benefit to follow the application of the Aachen ritual among those who present symptoms of early tabes, where internal medication has been tried for prolonged periods, with the effect of apparently making the condition worse, or at any rate causing no improvement.

That such satisfactory results are seldom obtained, except by methods not commonly in use in this country, may explain the fact that the far-reaching effects of mercurial inunction have not yet received adequate recognition among British clinicians.

By applying the Wassermann test to the blood and cerebro-spinal fluid, making a lymphocyte count and globulin estimation of the latter before, during, and after a course, diagnosis, prognosis, and indications for length of treatment bid fair to be placed on a sounder basis. The evidence pointing in this direction is already both considerable and interesting.

MERCURIAL INTOXICATION.

The onset of the toxic effects of mercury in the various organs may be manifested in the heart by palpitation, in the kidneys by albuminuria, and in the blood by decrease in hæmoglobin and disproportion of red to white corpuscles. In the nervous system it may be evidenced by tremors, and in the bowels by cramp and catarrh; while in the mouth

it may be indicated by salivation, gingivitis, and ulceration. The subjective sensations of the patient are useful in estimating the effect on his general health. A steady loss of body-weight which cannot be otherwise explained calls for temporary cessation or modification of treatment.

When, therefore, I point out the necessity for frequent and methodical examination of the various systems during this intensive treatment, the caution is more than a mere truism. Experience alone will enable us to recognize the warnings as to when the limit of physiological tolerance has been reached, and so to stop short of the further stage of toxic influence.

OBJECTIONS TO INUNCTION.

To deal now with various objections which have been urged against inunction, and some of its supposed disadvantages, stomatitis, which is said to be a common result of the method, is almost invariably associated, as has been previously stated, with neglect of orders. Though inunction has been stigmatized as dirty, we have the testimony of patients submitted to the Aachen course that inconvenience in this respect is usually quite trivial. Dirty indeed is the go-as-you-please auto-inunction which I have seen so often practised in this country. This, as a matter of experience, is almost always followed

sooner or later by the shirking of a task, the adequate performance of which is both irksome and repugnant owing to the disgust, not to say fatigue, which it entails. To expect a sufferer from tabes especially to carry out this routine is totally to misunderstand both the treatment and the disease.

As to its being 'advertising and compromising,' another count in the indictment against it, I frequently treat patients living with their wives and families without arousing any suspicion or disturbing domestic harmony. If referred to as a form of massage and sulphur baths, as of course it is, and if a discreet rubber is employed, there is little reason for comment, and things generally go perfectly smoothly. Success certainly is dependent upon skill in rubbing and upon proper supervision. Even in Aachen the rubbers differ somewhat in capability, and the employment of a strong, healthy, well-trained and conscientious individual is essential. It may be of interest to mention here that, provided always they take certain necessary precautions in the matter of cleanliness and hygiene, their occupation rarely causes them any ill-effects. The treatment cannot be applied if there is much scarring or thickening of the skin, as after variola or in ichthyosis. Certain eruptions or very tender skins preclude its use, as does a marked intolerance of mercury. It involves, naturally, the giving up of a certain length of time

every day, and in a moderate degree the intelligent co-operation of the sufferer. Diarrhœa, dermatitis, lassitude, muscular fatigue, and pains in the limbs, are, indeed, consequences which may have to be reckoned with. As to inequality of action, that may not improbably be due to the idiosyncrasy of the patient, or to the varying capability of the rubber.

Advocates of other modes of mercurial administration, when dealing with the disadvantages of inunction, sometimes mention death as a possible sequela. One of the instances most commonly quoted in illustration of this danger was described a few years ago in a publication on the subject [12].

It refers to a very fat woman in whom eczema supervened upon rubbings, and death from exhaustion followed. It is not said what was the state of the kidneys, heart, or even of the general health, prior to commencing treatment, nor is any mention made of the amount of supervision exercised.

In cases properly conducted and medically controlled, such a result is, of course, absolutely impossible, and that this should be the example usually instanced as an argument against inunction is, to say the least, significant.

ADVANTAGES OF INUNCTION.

