clinical. A study of these cases will afford an absolutely accurate idea of the affection as it manifests itself in childhood.

I offer this tabulated summary, therefore, without further comment, for the consideration of all who may be interested in the subject, but who may not have the time or the facilities to study the matter in the original articles.

It is my duty and pleasure to express how deeply I am indebted to those who have reported these cases, for the free use I have made of their material. To many others not here mentioned I am equally under obligation.

ABSTRACT OF DISCUSSION.

DR. SAMUEL J. WALKER, Chicago: General paresis in childhood is, of course, extremely rare. About 70 per cent. of the cases in the adult can be traced to a previous syphilitic history, and in childhood, so far as I know, all the cases reported have shown a history of congenital syphilis. In childhood the type of the disease is purer, as many things that may creep into the cases in the third and fourth decade of life are practically excluded in childhood. Dr. Fairbanks said that he saw this case two years after the onset. Had the case been diagnosed as general paresis before he saw it? If not, what did the parents think was the trouble with the child and what was the diagnosis of the physicians who had seen it? As to the pupillary findings in the adult type—and it is almost necessary to speak of the adult type in paresis—one of the earliest somatic signs is partial or complete Argyll-Robertson pupil. This is one of the earliest and also most frequent signs. It is true that paresis and cerebral syphilis are usually the only conditions that have to be differentiated, but as the condition advances the case clears up as to diagnosis. Some years ago I saw a case of cerebral tumor not associated with optic atrophy. The mental symptoms were very like the symptoms in general paresis and not until the very last, when optic neuritis developed, were we even fairly certain of a diagnosis. The post-mortem showed a tumor the size of an egg in the frontal portion of the brain.

DR. ARTHUR W. FAIRBANKS, Boston: The case had apparently not been diagnosed before I saw it. The patient was brought to me at the Children's Hospital, and the parents probably had an inkling of the condition. The family history of the boy was what I think gave the mother an idea of what was happening. The father had died in an insane hospital with a diagnosis of organic dementia four months before the child was seen. The post-mortem revealed diffuse arteriosclerosis including the basal vessels of the brain. It was not stated whether it was specific or not. In this case there was a perisplenitis and a perihepatitis. The mother gave no specific history as to rashes, miscarriages, etc., but the family physician stated that several years before she had come to him with an obstinate ulcer of the leg and two years later with iritis; neither trouble would yield to anything but the administration of potassium iodid. A sister of this boy is defective mentally and has an acquired strabismus. I think that there can be no question but that here we have a specific origin for this disease. The pupils were dilated markedly, and while one would slightly respond at first, later it became fixed and remained fixed for the rest of the child's life. I think that a tumor would have to be in a very peculiar location, as was Dr. Walker's, to confuse the diagnosis. It is true you do get the changed character, as in paresis, but you also get vomiting and an optic neuritis, which you do not get in paresis. Then the focal signs would point to a localized lesion of the brain. Occasionally, when the optic neuritis and vomiting are absent, it might for a brief time obscure the diagnosis, but not for long. In the synopsis I have here of these thirty-eight cases, all well within the period of childhood, you will notice the extreme family syphilitic history. It is very striking. Sometimes there is no outward evidence of stigmata in the patient. One should then examine the brothers and sisters, and examine the fundus as well as the external eye. Then one may find iritis or chorioiditis.

MERCURIAL TREATMENT FOR THE LATE MANIFESTATIONS OF SYPHILIS.*

HERMANN G. KLOTZ, M.D.

NEW YORK.

THE HISTORY OF THE TREATMENT OF SYPHILIS.

Syphilis had hardly been introduced into civilized Europe, when mercury offered a helping hand in the treatment of the new disease. As early as 1497 Gasparado Torella, an Italian physician, recommended mercurial ointment. This early external application of mercury probably was not merely accidental, as some authorities would imply, but due to the fact that mercurial ointments had long been in use against all kinds of skin diseases, having been first introduced into practice by the Arabian physicians in the twelfth century. As the principal and most obvious symptoms of the new disease were pustules, ulcers and other lesions of the skin, it was quite natural that the customary remedies for skin diseases should be applied.

Following the reckless abuse of mercury during the earliest period, when the treatment of syphilis was not generally in the hands of the better class of physicians, the vegetable decoctions for a short time superseded it under the guidance of the knight-errant Ulrich von Hutten, who sang the praise of guajac. But soon mercury was again recognized and firmly established as the only and true specific of syphilis, a position which it maintained without difficulty from the middle of the sixteenth to the early part of the nineteenth century.

During the early periods the use of mercury was entirely restricted to external applications, mostly ointments, but also plasters and at times fumigations; about 1535 Pierre-André Mathioli initiated the internal treatment with the red oxid of mercury, but the medication per os did not become popular until towards the end of the sixteenth century. During the following century many new preparations for internal use were introduced, among them numerous secret ones; later Van Swieten's liquor, a solution of the bichlorid, gained much favor; the protoiodid, first recommended by Bielt and much favored by Ricord, was widely adopted in the early part of the nineteenth century. Inunctions retained their place beside internal treatment, but were conducted in a much safer and more reasonable manner than in the beginning.

