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**Treatment of Tuberculosis
by Marmorek's
Method.**

**Doctor DeMartigny's Official Report to the
Board of Health of the City
of Montreal.**

A. Mc End. Pouchette
Jeun cher ami
agréé en maeste journal,
mais à cause de sa valeur, mais de
notre amitié - *Ad Martigny*
15 mai - 25.

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**Doctor De Martigny's official report to the Board of
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February 10th, 1905.

Gentlemen,

Last June I was commissioned by you to investigate the question of Marmorek's method of treating tuberculosis as practiced in Europe and report the results to you. Many reasons, independent of my will, have prevented me from presenting this report to you sooner. I do not regret this delay, however, as it has enabled me to continue my investigations since my return, to treat a certain number of cases myself and thus acquire an extensively personal experience in it.

The scientific idea underlying Marmorek's system is admirably simple, but the difficulties met with by its discoverer before his final success were innumerable.

The serious study of the method entailed a very considerable amount of work on my part, and I would not have succeeded during the two months I devoted to it had it not been for the kind assistance of Dr. Marmorek himself, as well as that of his assistant, M. Maurice Cohen, and Dr. Klein, of Paris. Dr. Marmorek received me with great cordiality and placed his laboratory, his institute at Neuilly, and everything necessary for my studies, at my disposal. My friend, M. Cohen, director of the Neuilly Institute, was my guide and constant companion, and laid his knowledge of bacteriology and his great experience in all matters pertaining to tuberculosis, at my service.

Dr. Klein, who has published a most exhaustive work on this method and has used the serum in a great number of cases, was kind enough to allow me to profit by his vast clinical experience and gave me access to his patients.

To these three men I hereby tender my most sincere thanks.

* Report printed by decision of Board of Health, at its meeting of February the 10th, 1905.

DR. MARMORECK.

Before entering on a description of the new method, I would like to say a few words about its inventor, I consider this but right as every discovery should in justice redound to the personal credit and honor of its author.

Dr. Marmoreck is an ex-director of the Pasteur Institute. He was decorated, at the age of 33, with the Legion of Honor, and the Order of Francis Joseph of Austria was bestowed on him in 1898, when he was commissioned by that country to combat a violent invasion of bubonic plague.

This new method is not his first discovery. A few years ago he brought out an anti-streptococcus serum which proved a valuable contribution to science.

I will say nothing of the numerous useful works he accomplished while in the Pasteur Institute of which he was one of the most highly esteemed members, but confine myself to an account of his greatest life-work, the anti-tuberculous serum.

As a consequence of this discovery, Marmoreck was subjected to all the worries and persecutions which Latin countries seem to reserve for innovators since the days of Galileo. From the date of his first communication about it to the Academy of Sciences he met with the most irreconcilable opposition; without a true knowledge of the method, perhaps, also, and without understanding the principles underlying it, its adversaries set it down at once, as both useless and dangerous. A quarter of an hour's investigation sufficed to condemn the result of eight years' hard study and patient methodical research controlled by a sound judgment, a marvelous intelligence and an energy that no obstacle could daunt.

Combated in France the method met with a better welcome from strangers. In England, Germany and Switzerland the most prominent specialist gave it a loyal test.

While this was being done, Marmoreck, not having met with the unanimous approval of the directors of the Pasteur Institute and to prevent any discord amongst them, sent in his resignation; he wished to assume alone all responsibility for his discovery. He founded an institute at Neuilly, near Paris, of which M. Maurice Cohen is director. This institute comprises a well equipped laboratory, a model stable containing sixty horses undergoing immunisation and a great number of rabbits and guinea pigs, used in daily inoculations and other experiments.

In the quiet and serenity of this retreat, Marmoreck labors incessantly at perfecting his serum, paying no heed to the more or less official clamour of the envious ones around him, indifferent even to his own personal success.

I cannot bring this short notice of him to an end without repeating the words he used to me, a few days before

my departure: "You can judge for yourself," he said, "of the success of my method, but this success is nothing—it fills very little space in my mind. What is really sad to think of, is that in Paris alone, in one year thousands die of consumption who could have been saved if the serum had been administered to them! It is enough to make one weep!"

MARMORECK'S METHOD.

Before entering on the scientific part of my report, I wish to state that I have endeavoured to make it as clear as possible, purposely avoiding technical terms which are so embarrassing to the uninitiated in medical science and the work of the laboratory.