The advantages of inunction, on the other hand, include safety, potency, and painlessness, as well as freedom from most of the objections mentioned in connection with injections or internal administration. As it does not interfere with the digestive system, it permits of the simultaneous use, if necessary, of drugs by the mouth, and of subcutaneous, intravenous, or intramuscular medication. As it does not cause pain, there is neither interference with ability to take exercise or with capacity for enjoyment, nor the onset of sudden lameness (not infrequent with injection) to explain away. In a word, it permits mercury to be pushed to a degree impossible by any other method, and this without risk or pain.

In theory, it is true, the utility of the intensive treatment by rubbing has long been more or less recognized, but we are now in a better position to avail ourselves to the full of its advantages, thanks to the results of the Wassermann test. By this means, as has been mentioned, we can ascertain at any moment in a large percentage of cases the degree of the drug's effect on the poison.

Perhaps the fact that introduction is effected by way of the lymphatic system, the original stronghold of the treponema, and that it enters over such a large area, may explain the rapidity with which

early symptoms usually yield to its use; while in disease of the spinal and cerebro-spinal systems its application close to the seat of mischief, by the rubbing of the back, may partially account for the good results. Inunction is of all other means of giving mercury incomparably the best fitted for the prolonged, and at the same time potent, assault upon the causative organisms which are so deeply entrenched that nothing short of the strongest attack persistently pushed home can overwhelm them.

Moreover, in inunction the metal enters not only through the substance of the skin, but also through the air passages, by volatilization from its surface. In the case of tabetics it is particularly desirable that pain, dread, or discomfort (one or more of which are almost inevitable with injection methods) be avoided. Here remedial means, to be of most use, must of necessity be prolonged and probably repeated; so in the patient's own interests, in order to gain his sanction and willing co-operation, it is of more than ordinary importance that these measures be not associated by him with anything to be looked back upon with disgust, or forward to with dread.

TESTIMONY IN FAVOUR OF INUNCTION.

In the treatment of syphilis in all its stages striking unanimity exists among high authorities, past and present, as to the merits of inunction.

Fournier, for instance, with his vast experience, says [13] that he has 'perfect confidence in inunction *when well performed*'; and, again, that he is 'satisfied that it is equal to, if not better than, any other way of giving the drug.' He considers that it is especially called for in severe cases, such as in disease involving the cerebral or cerebro-spinal systems, the viscera, or the eye; as well as in those proving refractory to other modes of treatment, such as severe tertiary glossitis. Neumann [14] believes that 'by inunction more certain as well as more lasting results are obtained than by any other method.'

It should be added that, though these expressions of opinion were made prior to the introduction of salvarsan, they form a valuable guide as to the comparative values of the different modes of giving the older drug.

Among the more modern advocates of this treatment, especially for the later effects of the disease, are a number of experts, both home and foreign, who spoke strongly in favour of inunction, particularly as applied to tabes, at a meeting of the Neurological Section of the British Medical Association, London, 1910, and this, be it remembered, is since the introduction of salvarsan.

Again, at a meeting of the Medical Society of London on November 20, 1911, Risien Russell, Farquhar Buzzard, and Wilfrid Harris, urged the

importance of this treatment. Quite recently, in the discussion initiated on March 4, 1914, at the Berliner Medizinische Gesellschaft, Citron, of the Charité, Berlin, proclaimed with no uncertain voice his belief in the advantages of inunction where mercury had to be given.

All, in fact, support the contention that failure to submit a patient with early tabes to prolonged and well-applied trial of this remedy is to withhold an excellent chance of amelioration or recovery.

Finally, from the experience of J. R. McDonagh, H. W. Bayly, and Major French, with the Wassermann test, the superiority of *properly performed* rubbing is amply confirmed [15]. It is only fair to mention here that other army workers [16], as a result of their investigation with the test, give the palm to injection as opposed to inunction. The difficulty, already alluded to, of getting rubbing efficiently carried out in the Army, where injection is probably the better treatment, may be considered a sufficient explanation of this diversity of opinion. On the whole, then, we may affirm that, considered from the various standpoints of safety, potency, painlessness, and evidence of the blood test, inunction is markedly superior to any other way of administering mercury; and, of all methods of carrying out this procedure, the Aachen appears to be far and away the best.

THE AACHEN METHOD IN ENGLAND.