In the eighteenth century, following the unfortunate deception of John Hunter, the identification of the three venereal diseases, gonorrhea, chancroid and chancre, was responsible for another period of too ardent use of mercury, and there appeared a more decided antimercurealistic tendency, at first in Great Britain, later also in France and Germany. Adversaries of mercury had existed from the beginning, primarily, probably, on account of its influence on the salivary organs.

That external applications could produce salivation had been known to Teodorico of Bologna and Guy de Chauliac as early as the end of the thirteenth and the beginning of the fourteenth century. Probably owing to the usual coincident appearance of salivation with the marked improvement of the symptoms of the disease, soon the opinion began to prevail that salivation was

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-ninth Annual Session, held in Chicago, June, 1908.

* The conclusions are based on practical experience, but the demonstration of the effects of mercury on the *Spirochaeta pallida* and of the presence of the latter in the late products of syphilis apparently explain and justify the same in theory.

really beneficial and, in fact, essential to a cure. This theory persisted almost without any contradiction until the end of the seventeenth century, when David Abercromby, in 1684, was the first to formally declare that salivation was not necessary to obtain the favorable effects of the drug. It was a long time before the old doctrine lost its hold on the medical profession in general, and it is by no means extinct now; one still meets in the periodical literature and even in text-books the hardly disguised or concealed opinion that a certain amount of salivation is more or less desirable or unavoidable and necessary during mercurial treatment. It surely is found frequently enough on patients with, but more commonly without, the beneficial effect on the disease itself. But besides the well justified dread of salivation there has always existed a not so well explained fear of some mysterious and mischievous power of mercury which would render it a most dangerous drug. In spite of the long-established fact that the symptoms of real mercurial poisoning are entirely different from those occurring in the course of syphilis, and in spite of the easily obtainable proof that mercury is more or less rapidly eliminated in measurable quantities in the urine, the saliva and the feces, there still lingers to-day, not only among the laity but even among members of the medical profession, the idea that mercury will remain indefinitely in the bones or somewhere else in the body. Many physicians who shrink with horror from the idea of administering one and a half grain of calomel by an injection, would not hesitate for a moment to prescribe one or even two ounces of iodid of potassium daily.

It was then quite natural that a constant search should go on for another, less objectionable, specific for syphilis. But all efforts had failed until in 1836 Wallace of Dublin introduced the iodid of potassium in the therapeutics of syphilis. Its success was remarkable; no objection whatever was raised to it and it was at once accepted with favor by the practitioners and generally approved by eminent syphilographers of that time like Ricord. The physician who had been afraid of mercury could now quiet his conscience by treating his patients with the new, apparently harmless, remedy. Not all the high expectations, however, were fulfilled; it soon became apparent that iodid could not entirely supersede mercury and that its best effects were obtained in combination with the latter.

THE LIMITATIONS OF THE IODIN TREATMENT.

I do not wish to enter here into a discussion of the much mooted question whether iodine has any really curative influence on the disease and its causative agent itself, or, as some authors believe, only disposes of the symptoms by promoting absorption of the pathologic products and by eliminating toxins. To be candid, we are, or at least we were until quite recently, in the same position with regard to mercury, but in the light of recent discoveries it seems highly probable that mercury has a direct restraining or destroying influence on the spirochete.

It soon became apparent that the later or so-called tertiary symptoms offered a more favorable field for the iodids than the early or secondary ones. I must say that in my own experience I often find iodid of great value in certain early conditions, particularly in some affections of the throat. This preference of iodid for the tertiary stage soon became widespread, and gradually the rule has crept in and has become more or less generally

established that in the later stages of syphilis the iodids are absolutely necessary for a cure, and that they alone should be given and mercury be entirely discarded. This doctrine has all along been disputed and condemned by eminent students and men of great experience in the treatment of syphilis like Virchow, Ricord, Mauriac and, among others, by that industrious student of syphilis, the late Robert W. Taylor. Still, this arbitrary rule, as he called it, continues to be proclaimed by the authors of text-books; it is continuously met almost as beyond dispute in the periodical literature; and it is evidently almost generally followed in the daily practice of thousands of members of the medical profession. In fact, the belief is so deeply rooted in the mind of the majority that any attempt to throw doubt on its correctness will be looked upon as arrant heresy.

In general, the tertiary and gummatous manifestation of syphilis offer a much better criterion for the effectiveness of a certain remedy or method of treatment than the earlier, secondary ones, because, as a rule, they do not possess the inherent tendency to improve or to disappear spontaneously, which, to a certain extent, is present in the earlier, principally the more generalized, eruptions; they are rather progressive and increase or advance unless checked by treatment. The various late manifestations, however, show decided differences of character and development; ordinarily we associate with the gumma or the gummatous infiltration the more or less pronounced tendency of the newly formed tissues to break down and undergo degenerative changes, leading to absorption or to destruction.