Marmoreck's method is exceedingly simple. It consists essentially in injections of a serum in varying doses according to the condition of the patient and his endurance of it. These injections are given in series, each series being separated from the one following by an interval of rest. In mild cases the doses are weak, and in serious or very acute ones they are stronger, the endurance of it on the part of the patient must be a factor in its use. Some stand it with difficulty, it seems to affect their nervous systems even to the point of momentarily elevating their temperature, but there is never the slightest danger to be feared. The worry they fell, however, often necessitates a diminishing of the dose, or even its momentary disuse. Patients are not required to remain at home or in hospitals while undergoing the treatment, they may, as a rule, occupy themselves to a certain extent with their affairs; all of my patients but one come to my office to receive their injections. The treatment therefore does not entail any extra cost in that respect, a fact of the greatest importance in the case of working men, etc., a class of patients especially dealt with in this report.

For the purpose of thoroughly testing his serum, Marmoreck at the beginning abandoned all other treatment, such as tonics, superalimentation, etc., so that the results obtained could be attributed solely to it. This question being satisfactorily settled, there was no further reason for depriving the patients of the benefits to be derived from suitable hygienic measures, good and sufficient food, and properly administered drugs.

HARMLESSNESS OF MARMORECK'S METHOD

Dr. Jacquerod, director of the Sanatorium of Leysin (Switzerland), states in the *Revue Médicale de Paris* (May, 1904, page 379) that the harmlessness of Marmoreck's serum has been established beyond the possibility of doubt, and such is the unanimous opinion of all those who have tested it. Had any accidents been possible they certainly

would have occurred when Marmoreck, with a view to demonstrating its innocuity, made his first experiments with it. At that period he used it only on patients in the last stages of the disease, when they were weak and without power to react against it.

Physicians, who have had much experience with consumptives are aware that in the late period of the disease death may occur very unexpectedly through such accidents as sudden hemorrhage, etc. Such accidents may happen in spite of the serum, and ill-disposed critics will not fail to attribute them to its use.

Dr. Jaquerod, in the article quoted above, says on this question: "Since we have been using the serum, we have observed in a certain number of cases (not treated by it) that various aggravating and unexpected complications set in. Among these cases, three had refused to submit to the new method, and though their conditions were serious, yet their chances of recovery were fairly good. One of them died at home, about a month later, from intestinal complication. Pneumothorax supervened about six weeks after in the second patient, from which, however, he recovered. Albumenuria came on two months later in the third case, and at this date there are dangerous uremic troubles setting in.

"We do not pretend to say that these accidents would not have happened if we had used the serum, but it is very likely we would have blamed it for them, and if we had met with them at the beginning of our experiments, our own judgment on the value of the serum would undoubtedly have been affected."

A similar opinion was given by Dr. Latham, of the Brompton Hospital, for diseases of the lungs and consumption, London.

"Two cases," he states, "in which I refused to use the serum, died very rapidly from pneumothorax. Another case where I had postponed its use, died five days after. In one of Dr. Marmoreck's patients where the first injection was delayed from Saturday until Monday, the patient died of sudden haemoptysis on the eve of receiving it. In all these cases had I used the serum I would have been led to form a very unfavorable and false opinion of it."

Such accidents are very common in consumption, so common indeed as to excite very little surprise, but let one of them arise in a patient undergoing the new treatment, and adverse critics will at once blame the serum for it. Physicians, unfamiliar, perhaps, with these complications and nervous about the new method which they may, but imperfectly understand, may also be tempted to decry it. To careful and conscientious experimentalists, however, who base their conclusions on an attentive and methodical series

of observations extending over many weeks and not on a chance, or possibly unfavorable case, the question will be very different.

It is impossible for an impartial physician not to agree, as I do myself with Drs. Jacquerod and Latham when they state that, "at this date we have acquired the certitude that the treatment of consumption by Marmoreck's serum is unattended by the slightest danger."

THE ANTI-TUBERCULOUS ACTION OF THE SERUM.

The anti-tuberculous action of Marmoreck's serum is not to be doubted to-day; this is frankly admitted by all who have used it in the treatment of tuberculosis.

To understand how it acts, a certain knowledge of the disease itself is necessary.

Tuberculosis is a disease caused by the development of the tuberculous bacillus in the tissues and organs, especially in the lungs, which bacilli brings about a series of local lesions and a general poisoning of the system.