For many it may not be feasible, or at any rate convenient, to go to Aachen for treatment. Business and other considerations may interpose. Among the other considerations, not the least deterrent, perhaps, is the almost inevitable stigma attaching to a sojourn in a place with such a very specific reputation. For such persons, the question frequently arises whether the treatment by inunction can be satisfactorily carried out in London. Having had a number of these cases under my care for some years past, my reply is emphatically in the affirmative. Provided that the full Aachen technique is rigidly adhered to, equally good results may generally be looked for with confidence. The mineral water and bath salts, as well as facilities for their application, are now obtainable here, while in my experience it requires only a little management to procure the patient's acquiescence in a routine in some respect unfamiliar to him.

CONCLUSION.

To repeat my earlier remarks in a somewhat different form, it may be said that in early syphilis, to procure the best results, salvarsan should be

used in conjunction with mercury intensively administered; while, later on, when adenitis has supervened, or it may be the spirochæte is firmly entrenched in the non-vascular deeper parts—*e.g.*, the nervous system and periosteum—whereas the arsenical preparation appears not to be able to reach the parasites with certainty, mercury would seem still to retain this power.

Salvarsan frequently produces little or no effect in cerebro-spinal syphilis, and this is the type of case in which Mott [17], as a result of much work in this particular branch, so strongly advocates inunction.

Attention may here be drawn to the fact that, hopeless as medicinal measures usually are in general paralysis, instances undoubtedly occur—No. 6 of my series is a case in point—in which cessation or remission of symptoms takes place under prolonged rubbings. Recently, the demonstration by Noguchi of the spirochætes in the brains of general paralytics may be considered an additional reason for an adequate trial of this remedy given simultaneously with intrathecal injections of salvarsanized serum.

It is obvious that a disease fraught with the possibility of such dire results, immediate and remote, as is syphilis, urgently requires the most thorough and strenuous attempt at eradication in all its stages,

once the diagnosis is certain.¹ Half-measures in its treatment should be considered no more permissible than in the case of malignant disease, and the pitiable ignoring by many of the existence in our midst of perhaps the most serious disease to which mankind is heir should be no longer acquiesced in.

On the medical profession chiefly devolves the

¹ This naturally leads to the consideration of prophylaxis, on which a few words are more or less unavoidable. The subject, with its various points of view—ethical, social, medical, and legislative—is confusingly complex and controversial. Here it is not proposed to consider the social, ethical, or legislative aspects of prophylaxis (though all may be of the greatest value if wisely applied), except to mention that at the present time there is in many quarters a strong feeling in favour of judicious instruction in sex hygiene to all adolescents. In view of the grave consequences which may follow ignorance, it certainly seems better to err, if indeed one can err, on the side of imparting too much knowledge than too little. It would be unduly optimistic, however, to expect too much from this proposal, bearing in mind the carelessness so frequently displayed by those whose occupation familiarizes them with the danger in question.

I can only wish here, approaching the matter with the greatest diffidence, to draw attention to one point which appears worthy of notice on account of its great practical importance especially in dealing with human nature as we find it. To Metchnikoff we owe the discovery that, if shortly after inoculation with the *Spirochæta pallida* the seat of entry is well rubbed with a 40 per cent. calomel ointment, it is quite likely that no further symptoms will develop. That this fact, with its many possibilities of application, ought to be very widely known appears to be for numerous reasons highly desirable.

duty of awakening by education the public conscience, and at last—none too soon—steps are being taken in the matter.

An additional reason for the thorough and early eradication of the poison is the present-day fashion of hustle and high pressure in work and play, which predisposes in a marked degree to the increase among us of a degenerative type of disease of the nervous system, and to the liability of inefficiently treated syphilitics to become victims of locomotor ataxia.

It may be recorded as a significant fact that of the many cases of tabes and specific nerve mischief which of late have passed through my hands, none had apparently been submitted to properly applied inunction during the early stages of syphilis.

In this account of the various modes of treatment I have endeavoured to deal as fully and accurately with my subject as limitations of space have allowed, but throughout I would have it borne in mind that the corporeal reactions to mercury intensively administered are apt to be disconcerting. Experience and close attention must go hand in hand if the best ultimate results are to be obtained with the minimum of inconvenience to the patient.