There exist, however, later products of syphilis which do not have such a tendency, but are considerably persistent and resistant. I am not speaking of those conditions which now are usually designated as parasymphilitic, but of quite distinctly specific and substantial affections of various organs in which the prevailing tendency is to form new, rather firm, often almost sclerotic tissue. Such late syphilitic processes are observed in almost all viscera, sometimes side by side with really gummatous products, as in the liver, the kidney, the lungs, the adrenal glands; they occur in the testicles, in lymph glands, in the bony structures, preferably in the central and the peripheral organs of the nervous system, including the sensory organs, and finally in the blood vessels, not only of the brain, but also in the large trunks, in the arteries and probably the veins of the extremities and in small terminal vessels. In fact, the origin of all these products of syphilis seems to be ultimately connected with the blood vessels. The skin, the subcutaneous and submucous tissues, as well as the mucous membranes themselves, which furnish a large percentage of the secondary and also of the more common gummatous formations, are less frequently the seat of these more persistent formations; they may, however, appear here and on the bones in the shape of real tumors. There must also be mentioned the mostly unilateral, late scaly affections of the palms, soles and occasionally of other portions of the skin. All such cases present a more or less pronounced resemblance to similar conditions of entirely different origin; they therefore are liable to offer the greatest difficulty to the establishment of a correct and sure diagnosis. They frequently give rise to mistakes in treatment, particularly to the performance of not only unnecessary but absolutely harmful operations. The late Professor von Eschscholtz was candid enough to publish some years ago a report of a

number of cases in which the syphilitic nature of the affection was recognized only after the operation and in some instances only after the recurrence of the growths. Naturally the patients under such circumstances are often submitted to the test of therapeutics, and on the result of the tentative treatment future proceedings will depend.

Now all lesions of this kind are more or less refractory to all treatment, but in the majority of cases they are not at all or but slightly affected by iodids alone, even in the large doses commonly given in our country; they are likewise resistant to the so-called mixed treatment. But the partisans of iodid will retort that they are not affected by mercury alone either. This, I freely concede, is true in regard to the methods of mercurial treatment heretofore principally in use. The pills of the protoiodid which seem to be the great favorite in our country, are practically inert in such cases. Solutions of the bichlorid, which are much less used than they deserve, and the mixed treatment may produce an improvement or an apparent cure, but mostly only a temporary one, soon followed by a relapse. Inunctions, even if made correctly and with all the accessories which are necessary to obtain the full benefit, are often enough ineffective, but much more so if they are made in the slipshod way only too common among patients who are not willing to change their often very unhygienic ways of living.

INJECTIONS OF MERCURIAL SALTS.

Mercurial treatment, however, has entered on an entirely new phase by the introduction of the hypodermic and intramuscular injections of soluble salts, and even more, of the insoluble salts and of the gray oil and similar substances. It might seem as if there could be but little difference in the therapeutic effects between the frequently repeated injections of soluble salts and the intramuscular injections of insoluble ones, made at longer intervals. It had been assumed that the latter furnish a deposit of mercury on which the organism gradually draws in small amounts until the deposit is nearly exhausted, when a new supply is furnished. But recent investigations, particularly those made under the auspices of Jadassohn by Emil Buerger of Berne,¹ have shown different conditions. It appears that subsequent to an injection an increased amount of mercury is at first eliminated in the urine and after about two days becomes reduced; evidently, then, during the first days following the injection a large amount of mercury must circulate through the blood so that we actually receive from the injection a single large dose of mercury, much larger than it is possible to introduce by any other method; and during a series of injections we have a number of such inundations of the entire system with the drug, a number of mercury storms, if you please. At the same time the entire amount of mercury consumed is much smaller than with other methods. For instance, if during the entire course of treatment within, say, two years, a patient receives altogether fifty injections of 10 centigrams of the salicylate of mercury which contains about 59 per cent. of metallic mercury, the total amount of the metal entering the body will amount to 2.95 grams, or about 47 grains. With calomel, which contains 84 per cent. of mercury, the total amount would be less than 68 grains for fifty injections, but ordinarily a smaller number would probably be required. Atten-

tion must also be called to the fact, so far not fully explained, that according to S. J. Meltzer and Auer,² the conditions of absorption in the muscle tissue are more favorable than in the subcutaneous tissue and very near to those of injections directly in the veins. The widespread use of these injections in Europe has certainly demonstrated beyond doubt that the human organism can stand much larger doses of mercury than formerly had been employed and that could safely be introduced through any of the older methods.

It has also been made evident that in many cases of syphilis such large doses are required in order to obtain the desired results, that conditions which heretofore had remained unaffected by any specific treatment and therefore had not been considered specific any longer, now have to be accepted as such. These facts have been insisted on by numerous authorities, principally in France by Leredde and others, and quite recently have led to the recommendation of a "plurimercurial" treatment by Jaquet,³ consisting of the simultaneous administration on the same day of pills of the protoiodid by the mouth, Van Swieten's liquor by rectal injection, the intramuscular injection of one centigram of the biniodid and the inunction of two grams of blue ointment. These applications are to be repeated on several days in succession and to be taken up again after a more or less extended interval. Without commending such exaggerated treatment, I must insist that the intramuscular injections of insoluble salts have come into such general use all over the entire European continent and, if I am not mistaken, lately also in Great Britain, that an immense number of observations is in existence which prove that these energetic applications of mercury exert a much greater influence on the late manifestations of syphilis, not only on those which heretofore mostly yielded to iodids alone or in combination with mercury, but also on those more solid formations of which I have spoken before. The practice of these injections is now and has been for years so common that one hardly finds now any special articles on the subject, but whoever peruses the current literature, even to a moderate extent, will meet numerous examples of cures effected by injections when iodids and inunctions had failed, even in the hands of experienced men, particularly in cases of affections of the nervous centers.