Locally, they sometimes cause an infiltration of the tissues which thicken and assume a lardaceous appearance, more generally they give rise to tubercles. These tubercles are small granulations visible to the eye, and are accompanied by more or less congestion of the tissues surrounding them. They contain the bacilli and finally end by degenerating, producing ulceration and a breaking down of the parts. It is through this destruction that cavities in the lung substance are formed. While these lesions are being developed, the bacilli sets up a general poisoning by secreting a toxine in the blood, the chief symptoms of which are: fever, sweating, cough, pain and loss of appetite.

Some patients bear this toxine without apparent trouble just as many individuals can absorb great quantities of alcohol. In these cases the local lesions are developed more or less rapidly, while the general condition of the body remains for a long time to all appearances in a fairly good state. This is the chronic form of the disease and is accompanied by little fever. The malady develops slowly and if properly treated from the outset may be cured by ordinary means.

On the other hand, there are cases which react very violently against the toxine. From the beginning there is a general and very pronounced trouble. During the first weeks, the temperature rises to 100°, 102°, and even 103°. The patient rapidly loses appetite, coughs incessantly, is feverish and ill at ease, without courage or energy. "Very ill" is the only expression he can use to describe his condition. This

is the acute form and may carry off the patient in a few months or even weeks, and against which all ordinary treatment is unavailable.

Between these two extreme types all grades of the disease may be met with.

This short description will enable us to understand the mode of action of the serum and what we may expect from it.

Anti-tuberculous serum is serum obtained from a horse which has been highly immuned, that is to say rendered refractory to the disease. The horse is extremely sensitive to tuberculous toxine, and the injection of a very small quantity of it ($\frac{1}{2}$ a cubic centimetre) will at the outset sicken it. Fifteen or twenty days after the first injection the horse will stand a second one without being affected. This is due to an increased resistance to it, owing to the presence in the blood of a special substance called "anti-toxine" and a certain degree of immunisation has begun.

To thoroughly immune a horse it is necessary to inject the animal at regular intervals with toxine in ever increasing doses. Each fresh injection will sicken it, but as the quantity of toxine increases necessitating a constantly greater reaction, its resistance increases in proportion. In this way an immuned horse can be made to stand doses which would kill four or five hundred ordinary ones. Thus the first dose being $\frac{1}{2}$ a cubic centimetre it becomes possible after a while to inject it with 500 cubic centimetres of the same toxine in a single dose.

The horse at this point is highly immuned, that is to say his blood contains a large quantity of anti-toxine. A certain amount of this blood is then abstracted and the serum obtained from it is called "anti-tuberculous serum."

The object of injecting this substance into the tissues of tuberculous patients is to neutralise the toxine in his blood by reason of the anti-toxine in the serum.

It must not be expected, however, that all the toxine secreted during many months by the tuberculous bacilli, can be neutralised at once. Several successive injections must be made before such a result can be obtained. As a proof of its so neutralising the toxine in the blood, we see the various symptoms due to toxine poisoning disappearing.

The most important of these symptoms is the fever. All physicians are aware how rebellious this is to treatment. Some drugs succeed to a certain extent in lessening it, but it is never completely removed. Moreover the effect of these drugs cease when they are stopped, and if they are continued any length of time, the system becomes used to them and their efficacy ceases.

With the first injection of the serum the fever diminishes, and in favorable cases the temperature falls to normal in a very short time, remaining so for several days after the treatment has been interrupted. The patient feels better, he sleeps well, the low spiritedness so common in consumptives is no longer present, and a feeling of relief as if the cause of the fever had been removed, is experienced.

To demonstrate more clearly the action of the serum on the temperature it is preferable to use it on a new case, for then the action is due entirely to the toxine. In such a case it acts with great rapidity, the first injection, if it is strong enough will often lower the temperature which will not rise again. I have twice witnessed this phenomenon myself. In any case the temperature begins to fall from the first injection. The results will be less marked in more chronic cases for the reason that in them the fever is often increased or modified by complications foreign to tuberculosis, and on which the serum has no effect. These complications must be sought for apart from the disease and need not be mentioned here.

The cough is very distinctly modified by the serum, especially the cough of early consumption which is so persistent, fatiguing and so rebellious to treatment. It is not due to a desire to expectorate, no sputum being formed at the outset of the disease, it is due to toxine irritation and disappears very promptly under the injections.