ILLUSTRATIVE CASES.¹

CASE I—*Cerebellar and Spinal Syphilis*.—In December, 1910, I met Sir Alfred Fripp and Dr. Henning Belfrage in consultation with reference to a man of forty, who lived in the country. He had suffered from fits, headaches, progressive weakness, loss of memory, and well-marked ataxia. He had, shortly before this, seen a neurologist (the late Dr. Savill), who correctly diagnosed spinal and cerebellar syphilis. The report runs:

Syphilis had been acquired eighteen years previously, and the patient had been treated for two years with mercury by mouth, and subsequently by courses of mercury combined with potassium iodide for varying periods. His present relapse began three years ago, when he was laid up with an attack of delirium and partial paraplegia. Since then his speech has been thick, he has been partially deaf in one ear (watch not heard on contact), occipital headache was intense, Romberg's sign was present, and the knee-jerks were exaggerated. He tended to fall to the left. The ordinary gait was very ataxic, and he could walk only a short distance, and that with great difficulty. He was afflicted with frequent fits, followed by complete amnesia, lasting for some time

¹ All of which (except No. 1) are still under observation, or have recently been communicated with.

afterwards. Signs of early optic neuritis were present. Wassermann test was strongly positive.

He was submitted to intensive mercurial inunctions, with sulphur waters internally and externally in accordance with Aachen methods, and was given potassium iodide by the mouth. At the end of two and a half months he had lost most of his symptoms, memory had improved, and he could walk six miles without fatigue. There was a marked increase in weight, and his general condition was better than it had been for years.

Dr. Belfrage reports (March, 1914) that the patient subsequently "earned his living while leading a hard, open-air life, and has never looked back." For precaution's sake he had a few short courses of injections afterwards, as his work made it impossible for him to come up to London for inunction. When last heard of he was travelling for pleasure, and in every way a fitter and stronger man than he had been for twenty years.

CASE 2—*Cerebral Gumma*.—Early in 1912 a professional man, aged forty, who had acquired syphilis sixteen months before this date, was treated with a full dose of '606' intravenously, and then with mercury pills by the mouth. Six months later, while still under this treatment, he developed partial ptosis of one eye and extreme pain in the head. He rested in bed, and was given cyanide of mercury

by injection, and potassium iodide by the mouth. The condition proved obstinate, so he tried a strict rest cure, and at the same time inunctions were given by a nurse for half an hour to one hour and a half daily, until early in May, but without avail. During this time matters gradually became worse, and the paralysis of the third nerve became practically complete. There was slight proptosis of the affected eye, due probably to muscle weakness.

He was then seen by a brain surgeon, who considered that, as medicine had apparently failed, the condition was sufficiently grave to require an exploratory operation with a view to relieving the local pressure, due, it was thought, to a cerebral gumma. Before submitting to this procedure, the patient consulted Dr. Risien Russell, who referred him to me for treatment, with the advice that, if no improvement occurred in a month, the operation should be performed. I treated him by inunctions in the Aachen manner, and 20 grains of potassium iodide every six hours by mouth. In ten days he could slightly raise his upper lid; at the end of two months and a half, except for the ophthalmoplegia interna and deficient power in the internal and inferior recti, there was practically nothing wrong with the eye, and binocular vision was obtainable in several positions, to his great comfort and relief.

As I was leaving town for a change, and the patient, too, was like-minded, I sent him abroad for a course of treatment of one month. Progress was uninterrupted, and he now finds the condition of the affected eye causes him practically no inconvenience during his arduous occupation, which he has resumed. His general health is excellent, though he wisely undergoes a short course of mercurial treatment occasionally as a precautionary measure. The success of Aachen methods, after a trial of salvarsan, mercurial injections, internal administration of mercury, and its inunction performed in a different manner—none of which produced any effect—is very striking.

CASE 3—*Early Tabes*.—Four years ago I was consulted by a professional man, aged fifty, who, while laid up with a severe attack of what was supposed to be intercostal neuralgia, suddenly developed diplopia, due to implication of the third nerve on the left side. He occasionally experienced bouts of 'rheumatically' pains, which were attributed to a very pronounced pyorrhœa, which was cured, however, without affording any real relief from the trouble. On examination, the knee-jerks were absent, the pupils were small, and exhibited the Argyll-Robertson phenomenon, and slight Rombergism was present. There was a history of syphilis thirty years previously, which had been

treated at the time by pills for two years, and medicine had been frequently taken at intervals since then when skin manifestations rendered it necessary. A Wassermann test, taken by Dr. d'Este Emery, was strongly positive.