To mention only a few recent publications, in a paper on "Experience with the Treatment of Disturbances of the Nervous System on a Syphilitic Basis," by W. Hartung and O. Förster⁴ of Breslau, the former reports cases of paralysis, etc., the latter cases of incipient tabes; and V. Mucha, from the clinic of Finger, in a paper on "The Differential Diagnosis Between Lues and Tuberculosis in Ulcerative Processes,"⁵ reports several cases in which injections of the salicylate effected sufficient improvement to assure the diagnosis of syphilis which the histologic examination had not been able to clear up. It is, however, almost generally agreed that the most energetic action is obtained from the injections of calomel.

I must mention also a paper which was quite recently published in this country on "The Diagnosis and Treatment of Syphilitic Lesions of the Nervous System,"⁶ by T. H. Weissenburg of Philadelphia. He says:

2. Jour. Exper. Med., 1905, vii, 59.

3. Hiriogoyen, D.: Thèse de Bordeaux, 1907.

4. Arch. f. Dermat. u. Syph., 1907, lxxxv, 1.

5. Arch. f. Dermat. u. Syph., 1908, lxxxix, 355.

6. Am. Jour. Med. Sc., April, 1908, cxxxv, 551.

1. Arch. f. Dermat. u. Syph., 1906, lxxix, 3305.

It has been my experience that, whenever any benefit has been obtained, it has been the result of the use of mercury and not of iodids. Even in the specific manifestations which come on many years after the infection, mercury is the only drug which will be of benefit. Iodids probably do good, and should be given in conjunction with the mercury, or, better still, after the mercurial treatment.

It is hard to understand why it should be given at all, if mercury, as stated, is the only drug which is of benefit; the recommendation can be explained only as a concession to the prevailing popular sentiment in favor of the iodids, although it seems that many physicians consider it necessary to follow up every administration of mercury by a course of iodids in order to get rid of the mercury as quick as possible—evidently another consequence of that deadly fear of it. I must not omit to mention that Weissenburg recommends the use of injections, but I have no doubt that he would be glad to use the insoluble injections if he would only try them in spite of the prejudices against them in America.

My experience with intramuscular injections agrees with that of others who have learned to trust to mercury in the late manifestations. I have used them constantly for about twenty-five years, and after giving a report⁷ on the first two hundred injections in 1889 have applied them more and more within the last years, after an extensive previous experience with soluble preparations, the bichlorid and the bicianid. Several times I have been tempted to return to soluble injections like the strong solutions of the bichlorid as recommended by Lukasiewicz, which were extremely painful and caused much local swelling, solutions of the oxycyanate, mercury salicylarsenate, etc., but I have always quickly returned to the insoluble ones, which I find acting more favorably and having fewer objectionable features. Encouraged by the excellent results in the earlier stages of syphilis, I began to use the injections in the later manifestations when the iodids or the mixed treatment gave results which were unsatisfactory, or as was more frequently the case, not lasting, particularly in the tubercular syphilides. My experience has gradually induced me to trust to the injections alone much more than to the iodids, and I have more and more dispensed with the latter, without, however, giving them up entirely.

I shall not attempt here to give any detailed or specified histories of cases. I shall only state briefly that in the course of years I have treated with injections of the salicylate and to a certain extent of calomel the most various manifestations of syphilis, not only the more frequent gummatous affections of the skin and of the mucous membranes but periostitis and topi of the cranial and other bones, at times in a condition when a breaking down of the integument seemed unavoidable, affections of the nervous centers and of the eyes, particularly iritis, paralysis of the muscles, neuritis optica, usually at the instance and under the supervision of ophthalmologists, gummata of the tongue and of the lips, swellings of the lymph nodes, gumma of the testicle, late scaly affections of the skin, among them one which appeared on the fingers of the right hand after eighteen years and finally yielded only to calomel injections, gumma of the muscles and syphilitic arteritis. The results at times have been really marvelous, exceeding my keenest expectations; usually very satisfactory; and seldom actually disappointing, although I am far from claiming that the injection will be successful

in all cases. In many instances I have been able to watch the further progress of the patients for years, and I have never observed any disastrous or even disagreeable consequences.

The injections of calomel have been the particular object of abhorrence to the adversaries of the insoluble injections. In fact, they are more liable to cause some local inconvenience; circumscribed subcutaneous swellings or nodules, as a rule painful only on pressure, are not so rare as after the salicylate, but these swellings have not the tendency to break down or to leave any outward marks; the general symptoms, slight malaise or fever, usually appear in a slightly more aggravated degree, somewhat later than after the salicylate and of longer duration. In a large number of cases, however, the general and local effects were not aggravated and at times entirely absent.

In some instances I have indeed found a greater tolerance of calomel than of other preparations. Thus, in two cases in which the injections of the salicylate caused diarrhea with tenesmus, calomel did not cause the slightest disturbance of the bowels, although in the one case a large quantity of sugar was present in the urine. In a case of a chronic albuminuria, soon after an acute exacerbation of an old nephritis which antedated the syphilis infection, the albumin entirely disappeared during the treatment of a gumma of the testicle with calomel injections. I have felt encouraged to make these perhaps somewhat hazardous trials by the confidence which long experience has created, but I do not advise others to repeat them until they have obtained sufficient experience and know all the safeguards.