The sweating of consumptives, especially the night sweating, is one of the most difficult symptoms to master. The most powerful drugs can only lessen it for a few days when it sets in again as bad as ever. It is often marked enough to seriously weaken the patient, but under the serum treatment it quickly and permanently disappears. In one of my patients it was so phenomenally great, continuing all day, that not only his linen, but his very clothes were wet, and no treatment could either arrest or diminish it. This man was in the second stage of the disease and extremely weak. He coughed incessantly and after four months had lost all appetite, his respiration was so short and laborious that the least effort exhausted him and his daily temperature marked 101° and sometimes 102° . After the third day of serum treatment he told me he had eaten his breakfast with relish, and on the sixth he noticed a marked decrease in the sweating. When I gave him his fifth injection I found the skin perfectly dry, and after the eighth the sweating disappeared for good. The other symptoms were ameliorated in the same degree.

I am willing to admit that every case is not as rapidly benefited as this one, but I could cite others even more remarkable.

The action of the serum is also very marked on the expectoration. During the first few days of the treatment, it increases both in quantity and in the number of bacilli it

contains. It would almost seem as if the patient was getting rid of his old supply of the latter and that they were too weakened to offer any resistance to their expulsion. After a few days their number begins to decrease gradually, and the sputum loses its yellowish or greenish colour to become whitish or white.

The action of the serum is less noticeable on the local lesions which persist for a longer or shorter time in spite of the injections, and when the disease is too far advanced they may fail to heal which is not hard to account for. The serum can act only on the bacilli or their toxins, but not on any physical lesions that may be present. Once the bacilli is eliminated, these lesions assume the nature of simple sores which heal and cicatrize in proportion to the strength of the patient. When his general condition is good, as, for example, when the disease is recent and the lesions are not extensive, they will heal readily and quickly. But if the disease has lasted some years with extensive lesions and cavities, if the constitution is weakened also by long suppuration, persistent diarrhoea, etc., it stands to reason that even without the presence of bacilli, the organ must be in a bad condition. Secondary infection, grafted on the primary disease, may also supervene to complicate and aggravate it.

When these lesions and cavities are formed, the tuberculous bacilli in them do not long remain in sole possession, other bacilli find in them a suitable soil to grow and develop, and these new comers often add a very dangerous complication to the disease. Against these latter visitors, the serum is powerless, and this is one of the reasons why an early treatment is so essential.

It is not to be wondered at, therefore, that patients in the last stages of phthisis, exhausted and without strength to resist fresh invasions and without power to repair past damage, succumb in spite of the serum. We must not expect miracles from it. Science never performs any; we must be satisfied with its undoubtedly anti-tuberculous action which is in itself almost miraculous.

DOES MARMORECK'S TREATMENT CURE CONSUMPTION?

We are convinced to-day that this method does cure tuberculosis, and this conviction is based on careful observations of the patients treated by it. The number so treated is not as yet very great and may be divided into two classes:

In the first must be placed those who were treated during the first months in which the serum was being experimented with. They were purposely chosen during the period of cohexia, and the serum was administered to them, not so much in the hope of effecting a cure as to demonstrate its absolute harmlessness. All of them without exception were bettered by it.

If we take into account the fact that, during that time, very small doses of a serum much less powerful than the

one in use to-day were given, we are astonished at the good results obtained. The condition of these patients was very much improved, and their lives prolonged. Many are doubtless still living who in all probability would have died in a few weeks without it.

In the second category are included those who have been treated during the second stage by a more powerful serum, that is to say for about a year.

Of these many were looked upon as incurable by the usual treatment, and were refused admission to sanatoriums on account of their high temperature and the extent of their pulmonary lesions. Many of them, despite the best of care, were gradually sinking. All, however, were rapidly improved by the new method, and this improvement has gone on steadily ever since. On account of their extensive lung deterioration they require a very lengthy course of treatment, and although many among them have shown no symptoms of the disease for several weeks, one hesitates to pronounce them cured lest these centres of infection should still retain a few bacilli which at any moment might spring into activity again.

It is considered safer to wait until absolute proofs are forthcoming, proofs that will disarm the irreconcilable enemies of Marmoreck's treatment and place the value of his discovery forever beyond question.