I gave him 100 rubbings in the Aachen manner, under which the ocular paralysis and intercostal pains disappeared, and have not since returned. He put on 5 pounds in weight under treatment. The Argyll-Robertson phenomenon remains unchanged, and the knee-jerks are still absent, but there is now no ataxia.

A Wassermann test every year since cessation of treatment proved negative. He has since married, in spite of my advice to the contrary. His recovery of co-ordination is well shown by a marked improvement in his game of golf, and his capacity both for work and enjoyment have much increased.

CASE 4—*Syphilis of the Labyrinth associated with Neuritis*.—This was Mr. Arthur Cheate's diagnosis of a case he kindly sent me early in 1910. The patient, a strong, active professional man of thirty-eight, had acquired syphilis about eighteen years before, and had taken mercury in the form of pills and potions on and off for eight years, as he had occasionally very slight reminders on his skin.

Since 1900, however, as he had experienced no symptoms for some six months, treatment was sus-

pended, and he was pronounced cured. In 1909 he had an attack of 'neuritis' in his right arm and shoulder. This was much relieved by aspirin, though some numbness remained. He was treated by a course of baths and waters at Harrogate without result. Some six months later loud noises developed in his left ear, soon accompanied by total deafness. A Wassermann test by Dr. d'Este Emery proved strongly positive. This was his condition when I first saw him. He was given 100 days of Aachen treatment, and a month afterwards tinnitus and numbness had practically disappeared, while his deafness was so slight as to cause him no inconvenience. Three months after treatment the Wassermann reaction was negative. He had a few courses subsequently to insure against relapse. Remaining to all intents and purposes well, he grew heavier than before his attack, felt remarkably fit, and lived a hard, open-air life till last summer (1913), when a slight return of tinnitus led to the discovery that his blood gave a positive Wassermann reaction. Another course of intensive mercurialization with two small doses of neo-salvarsan soon caused disappearance of symptoms, and he is now as well as ever.

CASE 5—*Cerebro-Spinal Syphilis*.—In May, 1910, I saw a young professional man in consultation with Dr. Hale-White. He had acquired syphilis fourteen

months before, and had taken Hutchinson's pills continuously up to the end of December, 1909, when he was exposed to cold and fatigue, and one evening was seized with paresis of left face, arm, and leg. This cleared up under potassium iodide and mercurial injections. In a month he was apparently well and about again. Towards the end of February he suddenly experienced severe abdominal cramp and return of weakness in the left leg. The right leg soon became affected. As there was a marked blue line on his gums, and subacetate of lead was discovered as an impurity in his medicine, there was some difficulty in deciding whether plumbism or syphilis was the origin of his trouble. The Wassermann reaction proved negative, though, of course, no great importance was attached to this, as he had been given mercury by mouth and injection for eleven months previously. A lymphocyte count of his cerebro-spinal fluid threw no fresh light on the matter. He was given potassium iodide in large doses, with some mercury, but he rapidly became paraplegic and bedridden, and had incontinence of fæces and to some extent, of urine. I put him on Aachen treatment, with potassium iodide by mouth and injections of arseniate of strychnine. At the end of a fortnight he showed signs of improvement, and in two months he was able to walk with the aid of a stick. Progress was slow, but sure, and, when

last heard of, quite recently, he had resumed his ordinary life.

CASE 6—*Early General Paralysis*.—In July, 1910, a business man, aged forty-one, suffering from nervous breakdown and loss of memory, was sent to me by Dr. Maurice Craig and Dr. Stewart, of Dulwich. Early in the year he had to give up work on account of insomnia, loss of memory, and general weakness. On the advice of a physician a trial was made of mercurial rubbings, about forty in all, performed by the wife of the patient, his condition necessitating his remaining in bed for four months.

He then went to the seaside for a month, but made very little progress, so his firm dismissed him. Dr. Craig, who was consulted about this time, considered him a case of general paralysis, and referred him to me for treatment.