The intramuscular injection of the insoluble preparations from the beginning have in this country met a widespread and bitter opposition which must remain unaccountable to anybody who has approached the new treatment without bias and has tried it for a reasonable time. As a rule the physicians of our country are by no means averse to taking their cue from European teachings; on the contrary, many things in theory and practice are accepted and adopted solely on the strength of their European origin and recommendation. Still, this method which has been practiced in all the countries of the European continent for more than twenty years, which has become the favorite and is recognized as the most efficient one by almost all syphilographers of renown, is hardly mentioned or is peremptorily condemned and depicted with such horrible colors by the authors of textbooks and prominent teachers in colleges and universities, that students could hardly help considering its use almost a crime.

What will such students think of their teachers if across the street in a dispensary they find younger men using insoluble injections without fear and with excellent results, or if going to the European centers of teaching they see the intramuscular injections universally employed and acknowledged without dispute as the most efficient treatment? It certainly seems to be the duty of teachers to give to such a treatment a sufficient, unprejudiced trial, preferably in a hospital under careful observation, before condemning it as unscientific, mutilating, ineffective and dangerous to health and life. Still at last year's meeting several men who strongly opposed this treatment have directly stated that they had never made an injection of an insoluble salt. Of course, each man is responsible for his actions to his own conscience, but by the failure to apply other well-known

7. Jour. Cutan. and Genito-Urin. Dis., 1890, vii, 41, 98.

methods if the usual ones fail, he deprives his patients of the benefit of a treatment which has long ceased to be an experiment.

I can not permit a method to be called unscientific which employs the smallest amount of mercury to obtain the greatest results, a method in which you know exactly the amount introduced and in which you may trace within a few weeks up to 30 per cent. and more in the urine, a method in which every bit is actually absorbed and in which the conditions for absorption are favorable. Or does anybody mean to assert that the inunction method is more scientific, when we not even know exactly whether the mercury is principally introduced through the skin or through the lungs? I cannot admit that because among hundreds of thousands of injections in a few cases several local troubles have occurred, the injections are mutilating. The worst result I have ever seen was a superficial circumscribed gangrene of the skin and subcutaneous tissue which I have conscientiously reported,⁸ without being able to explain its immediate cause. I have only once since the first three months had any abscess after I had begun to make the injections. That was in two dispensary cases in which probably the injection fluid was at fault, for after throwing it away no other abscesses followed. Even when they occur, as a rule, they are aseptic, and not very acute or very painful. In contrast to the frequent affections of the oral cavity and the gums during internal treatment, inunctions and soluble injections, the almost entire absence of salivation and of every disturbance of the gums, particularly during salicylate injections, has always been a great and pleasant surprise. It has been one of the most cogent reasons for the now almost regular employment of the treatment. I have nothing more to say on the subject of the efficiency of the treatment.

As to the dangers resulting to health and even life, I admit that under exceptionally unfavorable conditions the intramuscular, insoluble injections are liable to become the cause of death in the very same degree as soluble injections, inunctions, fumigations and internal administration, applied with all necessary and known precautions. Cases of fatal consequences of all these methods can be found recorded in literature, but since the method has been better understood than it was in the beginning, not more frequently after insoluble injections than after treatment with the soluble salts.

Two accidents, however, are likely to occur: diarrhea (colitis) with tenesmus, and embolism of the lung. I have had experience with both, and, while I admit that they are very annoying complications, they are not really dangerous and do not permanently impair the health. The intestinal symptoms at times seem to be due to an incidental indigestion or neglect of common rules of diet, but usually appear as the effects of idiosyncrasy after every injection, even in reduced doses. The peculiar experience with calomel I have mentioned before. The trouble rarely lasts longer than twenty-four hours; it occurs oftener after the bichlorid and the oxycyanate than after the insoluble salts. I have published my experience with embolism of the lung⁹ in 1898; since then I have seen only a few more. None of the patients was seriously sick at any time, they all recovered in a few days without any further trouble. I do not believe that embolism can be entirely avoided even with all the precautions that have been advised, like the removal of

the syringe before injection. Altogether, I have long come to the conclusion that the beneficial effects so far outweigh the disadvantages that I am willing to take so much risk for the benefit of my patients, and I have usually found the patients ready to do the same thing.

It has been mentioned as a drawback that the patient has to be seen by the physician more frequently. This objection applies much more strongly to the soluble injections which have found so much favor with some men who so strongly object to the insoluble ones. I believe that the necessity of regular visits is rather an advantage. It certainly is not safe and correct to allow a patient to continue internal treatment or inunctions indefinitely without regular observation by the physician, as is quite often done. Soluble injections are generally quite painful immediately after the application, for one-half to two hours, are made every day, while the seat of the insoluble ones is really painful only on pressure or during movement for about thirty-six hours. The best proof that the patient does not suffer so cruelly as has been asserted is the fact that some have been perfectly willing to stand from fifty to sixty injections. As a rule, I have found patients neither cowards who were not willing to stand some discomfort or even pain, nor such fools that they did not recognize the advantages and the conveniences of the method.