For my part, I find this reserve a little exaggerated, when in patients who have suffered for two or three years, steadily grow worse in spite of the best of care and the most scientific of treatment, in spite of lengthy sojournings in the mountain air, etc. We find, however, their symptoms disappearing under this new treatment; when the most careful auscultation fails to discover any pulmonary lesions and the general health appears excellent; when these results are attained after 5 or 6 months, treatment and persist for weeks after the injections are stopped, it seems to me, we may without being taxed as enthusiasts or as unduly partial to the discoverer, declare them cured.

On the other hand, when the opponents of the method argue that these cases may be, but lucky exceptions to the usual prognostic rule; that perhaps they are enjoying only a prolonged remission; that they are few in number and their "cure" of too recent a date to be considered as definite, and that possibly in two or even five years they may become tuberculous again, may we not look upon them as being altogether exacting, their objections exaggerated and without solid foundation? The lucky exceptions of which they speak are, fortunately, very rare, and it seems strange that these exceptions should be so frequently met with amongst the cases treated by the serum. It is unnecessary to comment on the difficulty of showing a cure of two or five years duration, due to a treatment which has only been in use for eighteen months.

In any case, even if patients pronounced, cured relapse after an interval of five years, that does not invalidate the claims of the serum, all that we ask is that it cures the patient of the attack from which he suffers at the time he is being treated. It must not be expected to immune the patient and shelter him forever from further contagion. Just as he contracted the disease once so he may in like manner contract it again. The cure does not confer any more privileges on him than he enjoyed before he fell sick, and which we, who are exposed to the contagion, do not ourselves possess.

But there is a third class of patients, those suffering from acute or galloping consumption, as it is popularly called. This form is of short duration, carrying off the patient in a few months or even weeks, and which is rebellious to all treatment. Well, even this refractory form of the disease is very markedly and rapidly influenced by the serum, in which cases powerful doses of it must be administered. The onward course of the disease is distinctly modified; the temperature gradually falls and the general condition improves, while the pulmonary troubles disappear. A certain number of cures have already been effected. Personally my experience with the new treatment has not been sufficiently long to enable me to show you any cures by it, that is to say, cures of long standing. Nevertheless, I must tell you that three weeks ago I ceased injections in a case I had been treating for two months. The patient's cough had stopped and auscultation failed to show the least sign of pulmonary lesion. This patient, a young girl of 20, had been tuberculous for six months, and when I began treating her she was very much emaciated, extremely pale, coughed incessantly and her sputum contained quite a number of bacilli. Auscultation showed a diseased condition of the lungs, especially of the right, in the apex of which numerous sibilant rattling and a prolonged expiration could be detected.

A month after I began treating her, the bacilli in the sputum had disappeared, and at this date, she has put on the appearance of health. She coughs no more and her appetite is excellent. For the present I look upon her as cured.

I have another patient in whom these changes are still more marked, although I cannot as yet consider him out of danger. The whole of his right lung was affected, moist cracking could be heard all over it, cough was incessant, expectoration abundant, and contained a large number of bacilli. He was weak, depressed, thin and without appetite. A confrère had sent him to me as a hopeless case.

After a little over two months' treatment, he is to-day much fatter, his cough has gone and he eats plentifully, only a little dry cracking can be detected by auscultation over the apex of the lungs. I might add that this patient had not followed anything like a proper hygienic regime during

his two months of treatment. I feel confident that in a few more months all signs of tuberculosis will have vanished and the patient will be cured.

Taking other facts into consideration, I feel that I am justified in asserting from my own personal experience that Marmoreck's serum cures consumption.

DURATION OF THE TREATMENT.

It is not possible to state how long the treatment should last, all we can say is that it must be kept up for a very long time for reasons that are easy to understand. Tuberculosis is a chronic disease, its evolution is slow and variable. There are periods of exacerbation, alternating with prolonged remissions. Sometimes the patient appears cured, and then the disease breaks out again with extreme violence and without warning. In such a case, a long course of treatment is necessary for while the symptoms of systematic poisoning often disappear rapidly, the local lesions may persist for a long time, constituting as they do an excellent medium for fresh injection. The treatment, therefore, should be continued until cicatrization is complete, and its energy should depend on the acuteness of the infection, the frequency and strength of the injections diminishing as the symptoms tend to disappear.

The older the lesions are, the longer they will take to heal. In his first work on his treatment published in "Les Archives Générales de Médecine" (November, 1900), Marmoreck says on this point: "Our observations on the action of the serum have led us to the conclusion that all things being equal, the extent of the lesion is less to be feared than its age. A large but recent one will heal more rapidly than one of lesser extent, but of remoter origin."