I gave him 100 days of baths and rubbings, performed strictly in the Aachen manner, and he subsequently had a few dozen rubbings, some iodipin being taken by the mouth. During the first few weeks improvement was manifest, and has slowly continued up to the present time. The following autumn he was well enough to return to the City for several hours daily, and to render some assistance to a firm engaged in his former line of business. Dr. Stewart reports (March, 1914) that, though he is not

quite the man he was, with the exception of a little weakness of memory and a slight tendency to emotional disturbance, it would be difficult to detect anything wrong with him.

CASE 7—*Advanced Tabes*.—Professional man, active and keen on sport, aged fifty-five. Father of a healthy grown-up family. No history of syphilis. Began to suffer from fugitive pains in limbs and trunk about the year 1904.

Accustomed to exposure and fatigue, he attributed his troubles to rheumatism. Several doctors were consulted, who prescribed salicylates and care in diet and clothing. These were tried, without much benefit, and it was not till the onset of oculo-motor trouble in 1906, due to third nerve paresis of left eye, that tabes was suspected.

Pain-killing drugs and change to a warmer clime were advised, with but temporary good result, and he gradually became quite unable to walk without assistance, in which state he remained for several years, suffering most acutely from lightning pains. A very extended trial was made of organotherapy and nitrite of sodium, both being given by injection, but he was never satisfied that either had any effect upon the disease.

I first had an opportunity of properly examining him in October, 1912. The Wassermann test by Dr. Emery was strongly positive. I found Argyll-

Robertson pupils, absent knee, wrist, and ankle reflexes, and much wasting. He had much difficulty in passing water, and was very constipated. Dr. Risien Russell, who saw him with me, agreed that, hopeless as things looked, it was worth while trying the effect of intensive mercurial treatment.

He had arranged to go abroad for the winter, so on his return early in the summer of 1913, the condition being unchanged, he had about three months of inunctions in the Aachen manner, and a couple of injections of salvarsan, 0·3 gramme each. He was at the same time submitted to a course of instruction in Frenkel's exercises. His improvement at the end of two months was remarkable. He could walk with the aid of a stick, had put on flesh, and looked a different man. Owing to the development of a trophic ulcer, he had a set-back about this time, but expresses himself very well satisfied with the effect of the treatment.

CASE 8—*Severe Gastric Crises*.—The following case was kindly referred to me for treatment by Dr. Risien Russell in the autumn of 1911:

A business man of middle age, occupying a responsible and worrying position, acquired syphilis in 1894, and had taken mercurial pills for a year or two.

He remained apparently well till 1906, since when

he had suffered from occasional rheumaticky pains, and experienced a sensation of giddiness when washing his face.

In the spring of 1911 he began to experience what he described as 'stomach twitches,' accompanied occasionally by intense pain in the epigastrium. This was associated with vomiting and great prostration, necessitating some twelve days in bed, rectal feeding, and the free use of morphia. The attacks were recurrent at irregular intervals, and each one not only involved a decided risk to life, but left him weaker and more disheartened. He had lost a stone in weight since they began, and looked anxious and ill. Gait was ataxic, and he had the Argyll-Robertson pupil. The knee reflexes were absent. He was very weak, and unable to walk more than a few hundred yards. It proved necessary to handle him very gently, as, shortly after beginning treatment, he had several attacks—one a most serious one, necessitating confinement to bed and the house for several weeks. His condition, indeed, was so grave as to make Dr. Risien Russell seriously contemplate the advisability of having the posterior nerve roots divided if improvement did not soon occur.

Under the steady application of the Aachen method, assisted by two small doses of salvarsan, the gradual tendency from that time has been towards recovery. The duration of the attacks has

been markedly shortened, and the interval between them prolonged. He can walk a mile without fatigue. He now reports (March, 1914) no gastric attack since August, 1913, and is feeling much better.

CASE 9—*Obstinate Throat Syphilis associated with Chronic Bright's Disease and High Blood-Pressure.*—In the summer of 1912 a busy, elderly man was referred to me for treatment by Dr. Lambert Lack on account of an obstinate secondary syphilis of the throat, which had defied the usual remedies. He had definite signs of granular kidney, with high blood-pressure, and had shown a marked intolerance for iodide and pills. Inunction applied to the axillæ and groins was followed by an acute local and mild general dermatitis.

Naturally, the condition of his kidneys precluded the use of salvarsan or mercurial injection, so, as something obviously had to be done, unless the disease were to be allowed to go on unchecked, it was decided to try the Aachen method.