CONCLUSIONS.

The following conclusions embody the points which I wish to emphasize:

Tertiary or late manifestations of syphilis can usually be as successfully treated by mercury alone as by iodids alone or in combination with mercury. In many instances they are influenced by strong mercurial methods when iodids and mixed treatment have failed. It is therefore advisable, in clearly syphilitic manifestations, not to cease specific treatment, and in doubtful cases not to dismiss the diagnosis of syphilis until such strong mercurial treatment has been sufficiently applied as offered by the intramuscular injections of insoluble mercurial preparations, of which calomel is the most reliable one.

These statements I do not ask you to accept without your own investigation; I ask you to subject them to a fair and unbiased trial. I am well aware that not all such cases of syphilis come under your observation, but that some are in the hands of general physicians or surgeons or of specialists, particularly neurologists, laryngologists, ophthalmologists and others, and that my statements ought to have been made before a general medical audience. It seems to me, however, that general practitioners as well as specialists will look for their guidance to those who make syphilis a subject of their special studies, and that they are not likely to adopt a treatment until it has been approved or at least has been brought to the knowledge and laid before the judgment of the syphilologists.

The conclusions are based on practical experience, but the demonstration of the effects of mercury on the *Spirochæta pallida* and of the presence of the latter in the late products of syphilis apparently explain and justify the same in theory.

130 West Fifty-eighth Street.

ABSTRACT OF DISCUSSION.

DR. J. M. KING, Nashville: I think we fail many times to relieve severe and malignant cases in the late stages of syphilis, because we do not use our remedies, particularly mercury, in

8. Arch. f. Dermat. u. Syph., 1903, lx, 399.

9. Arch. f. Dermat. u. Syph. xliii, Festschrift, für Pick., 1898, p. 407.

sufficient quantity or with sufficient energy. Fournier certainly impresses this on us in his late text-book. I recently saw a very malignant case of syphilis in a man who evidently furnished fresh soil for the disease. He had received internal treatment for two years, during which time he visited Hot Springs twice, but still his lesions failed to heal. He had developed a severe glossitis with a generalized skin eruption two years after the initial lesion. He also had a hard lesion on the glans penis, and a granulomatous lesion on the calf of one leg. Large doses of iodid had failed to relieve him. I gave him seven calomel injections, in doses of 5 centigrams, injected deep into the gluteal region, and afterward substituted gray oil. Under this treatment his skin eruption practically cleared up, and the gummatous lesion on the right calf is almost healed. While the injection treatment is certainly the most efficacious method of treating syphilis, there is one objection to the use of calomel, namely, it is liable to produce pain and tenderness and even abscess at the site of the injection unless it is injected deep into the muscles.

DR. JOSEPH ZEISLER, Chicago: The remarks made at the meeting of this section a year ago by the late Dr. Robert W. Taylor were rather denunciatory of the use of insoluble injections in general. I then warmly defended soluble injections and opposed the use of the insoluble salts. It is therefore only fair that I should now be permitted to express my change of front since that time. I was impressed by Dr. Gottheil's paper on this subject at our last meeting, and after an exchange of ideas with him, I began the use of injections of salicylate of mercury about eight months ago. Since then, after having given several hundred of these injections, I have been perfectly delighted with them. In certain forms of deep-seated tertiary lesions I was able, by means of injections of the insoluble salts, to produce results far superior to those of any other method of treatment that I had hitherto tried. I recently saw a young physician, a former pupil of mine, with mucous lesions and other evidence of an old syphilis. He objected to the proposed use of injections of salicylate of mercury, and when I expressed my surprise at this, he said that he had read my remarks on the subject made a year ago. I told him practically what I have said here to-day and explained my change of view, as I had already done on a previous occasion, at a meeting of the Chicago Medical Society. He still objected to the injection method, and I thereon refused to treat him. The following day he returned and made no further objection, and after the third injection the mucous patches on his tongue had disappeared, and my young friend had become very enthusiastic in regard to the treatment. In his case, only four or five injections were necessary. Many of you who at the present moment are opposed to the use of the deep injection of the insoluble salts of mercury in syphilis do not, I venture to say, even use the soluble ones. I believe that if you will take up the method and familiarize yourself with its technic, which is extremely simple, you will soon become as enthusiastic in regard to it as are Dr. Gottheil and Dr. Klotz.

DR. M. L. HEIDINGSFELD, Cincinnati: I have used a preparation of lanolin and metallic mercury equal parts, by weight, with very gratifying results for a number of years, and it has also been employed by a number of confrères, including Dr. L. E. Schmidt of Chicago and Dr. Eugene Hay of Hot Springs. I have never given a larger dose than 3 grains, but Dr. Schmidt has given as high as 5 grains of metallic mercury to each injection. Its results are especially shown in the very severe and persistent forms of eruption affecting the mucous membranes. The average case of syphilis will take care of itself, but some of these persistent cases are the ones wherein the injection treatment has been most gratifying. I recall the case of a man of 32 who came to me during the past year from Savannah, Ga., with the history of an epithelioma of the penis. The lesion had originally been regarded as syphilitic, but as it had failed to improve under the internal administration of mercury and the iodids, the penis was amputated. When I saw him, eighteen months later, there was a supposed recurrence. This entirely cleared up after a few injections of the insoluble salt in large doses, which proved the

case to be one of syphilis without a doubt. The chief advantages of the preparation are the stable character, large dosage and great tolerance.