Finally, when the lesions have disappeared for several weeks, the injections may be suspended. Nevertheless the patient must be always on his guard and watch himself carefully in order to anticipate any fresh attack that may threaten so as to allow of its prompt treatment. The only security against tuberculosis is an armed truce, for as has been said, a patient cured by this method is not safe-guarded against fresh contagion any more than he was at first, he is still as vulnerable as we all are and possesses no advantages over persons in good health.

If the treatment is long, its application on the other hand is so easy that its duration should be no objection, and after a short period of it, the patient is so much benefited that he may resume his ordinary calling.

ADVANTAGES OFFERED BY MARMORECK'S METHOD IN THE TREATMENT OF THE POOR.

By reason of its rapid increase tuberculosis has become a danger against which it is necessary to protect the public.

In all civilised countries leagues have been organised to combat it, and many governments are seriously studying the question. Up to the present the struggle against it has been confined chiefly to preventing contagion. With this object in view, efforts have been made to teach the public what precautions are necessary to avoid it. Efforts have been made to convince consumptives that they are a source of danger to their fellow men, and to induce them to cease spreading the disease in all directions by their expectoration, and encourage them to use receptacles for it, which can be disinfected or destroyed. These measures will certainly produce good results and tend to a certain extent to prevent its increase. There is a league in Montreal working along these lines, and it deserves to be encouraged and helped, it has already done good service, and is destined to do still better in the future.

But it is not enough to put the healthy on their guard or to request consumptives to cease being a danger. It is necessary to cure these unfortunate, whose patience in the long run may become exhausted in their efforts to protect a public which will do nothing to help them. After all a consumptive is not benefited any by spitting in a pocket-spittoon rather than on the street, on church floors or elsewhere. In sheer despair at his fatal malady he might even find a grim consolation in dragging other victims down with him.

From a social point of view, consumptives may be divided into two classes: the rich who are not so much in question here, and the poor who deserve all our attention and care.

By "poor", I do not mean the indigent only, but the working class, those who have to live on small salaries, who are so much exposed to contagion, and who, when they are attacked, are incapable of obtaining a suitable, because always expensive, treatment. These are the ones the city must protect. Up to the present, nothing has been done for them; they are not even admitted to the hospitals as they are a source of contagion to other patients. They are left to themselves, and incapable of working or caring for themselves. They stay at home with their families whom they soon infect, and take, when they can afford it, a few cheap and utterly useless drugs. After a while another member of the family becomes infected, for once tuberculosis enters a poor man's house, it very rapidly spreads.

During small-pox epidemics, the city distributes vaccine, for scarlet fever, and diphtheria it provides a gratuitous service in its hospitals, but against consumption which is a hundred times more to be feared, it does nothing. It is time such an anomaly should cease. In truth, up to the present, there was not much to be done (for tuberculosis considered as a public evil), nothing except endeavours to assuage it, and console the sufferers. The public was in reality disarmed against the onslaughts of the white Plague.

Now, however, things have changed. In Marmoreck's method we possess an unobjectionable and most efficacious weapon of defence.

In this serum treatment there is no danger, it is easily administered, requires no sojourns in hospitals, and when his general condition will permit it, the patient may go about his daily work. It cures the disease and by diminishing the number of bacilli in the sputum, lessens the danger of contagion for those who have care of the sick.

The city could procure this serum on special terms if it concluded to employ it on a large scale in the case of the poor, it could thus treat and cure a large number of consumptives at very little cost to itself.

CONCLUSION.

Gentlemen, I feel as I draw near to the end of my report that in accepting the important mission you confided to me, I have assumed a very grave responsibility.

Tuberculosis claims its hundreds of victims annually in Montreal. According to our official statistics, 751 deaths due to this disease were recorded in 1903. Deeply convinced, as I am of the wonderful efficacy of Marmoreck's serum, I ask myself, if I have been successful in imparting the same conviction to you; for on my success will depend the action you will take in regard to it, and in consequence the life or death of thousands in the near future.