I found, as was to be expected, that he was very susceptible to mercury, as shown by increase in the amount of albumin present and marked lassitude shortly after commencing the cure. With care, however, dropping a day now and then when necessary, and rarely exceeding a rubbing of twenty minutes' duration in a six weeks course, the throat symptoms soon cleared up. Since then he

has undergone a few series of rubbings, each characterized by the same phenomena, and has remained quite free from any further manifestation of specific trouble. Quite recently a blood-test done six months after the last course proved negative.

This is an interesting example of the good effects of the treatment in a most unfavourable subject, after the failure of several methods—*e.g.*, pills, iodide, and inunction performed in a different fashion—to influence the condition.

CASE 10—A medical man of forty consulted me in January, 1912, for difficulty in walking. He presented the usual signs of tabes, and his condition was such as to render the use of a stick essential. No history of syphilis.

His trouble began two and a half years before with an attack of diplopia, which was considered to be toxic in origin. At this time the pupils reacted well to light. He improved under strychnine, and got quite well in a few weeks. A year later a second attack of a similar nature occurred, with the appearance of the Argyll-Robertson pupil. A Wassermann test proved negative. Shortly afterwards he had an attack of laryngeal stridor, and experienced some difficulty in dancing and playing golf. This was due to definite ataxia, which had developed within a few days.

Tabes was then diagnosed.

He spent a month in bed, treatment consisting of general massage, Frenkel's exercises, and soluble mercurial injections, and soon became very much improved.

About six months later ataxia again came on quite suddenly, much worse than before, and with no apparent cause, associated this time with loss of bladder and rectal sphincter control; a Wassermann test proved strongly positive.

He was then given salvarsan injections intravenously—dose, 0.3, 0.4, and 0.6 gramme, at fortnightly intervals. Frenkel's exercises, massage, and faradism were again tried, but produced only slight improvement.

I now saw him for the first time, and prescribed inunctions in the Aachen manner, with lymphoid serum injections, which he had for over ten months, undergoing 250 rubbings in that time. The Wassermann test then proved negative, and has persistently remained so ever since.

He has gone on steadily with the treatment at intervals, and has had fifty rubbings each year since then. He has also taken two courses a year of Hectine and Enesol (20 ampoules in each course). Progress has been slow but sure, and beyond a slight appearance of stiffness in walking, which he does without a stick, there seems little wrong.

The patient himself is convinced that the satis-

factory state at which things have arrived is largely due to the inunction treatment which he has every reason to believe has caused the mischief in the cord to be completely arrested. He has increased in weight during treatment from 12 to 14½ stone, and, though submitted to an unusually large number of rubbings, has never been inconvenienced in any way whatever. He has been seen at different times by Dr. James Collier, Dr. Risien Russell, Dr. Frenkel, of Berlin, and Professor Förster, of Breslau, all of whom confirmed the diagnosis of tabes.

The most satisfactory result obtained in this instance may reasonably be attributed, in part, to treatment other than inunction.

This case, however, serves to illustrate particularly well a point I have previously urged—namely, the amount of intensive mercurial treatment (this patient has had several hundred rubbings) which it is possible to undergo without salivation, gingivitis, or, indeed, any untoward symptom, provided always adequate precautions are observed.

SUMMARY.

In the majority of cases of syphilis in all its stages the administration of mercury is the most important factor in effecting a cure.

Of the various ways of efficiently giving the drug

—above all, when it requires to be pushed—well-performed inunction is incomparably the most powerful, safe, and free from pain, and often succeeds when other methods have failed. Though valuable in every stage, it is specially indicated in nerve syphilis and tabes. In a considerable number of cases, by its means the progress of the latter disease can be slowed or checked.

Among the modes of inunction, that known as the Aachen treatment possesses marked advantages. Its efficacy depends, however, upon the employment of skilled rubbers, close attention to detail, and careful supervision.

Inasmuch as a visit to Aachen may not be possible for many patients, it is well that it should be known that this treatment can be carried out efficaciously in London, Aachen methods being closely followed.

Between the final results obtained there would seem to be no difference. In making the choice for an individual patient, the convenience of remaining within the metropolitan area must be balanced against the attraction of a brighter atmosphere in the famous German spa.

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