DR. W. H. DAVIS, Denver: At the time of the last meeting of the section I had been using injections of the salicylate of mercury. Subsequently I began the use of gray oil, and from the latter I have not had the painful indurations and infiltrations that I had when I used the salicylate. I regard gray oil as the best preparation I have used. I am sure that if you will take up the use of gray oil in accordance with the technic of Dr. Gottheil, the good results you will obtain will be a revelation to many of you.

DR. EUGENE CARSON HAY, Hot Springs, Ark.: Up to two years ago I used the soluble mercurial salts entirely for injection purposes. The bichlorid I never used, on account of the pain to which it gave rise. About two years ago I began the use of the salicylates of mercury, and while my results have been good, I think that perhaps we are apt to become too enthusiastic in regard to it, and forget the equally brilliant results that may be obtained by the older methods. I am still a believer in the ordinary routine treatment of syphilis, and my experience with the inunction method especially has been very favorable. If we take, for example, one hundred cases of ordinary secondary syphilis, and give the patients inunction treatment, and then take a second hundred and treat them by injections of the insoluble salts, I venture to say that the lesions in the first hundred will clear up just as rapidly as those in the second hundred; in other words, that the results of one method of treatment will be just as good as those of the other. Of course, there are exceptions. Some individuals apparently do not get the effects of mercury when given by inunction, and in such cases the injection method can be substituted. Frequently the first symptom produced by mercury is its depressive effect on the nervous system, and the gums are not an infallible guide. I saw a man recently who received sixty inunctions of mercury without any effect, and who rapidly improved with the substitution of the injection method. I gave up the use of the insoluble salicylate of mercury entirely about six months ago, because so many patients complained of the pain produced by the injections, and have been using the modified gray oil ever since. This modification I learned of through a conversation with Dr. Heidingsfeld about three years ago. He told me about a combination of lanolin and bi-distilled mercury that he was using, and sent me a loaded syringe, requesting I give it a trial. I am pleased to state that his modification of Lang's oil gave rise to less pain than any other preparation of mercury that I have ever employed, and the results have been generally very gratifying. In severe or malignant cases of syphilis, where a rapid effect is desirable, I prefer the injection treatment, but in the ordinary run of cases I can accomplish just as much with the inunctions. In syphilis of the nervous system I look on injections as the best method of treatment.

DR. WILLIAM A. PUSEY, Chicago: I appreciate the value of testimony such as Dr. Klotz has given us in regard to the use of insoluble salts, and in extreme situations I fully approve of the adoption of injections of mercury; but I prefer to give mercury by the mouth rather than by the muscles, for the same reason that I prefer to give nourishment by the mouth rather than by the rectum; and so long as a patient can take it by the mouth and be benefited thereby, I see no reason against that method of administration in the majority of cases. Whenever I listen to a discussion of this kind, emphasizing the ease and efficacy of these newer methods, I wonder if my experience with syphilis has been more fortunate than that of most men. The ordinary case of syphilis, in my experience, is one of the easiest things to treat. All the patient requires is rational and specific treatment. The administration of mercury and potassium iodid is an extremely simple proposition, as a rule, and the cases of syphilis requiring the new methods of treatment are extremely rare. As to parasyphilis, nobody knows the relative frequency of parasyphilitic manifestations after any particular form of treatment, nor does it appear that any form of treating syphilis has any effect on the subsequent possible development of

tabes or general paresis. It has not been proved that those diseases are due to the virus of syphilis, and it is more probable that they are due to some of the antibodies of the disease. I do not wish to combat the use of the injection treatment of syphilis in those cases in which heroic treatment is indicated, but I do think that somebody should say a word in favor of the extreme amenability of syphilis to the ordinary methods of treatment.

DR. HENRY CLAY BAUM, Syracuse, N. Y.: Dr. Pusey expresses my views in regard to the proper method of treating syphilis. I employ both soluble and insoluble injections, but only on rare occasions and not as a routine. I believe that if one thoroughly masters any particular method of treating syphilis, and at the same time studies the needs of his patients and keeps them in good health otherwise, he will be successful, whether he employs the injections, inunctions or gives his drugs internally. In rare cases, any particular method may fail; and then a change to another is necessary. In my experience with syphilis, extending over a quarter of a century, I have no apologies to offer for the methods employed—usually internally medication and inunctions. I am inclined to believe that the later manifestations of syphilis are not due to the failure of the method of treatment, but to the fact that the patient was inadequately treated during the early stages of the disease.

DR. M. LYON, DeWitt, Iowa: I notice that nobody has said anything about the intravenous method of injecting mercury, as recommended by Dr. G. Frank Lydston in *THE JOURNAL*, Nov. 16, 1907. I have treated several patients by intravenous injections of bichlorid of mercury. The injections gave rise to considerable pain, which, however, disappeared rapidly. The preparation I used was a 1 per cent. bichlorid solution, injected directly into the vein. By this method quick results will be obtained in desperate cases—sometimes inside of twenty-four hours.