I feel positive that if Marmoreck's method was applied at once to the treatment of all the consumptives of the city, this disease would in ten years be as rare as small-pox is to-day. To effect this happy result, it would be necessary, I repeat, to begin the use of the serum immediately. I am not led away by any false hopes, however, in this question, I know that many years must elapse before the new method will be in common use. Any doubts I might entertain on the point, would be dispelled when I reflect on the innumerable obstacles the seropathic treatment of diphtheria had to overcome. You all know the success that has attended that treatment during the past ten years, yet I regret to say it has not even at this date overcome the antagonism of some of its early adversaries. Many physicians are still unconvinced, notwithstanding the fact that the serum treatment of diphtheria presents so many convincing arguments to the practitioner in its favor. The disease it treats is one which develops rapidly, and the good effect of the serum, in a few hours, is so evident that it seems impossible for any physician in good faith to deny its efficacy.

Marmoreck's serum is less favored in this respect. It attacks an essentially chronic disease, one that may take years to evolve, and its good effects are noticeable only after some weeks, and the cure is long in coming. The patient so treated may soon cease going down hill, but he

climbs up again only slowly and by degrees, a careful examination by a physician, will, alone, make the progress evident. There is no sudden nor striking change, nothing that in a few days would suffice to bring conviction to a prejudice opponent.

In most cases, the experimenter must possess a mind open to conviction, a condition, it must be admitted, not often met with, especially when self-interest or vanity have to be counted with.

If, therefore, the serum treatment of diphtheria after ten years of incomparable success, still meets with adversaries, you must not be surprised to hear of many objectors to Marmoreck's serum, which is new and as yet but little known. You must remember, also, that the medical profession has been grievously disappointed over the failure of Professor Koch and his tuberculine, and is not therefore very ready to put confidence in any new treatment by a method it regards as analagous. The profession is still influenced also by the unfavorable opinion on the serum emitted by a well known professor of Paris, as a result of the unsuccess of a few cases treated by it at its *début*. It must not be forgotten, however, that these cases were chosen purposely among the most unpromising and dispaired of, and that the serum was injected not with any hope of effecting a cure, but of demonstrating the harmlessness of the treatment. Remember, also, that the serum then used was much less powerful than the one we use to-day, and that through fear of some possible accident which might have had a disastrous effect on the treatment, the doses administered were extremely weak, doses which one would smile at to-day, as Dr. Klein remarks. To blame Marmoreck's serum, therefore, for not curing such cases, would be equivalent to blaming Roux's serum for failing in desperate cases of diphtheria.

In tuberculosis, as in the other disease, the earlier the serum is given, the more effective it is.

Do not forget, Gentlemen, that the most self evident truth is not always accepted without protest. Galileo paid a heavy penalty for his discovery of the rotation of the earth, and to go less further back in history, was not Pasteur accused of being a poisoner for having discovered his anti-rabic vaccine.

I trust you will not allow your judgment to be swayed by objections brought against the new method by persons who have had no experience with it, and who, perhaps, do not clearly understand the principle underlying it, but that you will be guided rather by those specialists who have successfully tested it, and that you will give a certain weight to my own personal opinion, however modest it may be.

If you are convinced of the great therapeutic value of this serum, as I trust you are, you will be in a position to initiate a great humanitarian work. I have taken the liberty in

the course of this report to draw your attention to the abnormal position in which consumptives in this city are placed. I have shown you that they, alone, among the sick poor, receive no assistance, and that even the hospital doors are closed against them. This state of things is deplorable from every point of view, and it is hard to understand why it has been allowed to exist so long. It is true our means of fighting the disease have been few and impractical. It has been suggested, for example, to build a sanatorium where the poor may receive gratuitous treatment, but the cost of building and maintaining a sanatorium would be very great, and the treatment received in such places is not very satisfactory. Few are cured therein as they generally enter when it is too late, and those who are cured speedily relapse again owing to the unsanitary conditions of the workshops and factories to which they return.

Marmoreck, through the discovery of his serum, has changed all this. Thanks to him, we now possess an incomparable resource against the disease, one that is easy to administer and which the city could procure at a low rate, and thereby benefit a large number of consumptives every year.

I conclude, Gentlemen, by strongly recommending Marmoreck's serum for the treatment of tuberculosis. It is for you to judge, if it is your duty to put an end to the present condition of things in regards to the consumptive poor. The city owes them an effective assistance which it is now in her power to give. If you consider it your duty to use this agent on a large scale and in a practical way, I am absolutely convinced that hundreds of lives will be saved every year, and the rest of the population be effectually safe-guarded against the ravages of the white Plague.