DR. DAVID LIEBERTHAL, Chicago: I have employed injections of bichlorid, gray oil, calomel and salicylate of mercury in the treatment of syphilis for the past fifteen years. I also use other modes of administration. Whenever I am convinced that a patient will carry out instructions, I prefer the inunction method because I consider the same the treatment par excellence. When difficulties arise for its application, the injections are the next choice. Any one employing them must be impressed by their marked effect. Among others, I recall a case of acute iritis, which cleared up within forty-eight hours after a single injection of salicylate of mercury. If a syringe with a leather or rubber washer be employed, care should be taken that the washer be in good condition, because the leather or rubber readily decomposes and particles may be carried with the injection fluid into the tissues and cause abscess. As a menstruum for insoluble preparations, olive oil is preferable to liquid petrolatum, because the latter is apt to produce harder infiltrations and of longer duration. The injections of insoluble salts should rather be applied hypodermically than intramuscularly, because if an abscess should form, it is more easily accessible. In tertiary manifestations, we should combine the administration of potassium iodid with mercury. After the symptoms have subsided, a prolonged course of mercurial treatment should follow, in order to prevent a recurrence of tertiary lesions.

DR. M. B. HARTZELL, Philadelphia: I have never resorted to the insoluble injections of mercury. The use of the insoluble injections, as admitted even by the advocates of that treatment, is oftentimes followed by disastrous results. Millions of men and women have been successfully treated with mercury given by the mouth. I believe that there are urgent cases of syphilis in which the hypodermic method of treatment is indicated, but in those cases the use of the soluble salts will accomplish quite as much as the insoluble. After you have injected an insoluble preparation of mercury into your patient, it is beyond your control, and you do not know how long it will take to absorb it. Those who assert that the insoluble preparations are more efficacious than the soluble attempt to prove too much. They state that the insoluble mercury is gradually and slowly absorbed, and that the pa-

tient is gradually placed under its influence. With a soluble preparation, the effect will continue until the drug is absorbed; with an insoluble preparation, you do not know what will happen. I am opposed to depositing mercury in a man's tissues, since you are absolutely incapable of knowing whether it will be absorbed in a few hours or a few weeks. In the vast majority of cases of syphilis, I believe that this method of treatment is unnecessary. It is easy to say that the patient does not object to the treatment, but I am quite sure that most of us, if we had to take mercury, unless there was an urgent necessity, would prefer to take it by the mouth. In my opinion, the intravenous method of injecting mercury is little short of criminal.

DR. HERMANN G. KLOTZ, New York: I came here on account of the adverse and harsh remarks on the injections of insoluble mercurial preparations which had been made at last year's session, and I had looked for considerable criticism of my paper. I did not particularly mention the gray oil, because I have had hardly any experience with it; I do not believe in having too many irons in the fire at the same time; but if I find a method a good one I study that thoroughly and try to master it. I had regarded gray oil as a valuable remedy in syphilis until recently, when I read papers by Welander and by Zieler, the latter an assistant of Neisser, which really were intended to favor and to recommend the gray oil. But they actually gave me the impression that in its application it is more dangerous and less effective than the salicylate and calomel, because it is more liable to remain for a long time unabsorbed at the seat of the injection. In its action it is apparently more slow and more like the inunctions. I agree with Dr. Pusey that you can treat a recent case of syphilis more or less successfully by almost any method. It is justifiable to try the mildest remedies in the beginning, but if you are confronted with gummatous lesions of the integument or of the mucous membranes that are on the point of breaking down, or with an affection of the nervous system threatening paresis or death, or if you have to deal with a syphilitic iritis, with the eyesight of the patient at stake, then you have no right to delay or to try to temporize. There you have to act quickly and energetically; it is to such cases I have principally referred. If any one present has been so fortunate as not to have seen such cases in the course of his practice, I think that he ought not to oppose the methods of those who have been less fortunate. I can not regard the inunction method of treatment as more scientific than the injections, and it is inapplicable to many patients who can not give up their business. Several speakers have referred to the disastrous results of the insoluble injections. If there are any such results, I should like to have them pointed out and described. I have candidly published all the disagreeable occurrences which I have seen; they were limited to a number of cases of pulmonary embolism, the effects of which were transient in character. When mercury is injected into the muscles, it is no more within or beyond our control than when it is given internally or by inunction. By the latter method nobody can say how much or how little of the drug is absorbed, and when administered internally, we never know how much is taken up by the system, how much remains in the stomach or in the intestines, or how many pills pass unchanged through the intestinal tract and out again.

Norwegian-Danish Translation of Essay on Tuberculosis.—

The essay of Dr. Knopf on "Tuberculosis as a Disease of the Masses, and How to Combat It," has been of great service in the crusade against the "Great White Plague." It has been translated into about twenty different languages, and in some cases two translations exist in the same language, as, for instance, an Italian and Russian. We have just received a translation into Norwegian-Danish by Dr. A. C. Amundson for use among the Scandinavians of this country, among whom the death rate from consumption is very high, higher than in the mother countries. The book is published at a low price, 25 cents (to physicians, 18 cents, postpaid) by the Amerika Publishing Company, Madison, Wis. This edition should receive a wide circulation among Scandinavian readers.